NII

Inter-University Research Institute Corporation
Research Organization of Information and Systems

National Institute of Informatics

2024 Overview

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Top Message

Informatics at the Center of a Shift from Competition to Collaboration

KUROHASHI, Sadao

Director-General, National Institute of Informatics
Inter-University Research Institute Corporation
Research Organization of Information and Systems

We live in a time of confusion, unsure about whether an era is ending or a new age is dawning.

The year (2024) kicked off with the Noto earthquake. As a country prone to earthquakes, we must accept them as natural disasters, but couldn't we be a little more creative in our risk preparation and disaster response? What about the ongoing and appalling situation of regional conflicts, which are purely man-made disasters? It is heartbreaking to see drones and other IT technologies used as high-tech killing machines. Other problems too numerous to mention are plaguing humanity too, such as population (both exploding and declining), poverty, food, and global warming.

At the same time, 2023 will go down in history as the year when the evolution of AI crossed a line, as its coexistence with humanity began in earnest. AI is now being used for both routine and creative tasks. It is also starting to be applied in medicine, law, and other fields that traditionally required the judgment of human experts.

Science, technology, and industry developed enormously through the 20th century, but too much emphasis was put on competition (though this should not be surprising, given that conflict has been a constant feature of human history). To resolve the plethora of complex social issues we face, we need to shift our values from competition to co-creation. In the academic and scientific realm, this movement is known as "open science." It was even highlighted at last year's G7 meeting. Starting in 2025, all scientific papers in Japan resulting from publicly funded research, as well as the data they are based on, are required to be immediately open access.

The NII has promoted the development of Japan's scientific information infrastructure for many years. Its SINET6 network is now used by more than 1,000 universities and research institutes. In 2017, NII set out to develop NII Research Data Cloud, a platform for publication, discovery, and management of academic information. It began operation in 2021. In 2022, the project was evolved with the development of a research data ecosystem, in cooperation with numerous universities and research institutes. In this advanced phase, research results will be fully deployed. The goal is to build and propagate an environment that enables easy access to papers, data, and computational resources in all research fields, and to smoothly facilitate new research projects, as well as new joint research initiatives across different disciplines.

Recognizing the large impact of generative AI on society and the need for a place in Japan where people can get experience in building and researching large language models (LLM), in May 2023, LLM-jp, a study group centered on NII, was formed. The group, based on the idea of making all activities and findings open, started out with about 30 researchers in natural language processing, but has grown to more than 1,000 participants from industry, government, and academia. By October 2023, it had developed and released a 13-billion-parameter LLM.

In April 2024, the LLM R&D Center will be established at NII to develop this initiative further and build a 175-billion-parameter model (of similar scale to GPT3). The work will also focus on ensuring model reliability and transparency.

Given that we live in an era of chaos, as mentioned at the outset, the relationship of humans to science and technology will be increasingly important. It will also be vital to rethink human values. Informatics is an academic discipline that lies at the interface of technology and people, but also takes a sweeping view of them. It therefore has a big responsibility and role to play in these efforts.

As a research institute of the Inter-University Research Institute Corporation, NII works not just on scientific information infrastructure and the LLMs presented here, but on a wide assortment of other informatics research and endeavors. Through collaboration with about 200 visiting faculty from all over Japan, NII pursues open, joint research projects. It has also signed MOUs with over 100 research bodies worldwide and hosts student interns from universities around the globe. There is saying, "If you want to go fast, go alone. If you want to go far, go together." Through this approach to informatics, we expect NII to contribute to the transition from an age of competition to one of co-creation.

Weaving Information into Knowledge

Informatics to Create Future Value on the Wheels of "Research" and "Service"

Research

Comprehensive research from basic theory to cutting-edge technology

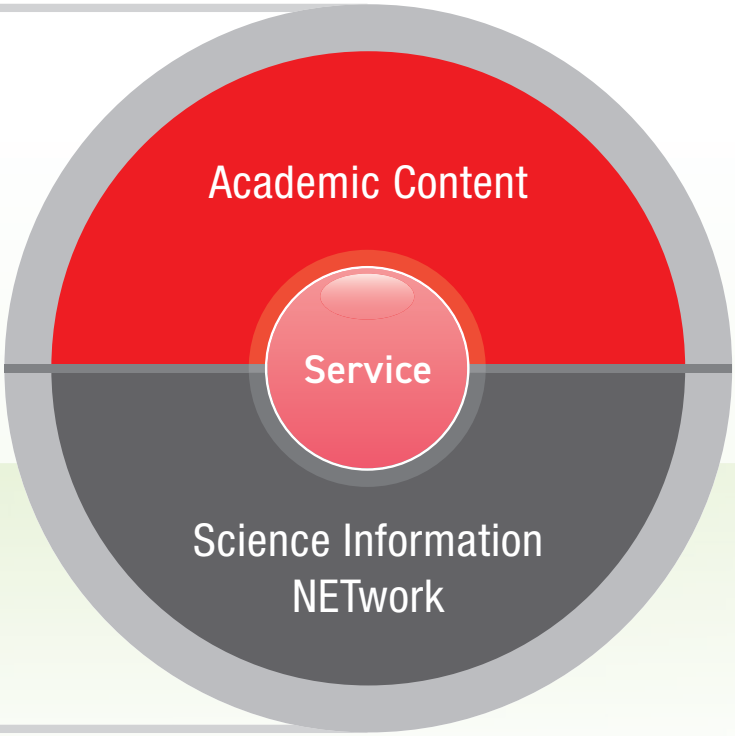
Merging computer science and information engineering with the humanities, social sciences, life sciences, and many other disciplines, informatics is a new domain of study that is involved in all aspects of society. Having established four Research Divisions and 17 Research Centers, NII is carrying out research comprehensively on everything from the basic theory of informatics to cutting-edge fields such as artificial intelligence, big data, internet of things, and information security. NII is also focusing its efforts into international exchange and collaboration with overseas universities and research institutes, as well as collaboration between industry, government, and academia, in order to help implement its research achievements in the real world.

Graduate Program

Fostering new leaders for an advanced information society

The graduate program at NII is carried out in three ways: (1) participating in the Graduate University for Advanced Studies, SOKENDAI, (2) collaborating with other graduate schools, and (3) accepting research students for special collaboration. SOKENDAI is the first graduate university in Japan established to foster original world-class academic research that transcends traditional disciplines and to pioneer advanced fields of study that create new lines of scientific inquiry. NII has joined with SOKENDAI to establish an Informatics Program, offering graduate school education for Five-year and Three-year Doctoral Programs. There are six areas of education and research within the Informatics Program, so students can take lectures and receive research supervision according to the field in which they wish to specialize.

The National Institute of Informatics (NII) under the Inter-University Research Institute Corporation Research Organization of Information and Systems is the only academic research institute in Japan dedicated to creating future value in informatics, a new academic field. From the basic theory of informatics to cutting-edge fields such as artificial intelligence, big data, internet of things, and information security, NII carries out long-term basic research as well as practical studies that attempt to address current social issues. Furthermore, NII is undertaking diverse services, including development and operation of the Science Information NETwork (SINET) and other essential scientific information infrastructures used by the entire academic community in Japan for research and education. It is also providing academic content and service platforms, as well as improving research data infrastructure. NII is thus committed to services based on leading-edge technologies through mutual feedback of knowledge obtained from those services and from academic studies. Through these activities, NII is committed to human resource development and social/international contribution, and conducts its operations with an emphasis on collaboration and cooperation between universities, research institutes, and private sector businesses in Japan and globally. Furthermore, NII is engaged in graduate education with the aim of fostering original world-class academic research and pioneering advanced fields of study.



Service

Supporting academic research infrastructure and education

In collaboration with universities, research institutions, and the entire research community, NII builds and operates the Science Information NETwork (SINET). Leveraging the SINET network's ultra-high speed, high reliability, and multifunctionality, NII provides an authentication federation platform, cloud adoption and utilization support, and academic content platforms as well as develops the NII Research Data Cloud to promote open science. Through those services, NII is working to maintain and provide the Scientific Research Digital Platform. Furthermore, NII Security Operation Collaboration Services contribute to building the framework enabling national universities and other academic institutions to respond quickly to cyber security incidents and other issues.

Collaboration with Industry, Government, and Academia

NII carries out goal-oriented research and development to address real social issues and fosters collaboration between industry, government, and academia to help implement its research achievements in the real world. NII actively promotes collaborative work between industries, local governments, and universities by using a system that includes open calls for collaborative research, comprehensive partnerships, and joint research units that are set up to operate special research laboratories under corporate partnerships. To create new collaboration and licensing opportunities for its research accomplishments, NII holds seminars to present the seeds of its cutting-edge research and to discuss corporate and social needs. It is also engaged in academic consulting by researchers and human resource development for the IT sector.

International Exchange

To promote organization-wide international research exchange with overseas universities and research institutes, NII has set up the Global Liaison Office (GLO), which conducts various activities, including forming international exchange agreements through Memoranda of Understanding (MOUs), and the management of the MOU/Non-MOU Grant for research exchange assistance and the NII International Internship Program. In addition, NII holds the NII Shonan Meeting, a series of seminars where top-class researchers from around the world come to Japan for intensive discussions on the field of informatics. NII is also actively accepting researchers through the German Academic Exchange Service (DAAD) and the Japanese-French Laboratory for Informatics (JFLI).

Research Divisions

NII established four Research Divisions—Principles of Informatics Research Division, Information Systems Architecture Science Research Division, Digital Content and Media Sciences Research Division, and Information and Society Research Division—in order to accommodate various types of research across the broad discipline of informatics. Each research division conducts specialized studies ranging from basic to applied research.

Principles of Informatics Research Division

Director: TAKEDA, Hideaki

Seeks new principles and theories of informatics using algorithms and computational complexity theory, as well as artificial intelligence, robotics, and quantum computing. Conducts research to develop new technologies that will sustain societies of the future and break new ground in the field of informatics.

Fields of Research

Algorithms, artificial intelligence, machine learning, deep learning, big data analysis, data mining, mathematical modeling, numerical analysis, computational science, web informatics, neuroscience, quantum information, and leading-edge research that creates possibilities for discovering new principles or theories and new applications at the frontiers of these fields

Information Systems Architecture Science Research Division

Director: JI, Yusheng

Aiming at boosting the performance, quality, and functionality of computers and networks, the building blocks of information technology, conducts research ranging from creating groundbreaking technologies in software and hardware architectures to implementing their working systems.

Fields of Research

R&D on post-Internet, cybersecurity infrastructure, software and hardware architecture, distributed and cloud computing, programming languages, system performance and log analysis infrastructure, dependable systems, Internet of Things (IoT), and network and cloud visualization

Digital Content and Media Sciences Research Division

Director: SATOH, Shin'ichi

Carries out research on analyzing and generating content and media, including symbolic and patterned media; storing, retrieving, and organizing content with platform technologies; and analyzing social media and interactions among humans and knowledge.

Fields of Research

R&D on natural language processing, computer vision, image processing, acoustic information processing, computer graphics, databases, human interaction, web mining, social media, community analysis, media clone generation and recognition, generative models, vision and language analysis, machine learning and deep learning applications, among others

Information and Society Research Division

Director: ECHIZEN, Isao

Conducts cross-disciplinary research based on emerging information and system technologies such as big data analytics to achieve the required levels of trustworthiness in a cyber–physical society where the cyberspace and real-world phenomena are related more closely than before.

Fields of Research

R&D on protection and use of privacy information, next-generation anonymization, data governance, next-generation IR infrastructure theory, data policy theory, data use in human resource development theory, digital humanities, IT healthcare, data reliability evaluation, crowdsourcing, digital education, and open innovation platforms, as well as research in humanities and social sciences related to these topics

Research Centers

NII established 17 Research Centers in order to remove barriers between Research Divisions and respond quickly to critical social issues, creating a system where researchers with various areas of expertise can collaborate across disciplines to focus on exploring key research domains.

Services and Operations

Research and Development Center for Academic Networks

https://www.nii.ac.jp/en/research/centers/network/

Develops and provides new services and features to enhance the operations and efficiency of the Science Information NETwork (SINET), a crucial backbone network of more than 1000 universities and research institutes in Japan.

Director: KURIMOTO, Takashi (Professor, Information Systems Architecture Science Research Division)
Vice Director: AKASHI, Osamu (Project Professor, NII)

GRACE Center: Center for Global Research in Advanced Software Science and Engineering

http://grace-center.jp/?lang=en

Integrates research, practice, and education using collaborations between Japanese and overseas research institutions, as well as collaborations between industry and academia, with the goal of developing the software infrastructure of the twenty-first century, and also fosters the next generation of world-class researchers and engineers.

Director: ISHIKAWA, Fuyuki (Associate Professor, Information Systems Architecture Science Research Division)

Center for Cloud Research and Development

https://www.nii.ac.jp/en/research/centers/ccrd/

Promotes IT-based research and education by advancing joint R&D with researchers at universities and research institutes, in order to provide state-of-the-art scientific information infrastructures using cloud technologies on the Science Information NETwork (SINET).

Director: AIDA, Kento (Professor, Information Systems Architecture Science Research Division)

Center for Strategic Cyber Resilience Research and Development

https://www.nii.ac.jp/en/research/centers/cyberresilience/

Leveraging the knowledge acquired from building and operating information security infrastructure for the Science Information NETwork, we pursue research on technology development and strategies for enabling the utilization of robust cyberspace environments and collaborate with universities on the training of highly skilled professionals to support this work.

Director: TAKAKURA, Hiroki,
(Professor, Information Systems Architecture Science Research Division)

Center for Research Data Ecosystem Development

https://www.nii.ac.jp/research/centers/creded/

With a focus on national research data infrastructure, promotes R&D directed at the development of a research data ecosystem as a means to foster the sustainable management and utilization of research data.

Director: KUROHASHI, Sadao (Director-General, NII)
Vice Director: YASUURA, Hiroto (Vice Director-General, NII)

Research Center for Knowledge Media and Content Science

https://www.nii.ac.jp/research/centers/kmcs/

Promotes cutting-edge research on the analysis and extraction of knowledge from research papers and other academic content, and carries out empirical R&D to encourage the distribution of academic knowledge.

Director: TAKEDA, Hideaki
(Professor/Director, Principles of Informatics Research Division)

Research Center for Community Knowledge

Collects and analyzes the process of forming shared knowledge between humans, as well as that between humans and machines, carries out activities to promote the use of the outcome of such research, and conducts empirical R&D to encourage the next generation of information sharing.

Director: ARAI, Noriko
(Professor, Information and Society Research Division)

Center for Dataset Sharing and Collaborative Research

https://www.nii.ac.jp/en/research/centers/dsc/

Collects datasets that are useful for informatics research and makes them available to researchers, conducts R&D on building datasets and a platform for their use, and promotes collaborative research in informatics using shared datasets.

Director: OYAMA, Keizo (Project Professor/ Professor Emeritus, NII)
Vice Director: SATOH, Shin'ichi (Professor, Digital Content and Media Sciences Research Division)

Research Center for Open Science and Data Platform

https://rcos.nii.ac.jp/en/

Conducts joint international R&D on platforms for managing, publishing, and searching research data, which will serve to promote a paradigm shift in the way research is carried out towards open science, and deploys these platforms jointly with universities and research institutes in Japan to encourage their use.

Director: YAMAJI, Kazutsuna
(Professor, Digital Content and Media Sciences Research Division)
Vice Director:
KOMIYAMA, Yusuke (Associate Professor, Digital Content and Media Sciences Research Division)
TANIFUJI, Mikiko (Senior Researcher for Cyber Science Infrastructure, NII)

Center for Trust & Digital Identity Infrastructure Research and Development

https://www.nii.ac.jp/en/research/centers/trust-digitalid/

Conducts R&D on technology to establish the Internet trust in academic cyberspace and digital identity infrastructure to enhance the academic activities. As a hub for R&D of authentication and authorization technologies in Japan, the center will promote collaboration between academia and industry to strengthen international cooperation and interoperability.

Director: SATO, Hiroyuki (Professor, Information Systems Architecture Science Research Division)
Vice Director: SAKANE, Eisaku (Associate Professor, Information Systems Architecture Science Research Division)

Research Centers

Major Research Projects

Global Research Center for Quantum Information Science

https://qis1.ex.nii.ac.jp/qi/

An international hub for cutting-edge research on quantum information science and technology, advancing the science of quantum information and exploring the potential of quantum information technologies. Also cultivates the development of international human resources who will lead medium- to long-term research projects focused on specific goals.

Director: NEMOTO, Kae
(Project Professor, Principles of Informatics Research Division)

Global Research Center for Big Data Mathematics

https://bigdata.nii.ac.jp/wp/english/

Research base for JST ERATO's Kawarabayashi Large Graph Project. A world-class hub for research on big data mathematics focused on developing high-speed algorithms, conducting advanced research and human resource development.

Director: KAWARABAYASHI, Ken-ichi
(Professor, Principles of Informatics Research Division)
Vice Director: YOSHIDA, Yuichi
(Professor, Principles of Informatics Research Division)

Research Center for Mathematical Trust in Software and Systems

Research base for JST ERATO's HASUO Metamathematics for Systems Design Project. Aims to provide support to manufacturing, ranging from developing specifications for industrial products to their design, production, and maintenance, by incorporating the knowledge of formal methods from software engineering into manufacturing.

Director: HASUO, Ichiro (Professor, Information Systems Architecture Science Research Division)
Vice Director: ISHIKAWA, Yutaka (Professor, Information Systems Architecture Science Research Division)

Research Center for Medical Bigdata

http://research.nii.ac.jp/rc4mb/

Undertakes the construction of big data cloud platforms for medical imaging using the Science Information NETwork (SINET) built and operated by NII, and develops artificial intelligence (AI) that analyzes large collections of medical images to assist doctors with diagnosis.

Director: MORI, Kensaku (Visiting Professor, NII)
Vice Director:
HARADA, Tatsuya (Visiting Professor, NII)
AIDA, Kento (General Manager, Cyber Science Infrastructure Development Department; Professor, Information Systems Architecture Science Research Division)
SATOH, Shin'ichi (Professor, Digital Content and Media Sciences Research Division)

Global Research Center for Synthetic Media

http://research.nii.ac.jp/~iechizen/synmediacenter/en

With a view to realizing an AI society focused on human beings, we promote research and development for generating synthetic media covering face, voice and various other modalities, detecting fake media, ensuring the media's reliability, and supporting decision-making.

Director: ECHIZEN, Isao
(Director, NII; Professor, Information and Society Research Division)
Vice Director: YAMAGISHI, Junichi
(Professor, Digital Content and Media Sciences Research Division)

Research and Development Center for Large Language Models

https://llmc.nii.ac.jp/

Bringing together researchers from industry, government, and academia to build an academic research base, the center provides an environment to cultivate R&D capabilities relating to generative AI models and clarify the principles behind how generative AI models learn in order to ensure transparency, as well as conducting R&D contributing to enhancing generative AI models.

Director: KUROHASHI, Sadao (Director-General, NII)
Vice Director: AIZAWA, Akiko (Vice Director-General, NII; Professor, Digital Content and Media Sciences Research Division)
TAKEDA, Koichi (Project Professor, NII)

Industry–Academia Collaboration

Center for Advanced Mobile Driven Research

Aims at the creation of an innovative next-generation common research data platform based on the accumulation of use cases and advanced application development by leveraging the high speed of a leading-edge scientific information network (SINET6) and a high-performance local 5G mobile environment.

Director: KUROHASHI, Sadao (Director-General, NII)
Vice Directors: YOSHIDA, Susumu (Professor Emeritus, Kyoto University),
NAKAO, Akihiro (Professor, The University of Tokyo)
SUZUKI, Shigeki (President, YRP, Inc.)

Principles of Informatics Research Division

Project Associate Professor
AZUMA, Hiroo
Ph.D. (Science)

Specialties: Quantum Information, Quantum Optics, Quantum Statistical Mechanics
Research themes: Planning and production of online content for lectures about quantum information theory. Research for implementation of quantum processors and measurement problems of quantum mechanics.

Assistant Professor
FUJII, Kaito
Ph.D. (Information Science and Technology)

Specialties: Combinatorial optimization; Machine learning; Approximation algorithm; Online algorithm
Research themes: Efficient algorithms for solving combinatorial optimization problems. In particular, designing algorithms with theoretical approximation guarantees and their applications to machine learning.

Associate Professor
HIRAHARA, Shuichi
Ph.D. (Information Science and Technology)

Specialties: Complexity theory; Minimum circuit size problems; Kolmogorov complexity; Average-case complexity
Research themes: Research on complexity theory, the theory underlying cryptographic security. Aiming to solve open problems that ask the limits of computation including the P vs NP problem with minimum circuit size problems serving as the axis of research.

Professor
INOUE, Katsumi
Ph.D. (Engineering)

Specialties: Artificial Intelligence; Knowledge Representation and Reasoning; Machine Learning; Logic Programming
Research themes: Theories of representation, reasoning, learning, and their integrations. Understanding and explanation of the dynamics of systems and the world.

Professor
KAWARABAYASHI, Ken-ichi
Director, Global Research Center for Big Data Mathematics
Ph.D. (Science)

Specialties: Graph coloring problems in discrete math; Structural graph theory and its applications to algorithms; Network flow and disjoint path problems
Research themes: Discrete mathematics, particularly graph theory and theoretical computer science. Global research in discrete graph theory. Many themes requiring mathematical theory. Also interested in application to needs in society at large.

Associate Professor
KISHIDA, Masako
Ph.D.

Specialties: Control theory, optimizations
Research themes: Her research focuses on mathematical methods for control and optimization, with a particular emphasis on addressing uncertainty. Recently, she has been focused on developing new theoretical frameworks and mathematical tools for solving a range of problems in "networked control systems," where the dynamical systems are controlled through communication networks.

Assistant Professor
KOBAYASHI, Taisuke
Dr. Eng.

Specialties: Robot control/Reinforcement learning/Imitation learning/Latent representation learning
Research themes:
Developing new machine learning methods for real-world intelligent robots, e.g. reinforcement/imitation learning to obtain controllers and latent representation learning of robotic systems from empirical data.

Associate Professor
MATSUMOTO, Keiji
Ph.D. (Mathematical science)

Specialties: Quantum information and computation
Research themes: Search for potential for quantification by introducing information theoretical approaches to entanglement research. The goal is to produce new concepts by integrating quanta and information, as well as physics and information science at a deep level.

Project Professor
NEMOTO, Kae
Director, Global Research Center for Quantum Information Science
Ph.D. (Physics)

Specialties: Quantum information and computation; Quantum optics; Theoretical physics
Research themes: Creation and discovery of new physics generated by quantum computers, and their applications. In addition, realizing a scalable quantum information system and elucidating the quantal essence that is held by such a system through constructing a theoretical basis of that scalable quantum information system and a dispersible quantum information system.

Assistant Professor
SATO, Ryoma
Doctor in Informatics

Specialties: Machine Learning, Graph Neural Networks, Optimal Transport, Information Retrieval
Research themes: Theory and algorithms for machine learning and data mining with real-world applications in mind, e.g., graph neural networks, information retrieval, user-side recommender systems.

Assistant Professor
SHIGAKI, Shunsuke
Ph.D. (Engineering)

Specialties: Intelligent Robots/Neuroethology/ System Identification
Research themes: Establish an implementation method to develop a robot system that can behave intelligently in a real environment. Specifically, working on extracting the intelligence possessed by living organisms and reconstructing it in an engineering manner.

Associate Professor
SOEDA, Akihito
Ph.D

Specialties: Quantum information theory. Quantum algorithms. Higher-order quantum information processing.
Research themes:
Theoretical research on quantum information. Especially on quantum algorithms to address large-scale problems while respecting the recent progresses of quantum information processing devices/systems.

Principles of Informatics Research Division

Associate Professor
SUGIYAMA, Mahito
Ph.D. (Informatics)

Specialties: Machine learning; Data mining
Research themes: Fundamental and practical methodologies of data science, data mining, and statistics, focusing on machine learning theories. Developing theories to support the reliability of information obtained from data for trustworthy AI.

Professor
TAKEDA, Hideaki
Director, Principles of Informatics Research Division; Director, Research Center for Knowledge Media and Content Science; Chair, Informatics Program, SOKENDAI University
Dr. Eng.

Specialties: Knowledge sharing systems; Semantic Web; Design theory
Research themes: Artificial intelligence coexisting and co-creating with society. Building and applying large-scale knowledge graphs as semantic Web research that will enable smooth sharing of information between people and computers.

Professor
TATSUTA, Makoto
Ph.D. (Science)

Specialties: Software verification; Separation logic; Theory of programs; Type theory; Constructive logic
Research themes: Theory of types in programming languages and their abstraction, “type theory.” In 27, solved the 2th of 22 important and difficult type theory problems. Research results are being used in implementing large-scale high-quality programs.

Professor
UNO, Takeaki
Ph.D. (Science)

Specialties: Development of high-speed algorithms for large-scale computation in data mining and genome informatics; Analysis of computation for distributed and especially enumeration algorithms, methods for building and accelerating industrial computation models, scheduling, facility placement, etc.
Research themes: Program theory (algorithms) for processing large amounts of information quickly. Efficiently finding data features. Technology to make data more easily comprehensible. Many applications including matchmaking, advertising, and intestinal bacteria.

Assistant Professor
WELLNITZ,Philip
Ph.D.

Specialties: Algorithms, Fine-grained Complexity Theory, Algorithms for Strings, Counting Problems
Research themes: Cutting-edge algorithms that can find or count patterns in various types of data and related problems. (Conditional) lower bounds ruling out faster algorithms.

Professor
YOSHIDA, Yuichi
Ph.D. (Informatics)

Specialties: Constant-time algorithms; Discrete optimization; Spectral graph theory; Algorithmic stability
Research themes: Theory and application of algorithms for analyzing large-scale data quickly. Focus on theoretical guarantees of computing time and accuracy using theoretical tools such as randomized computation and discrete optimization.

Information Systems Architecture Science Research Division

Professor
AIDA, Kento
General Manager, Cyber Science Infrastructure Development Department; Director, Center for Cloud Research and Development; Vice Director, Research Center for Medical Bigdata
Ph.D. (Engineering)

Specialties: Cloud computing; IoT; Parallel and distributed computing
Research themes: Parallel-distributed computing platform technology enabling multiple computing resources connected by a network to be used as a single resource. Promising for use in consolidating advanced information platforms such as clouds and IoT.

Assistant Professor
AOKI,Shunsuke
Ph.D.

Specialties: Autonomous driving; Cyber-physical systems; Real-time embedded systems; Internet-of-things
Research themes: Autonomous driving and real-time systems for autonomous mobile robots and computing platforms; also, task scheduling and allocation of computing resources, for the realization of "cyber-physical systems" in which computer components and the real world are deeply intertwined.

Project Associate Professor
ARCAINI, Paolo
PhD

Specialties: Search-based testing, autonomous driving, automatic repair, software product lines
Research themes: Research focuses on testing complex systems, as autonomous driving systems. Search-based approaches are designed to efficiently generate tests and tackle problems as the absence of precise oracles.

Project Assistant Professor
EBERHART, Clovis
Ph. D.

Specialties: Formal methods, semantics of programming languages, mathematical logic
Research themes: Most of my current research focuses on specification and verification, in particular for physical and cyber-physical systems, as well as systems with uncertainties.

Associate Professor
FUJIWARA, Ikki
Ph.D. in Informatics

Specialties: Computer Architecture, Distributed Systems, Cloud Computing
Research themes: Working on data analysis services and research reproducibility services integrated in the NII Research Data Cloud.

Professor
FUKUDA, Kensuke
Ph.D. (Engineering)

Specialties: Measurement and analysis of Internet traffic; Network science
Research themes: The Internet as an autonomous distributed system. Towards safe and efficient contol of the Internet, we measure, analyze and model information flows on the Internet.

Professor
GOSHIMA, Masahiro
Vice chair, Informatics Program
Ph.D. (Informatics)

Specialties: Processor architecture; Memory architecture; Security architecture; Digital circuit technology
Research themes: Continuous speedup of computers serves as a foundation of development of information society. Over the past ten years, though the clock speeds remained constant, the effective speeds have increased by a factor of ten. Ongoing research to extend this trend for another ten or twenty years.

Professor
HASUO, Ichiro
Director, Research Center for Mathematical Trust in Software and Systems
Ph.D. (Computer Science)

Specialties: Informatics infrastructure; Computer systems and networks; Algebra
Research themes: Mathematical methods (formal methods) for software design. Through investigating the mathematical logic in formal methods, abstraction, and generalization, overcoming software application categories to achieve broad application in areas such as industrial product design.

Project Assistant Professor
HIRASAWA, Shoichi
Doctor of Philosophy

Specialties: Computer Systems, Programming Language Systems, Auto-tuning
Research themes: Research on optimization techniques for computer architectures, especially reducing routing delays of interconnection networks, and on optimization of whole computer systems with complex performance parameters, aiming for high performance and efficiency.

Associate Professor
ISHIKAWA, Fuyuki
Director, Grace Center: Center for Global Research in Advanced Software Science and Engineering
Ph.D. (Information Science and Technology)

Specialties: Software engineering; Testing; Formal methods; Autonomous and smart systems; Cyber physical systems; Machine learning systems engineering
Research themes: "Smart systems and smart dependability assurance": research on automated test generation, optimization, formal verification, and debugging for both of requirements/design models and black-box simulators/implementations for leading-edge AI systems.

Professor
ISHIKAWA, Yutaka
Vice Director, Research Center for Mathematical Trust in Software and Systems
Ph.D. (Engineering)

Specialties: System software; Operating systems; Cybersecurity; Parallel and distributed processing
Research themes: Study on system software for cybersecurity has been focused, such as vulnerability analysis based on threat analysis, trusted execution environment built from root of trust, mandatory access control, runtime monitoring and execution enforcement.

Professor
JI, Yusheng
Director, Information Systems Architecture Science Research Division
Ph.D. (Engineering)

Specialties: Network resource management; Quality of service; Mobile computing
Research themes: Conducting research on resource allocation, access control, and quality of service management in mobile networks and distributed systems, aiming for high-quality, large-capacity, and highly efficient information networking.

Information Systems Architecture Science Research Division

Professor
KANEKO, Megumi
Ph.D. (Engineering), HDR (French Habilitation for Directing Research at Professor Level)

Specialties: Wireless communications; Mobile networks; IoT communication networks; LPWA
Research themes: Conducting research on the design of future wireless networks, wireless communications systems for Beyond 5G and wireless access optimization for massive IoT connectivity.

Assistant Professor
KATO, Hiroyuki
Ph.D. (Engineering)

Specialties: Database programming languages; View update problem; Query optimization
Research themes: It become possible to create new value by connecting existing systems. Software foundations for the data interoperability are needed.

Project Assistant Professor
KAWANO, Ryuta
Ph.D.

Specialties: Interconnection Networks, Deadlock-free Routing, High Performance Computing
Research themes:
Development of high-performance and highly expandable packet routing methods for inter-host networks on supercomputers and data centers that can achieve theoretically optimal communication performance

Professor
KOIBUCHI, Michihiro
Ph.D. (Engineering)

Specialties: Computer system networks; interconnection networks; computer architecture
Research themes: The topic I work on is interdisciplinary research on networks using graph theory, system design, and photonics for parallel computers, such as network design using randomness and free-space optics.

Professor
KURIMOTO, Takashi
Director, Research and Development Center for Academic Networks
Ph.D. (Engineering)

Specialties: Network system architecture; Network protocols
Research themes: New network services using NFV, SDN, and other technologies with the goal of increasing reliability and stability while reducing costs. Also, realizing reliable high-speed network services in cooperation with SINET.

Associate Professor
SAKANE, Eisaku
Vice Director, Center for Trust & Digital Identity Research and Development; Head, Academic Authentication Systems Office
Doctor of Science

Specialties: Authentication, Authorization and Access Control, Trust Framework, Interoperability, Operation Management
Research themes: Research on personal identification, authentication and authorization technology, operation management, and interoperability technology for the secure and efficient use of increasingly diverse online services. The aim is to build a more advanced federated authentication platform to facilitate a wide variety of academic research activities.

Professor
SATO, Hiroyuki
Director, Center for Trust and Digital Identity Research and Development
PhD (Computer Science)

Specialties: Computer Science, Internet Trust Engineering, Distributed Computing Environment
Research themes: Computer Science in the Internet, Architecture for Distributed and Decentralized Computing Environment, Internet Trust and Digital Identities

Associate Professor
SEKIYAMA, Taro
Ph.D. (Informatics)

Specialties: Programming languages; Type theory; Program verification
Research themes:
Programming language theory and type theory for safe software, and program verification based on these theories. I also work on the application of these theoretical results to system software and IoT systems.

Assistant Professor
SHIMIZU, Sayako
Ph.D.(Informatics)

Specialties: Authentication and authorization; Information security; System operation technology; Data Science
Research themes: More reliable authentication required to provide various services, and technology for handling the information associated with it. At the same time, aiming to reflect the research result in NII's authentication-related services.

Professor
TAKAKURA, Hiroki
Director, Center for Strategic Cyber Resilience Research and Development
Ph.D. (Engineering)

Specialties: Cybersecurity, high-reliability networks, anomaly detection, resilience
Research themes:
Technology to preemptively guard against damage from ever more sophisticated cyber-attacks; damage control technology to minimize the impact of damage; and technology to ensure business continuity by streamlining operations, to achieve resilient operational management.

Professor
TAKEFUSA, Atsuko
Head, Cloud Promotion Office
Ph.D. (Science)

Specialties: Parallel and distributed processing; Cloud infrastructure technologies; IoT; Cyber-physical systems; Security
Research themes: Building a new information platform that securely connects multiple computers in different environments ranging from mobile to clouds, thus making advanced analysis easier. Also, R&D on software that supports the development of secure and highly efficient IoT systems, and on technologies for building a computing environment using container-based virtualization.

Professor
URUSHIDANI, Shigeo
Vice Director-General
Ph. D

Specialties: Dynamic resource optimization technologies for multi-layer networks; Universal switching system architecture
Research themes: Innovative network architecture and service control and management technology with the goal of implementation on SINET. Development of NII's original or academic-specific network functions and new services in collaboration with system vendors.

Digital Content and Media Sciences Research Division

Professor
AIZAWA, Akiko
Vice Director-General; Vice Director, Research and Development Center for Large Language Models
Ph.D. (Engineering)

Specialties: Natural language analysis and automatic construction of language resources; Text mining and knowledge search; Intelligent language interfaces
Research themes: Methods for analyzing natural language text by using computers to obtain and use knowledge. Platform technology to acquire terminology, assessing uniformity, document structure, etc. Interfaces supporting reading and writing of documents by humans.

Associate Professor
ANDRES, Frederic
Ph. D., HDR (Habilitation Diriger des Recherches)

Specialties: Mulsemedia; Collective intelligence; Data science; Very Large Database;
Research themes: Molecule discovery, Intelligent food and cooking recipes, Intelligent supply chain, Distributed collective intelligence (CI)-based applications, community behavior detection, and early stress detection and monitoring.

Assistant Professor
ASANO, Yuta
Doctor of Engineering

Specialties: Computer Vision Based on Optical-Physical Models, Computational Photography, Medical Image Analysis
Research themes: Image processing technologies that utilize physical-optical characteristics as feature quantities. Particular aims are the realization of image sharpening and depth estimation below the sea, especially the effects of light absorption and scattering, and technology to visualize diseased areas for medical diagnosis using light absorption and polarization.

Associate Professor
IKEHATA, Satoshi
Ph.D. (Information Science and Technology)

Specialties: Computer vision; Computer graphics
Research themes: We are working on cutting-edge 3D computer vision research using deep learning, digital cameras, distance sensors, and other devices. Our goal is to develop practical 3D reconstruction techniques that can be used in various fields such as geography, architecture, medicine, and entertainment by achieving casual, industry-applicable professional 3D measurements.

Associate Professor
KANAZAWA, Teruhito
Ph.D. (Engineering)

Specialties: Information Access Technology, Bibliographic and Human Identification, Machine Learning, Big Data Processing
Research themes:
Supporting the daily activities of researchers through "smart navigation," which utilizes information retrieval, information identification, and information integration to actively provide information that matches the interests of users. Also pursuing the development of data and utilization environments that contribute to the analysis of research capabilities.

Associate Professor
KATAYAMA, Norio
Ph.D. (Engineering)

Specialties: Data Management Technology for Video Corpus Analysis, Multimedia Data Analytics
Research themes: Efficient high-speed analysis of multimedia databases storing large amounts of video data. Focusing on grid and SMP as key technologies, and devising databases and algorithms for them. Pursuing applications to multimedia data analytics for TV archives.

Professor
KITAMOTO, Asanobu
Ph.D. (Engineering)

Specialties: Data-driven science; Humanities informatics; Big data analysis of global environment and disasters; Open science; Image analysis
Research themes:
Technologies such as image analysis, databases, and machine learning that are fundamental to the expansion of data-driven science into various fields such as the global environment, natural disasters, and the humanities, and "super-interdisciplinary expansion" of research results using open science approaches.

Associate Professor
KODAMA, Kazuya
Ph.D. (Engineering)

Specialties: Structured multi-dimensional image representation and distributed systems for visual communication with real-time quality control
Research themes: Methods for free viewpoint image reconstruction and scene refocusing. Advanced visual media using multi-dimensional signal processing based on innovative technologies for directly capturing, storing, transmitting, and displaying light ray information within the 3D spaces beyond its conventional 2D images.

Associate Professor
KOMIYAMA Yusuke
Vice Director, Research Center for Open Science and Data Platform
Ph.D. (Agriculture)

Specialties: Open science; Research data management; Research data infrastructure; Semantic Web; Bioinformatics
Research themes: The development of a research data management platform that is secure and versatile, utilizing NII's academic information infrastructure, is critical for properly managing and sharing academic institutions' research data, addressing an urgent issue in the field of academic infrastructure.

Associate Professor
KOYAMA, Shoichi
Ph.D. (Information Science and Technology)

Specialties: Acoustic Signal Processing; Physics-informed Machine Learning; Inverse Problems; Spatial Audio
Research themes: Sound field analysis and control and their applications. Developing new methodologies of signal processing and machine learning considering properties of the wave field and their applications to virtual reality audio, spatial active noise control, and others.

Assistant Professor
KURITA, Shuhei
Ph.D. of Informatics

Specialties: Natural Language Processing Image Recognition
Research themes:
To develop flexible understanding technology for agents or robots that interact with us, he researches language understanding technology in the real world that combines the instruction following ability of the large language models in diverse texts with the various information from cameras and sensors.

Assistant Professor
MO, Hiroshi
Ph.D. (Engineering)

Specialties: Case-based video indexing; Intelligent video structuring
Research themes:
Development of essential technologies for active selection of broadcast programs, such as on-demand viewing. Devising and implementing schemes to clearly show what is in the image, index it, and automatically organize it. Building reliable archives and using video as knowledge.

Digital Content and Media Sciences Research Division

Assistant Professor
NISHIOKA, Chifumi
Doktor der Ingenieurwissenschaften (Dr.-Ing.)

Specialties: Scholarly Communication, Open Science, Bibliometrics
Research themes: Research and development on open science platforms to promote publication and sharing of scholarly publications, research data, and other research outputs. Surveys and research to verify the effectiveness of open science platforms using citation data.

Professor
PRENDINGER, Helmut
Ph.D.

Specialties: Artifical Intelligence, Deep Learning, Intelligent Drone
Research themes: The broad potential of drones as new social infrastructure. Development of core technologies for effective utilization in more fields using information engineering. Focusing effort on information processing research using deep learning. Analysis of time series.

Professor
SATO, Imari
Ph.D. (Interdisciplinary Informatics)

Specialties: Physics-based object shape and reflectance modeling; Creation of spatially immersive displays for human-computer interaction
Research themes: The spectral absorption of objects provides innate information about material properties. We propose various shape recovery methods and internal structure analysis approaches focusing on the properties of light such as absorption, emission, and refraction: 3D modeling by PAI, shape from water, shape from chromatic aberration, and shape from fluorescence as well as a novel imaging technique of scattering characteristics of tissue in transmitted microscopy.

Professor
SATOH, Shin'ichi
Director, Digital Content and Media Sciences Research Division; Vice Director, Center for Dataset Sharing and Collaborative; Vice Director, Research Center for Medical Bigdata
Ph.D. (Engineering)

Specialties: Video analysis, retrieval, and knowledge discovery based on broadcast video archives; Image retrieval
Research themes: Building visual systems able to understand meaning in video similarly to how humans do. Technologies to determine names from facial images, and establishing search technologies for objects and events portrayed in video. Participating in overseas R&D projects and refining technologies.

Project Assistant Professor
SHIMANO, Mihoko
Ph. D.

Specialties: Analysis of the Physical Properties of Objects using Computer Vision Technologies, Medical Image Analysis, Analysis of Cell Characteristics
Research themes: Research on elucidating the physical properties of objects, such as composition and light propagation, using a 3D imaging technique that combines light source patterns and cameras. Also analyzing medical images and cell characteristics by elucidating complex scattering processes in biological samples and other complex structures.

Assistant Professor
SUGAWARA, Saku
Ph.D. (Information Science and Technology)

Specialties: Natural language processing; Computational linguistics; Natural language understanding; Task design
Research themes: Designing explainable natural language understanding tasks for linguistic intelligence, while working on building systems that ensure practical reliability and interpretability, with the goal of exploring human language understanding through computational modeling.

Professor
SUGIMOTO, Akihiro
Vice Director-General
Ph.D. (Engineering)

Specialties: Sensing and understanding human activities in daily life; Real-time 3D environment reconstruction using RGB-D cameras; Computer vision under the existence of digitization errors
Research themes: Broad research on visual information processing from theoretical to system building perspectives, giving particular thoughts to the nature of “seeing.” Especially, reformulating problems in computer vision from the mathematical engineering perspective to establish a visual information mathematics.

Professor
TAKASU, Atsuhiro
Vice Director-General;
Ph.D. (Engineering)

Specialties: Data engineering; Structural matching; Sequence data analysis
Research themes: Analytical technology for identifying and extracting underlying knowledge in large-scale text data and sensor data, as well as data management technology for efficient analysis.

Project Associate Professor
WANG, Xin
Ph.D. (Informatics)

Specialties: Speech information processing / speech synthesis / fake speech audio detection / machine learning
Research themes: Speech waveform model based on new theory of fusing classical digital signal processing and deep learning, and detection of speech-synthesis-based fake speech audio.

Professor
YAMADA, Seiji
Ph.D. (Engineering)

Specialties: Artificial intelligence; Human_agent interaction; Intelligent interactive systems
Research themes: Many AI agents do not operate independently, without human assistance. Development of systems with close cooperation between humans and AI agents. Interaction design technology incorporating GUI design and human cognitive models.

Professor
YAMAGISHI, Junichi
Vice Director, Global Research Center for Synthetic Media
Ph.D. (Engineering)

Specialties: Speech information processing; Speech synthesis; Speaker verification; Media forensics; Machine learning
Research themes: Reproducing the traits and characteristics of individuals as defined by voice, face, and writing by machine learning (digital cloning) and looking for new applications such as personal avatars, while at the same time considering a framework that achieves both security and privacy such as by liveness detection and deepfake detection.

Professor
YAMAJI, Kazutsuna
Director, Research Center for Open Science and Data Platform
Ph.D.

Specialties: Research data sharing and metadata management; Platform system activating the research community.
Research themes: Development of technology supporting open science for publishing and sharing research results such as papers and research data. Develop a world-leading research data infrastructure adapted to research workflows and provide services to universities and research facilities in Japan.

Information and Society Research Division

Professor
ARAI, Noriko
Director, Research Center for Community Knowledge
Ph.D. (Science)

Specialties: Information sharing, cooperative systems R&D; Artificial intelligence; Mathematical logic
Research themes:
Information technology enabling information and knowledge to be shared smoothly. Research on the potential and limitations of artificial intelligence starting with the question: "What if a robot were to be admitted to the University of Tokyo?" Also, issuing skills needed for the 21st century from an education-oriented science research laboratory.

Associate Professor
BONO, Mayumi Ph.D.

Specialties: Multimodal interaction analysis; Sign language corpus linguistics
Research themes: To observe the mechanisms of human social interaction, we record multimodal interactions and signed languages and construct corpus data. By comparing spoken and signed languages, we aim to reconsider communication theories created for spoken languages.

Professor
ECHIZEN, Isao
Director, Information and Society Research Division; Director, Global Research Center for Synthetic Media
Ph.D. (Engineering)

Specialties: Information security; Media security; Privacy protection technology
Research themes: Establishing security and privacy protection technologies at the boundary between cyberspace and real space. Contribution to increasing information security in society at large through research on biological information protection technology and technologies for generating and recognizing media clones.

Associate Professor
FUNAMORI, Miho
Strategy Manager, Research Center for Open Science and Data Platform
M.Sc.

Specialties: Higher education policy; Scholarly communication policy; Open science; Research evaluation; Higher education in the digital age
Research themes: Analyzing the impact of digitization on higher education from the perspective of university management, research, and education. Investigating the relationship between massification and digitization of higher education, the process of digitization, the relationship between scholarly communication and research evaluation, and the outlook for higher education in the age of Society 5.

Associate Professor
FURUKAWA, Masako
Doctor of Philosophy in Informatics

Specialties: Analysis and standardization of learning logs; Learning analytics; Development and evaluation of e-learning materials including MOOCs
Research themes: Development of system infrastructures for the collection and analysis of learning behavior data in online education and MOOCs at universities. The goal is to provide effective support by using learning logs to provide appropriate feedback to students, instructors, and educational institutions.

Associate Professor
GOTODA, Hironobu
Ph.D. (Science)

Specialties: Stereoscopic displays; Acoustic rendering systems; Similarity search for 3D models
Research themes: Modeling, to recognize and draw objects using computers. Establishing a matching technology able to find two objects that are similar would enable, for example, computing 3D data from objects in photographs.

Professor
KANDO, Noriko
Ph.D. (Library and Information Science)

Specialties: Evaluation of information access technologies; Exploratory search and user interface; Cognitive research for exploratory search; Extracting attitudes and relations from text
Research themes: Search systems for cases when the answer cannot be anticipated, or when the user does not know where to start. The objective is to build a mechanism to gather useful information satisfying the underlying needs of a query.

Associate Professor
MIZUNO, Takayuki
Ph.D. (Science)

Specialties: Computational social science; Econophysics; Complex network science
Research themes: Creation of a field that integrates informatics and social sciences. Addressing economic, international political, and social issues through big data analysis and large-scale simulations. Building sustainable social systems leveraging information technolog

Project Assistant Professor
NGUYEN, Hong Huy
Doctor of Philosophy

Specialties: Machine learning, biometrics
Research themes: Synthetic media such as images, videos, and text have both positive and negative effects on society. Some synthetic media are related to human biometrics, raising security and privacy concerns. Work to mitigate the downside of synthetic media, especially in cyberspace.

Information and Society Research Division

Associate Professor
NISHIZAWA, Masaki
Ph.D. (Science)

Specialties: Scientometrics; Bibliometrics; Cosmic-ray physics
Research themes: The relationship between press releases and media reports about academic research, and the relationship between industry-academia collaborative research and academic marketing.

Associate Professor
OKADA, Hitoshi
Ph.D. (International Public Policy)

Specialties: Critical growth factors of e-commerce and e-money; Interdisciplinary research on the social implications of blockchain technology
Research themes: Blockchain technology can be applied to various aspects of internet transactions. Distribution experiments were conducted using a system to verify the operational feasibility. Legal issues are analysed, and their application to the economy and society is considered interdisciplinary.

Professor
SATOH, Ichiro
Ph.D. (Engineering)

Specialties: System software (OS and middleware) and architecture for distributed systems including cloud computing and IoT
Research themes: Research on middleware-level techniques for reliable distributed systems, e.g., consistent data replication mechanism for multiple computers and software migration mechanisms between computers.

Professor
SUN, Yuan
Head, NII Library
M.A. (Education)

Specialties: Educational Measurement; Psychological statistics; Test theory; Bibliometrics
Research themes: Cognitive diagnostic assessment for individual learners based on learner and domain modeling; Personalized learning; Preprints on scholarly communication and Research evaluation

Assistant Professor
UEKI, Kouichirou
M.Sc.

Specialties: Development of the next generation information systems
Research themes: Natural information processing methods, specifically working on neural networks and genetic algorithms. Research and development for the next generation science information systems using these technologies.

Service Division

〈Center for Dataset Sharing and Collaborative Research〉

Project Professor
OYAMA, Keizo
Director, Center for Dataset Sharing and Collaborative Research; Professor Emeritus, NII
Ph.D. (Engineering)

Specialties: Data analysis of web user behavior and improvement of access to information; Web information retrieval technology; Full-text search technology; Digital Humanities
Research themes: Technology to support efficient finding and extracting of information required by the user from the Internet and various other databases, using various data reflected in user behavior.

〈Grace Center: Center for Global Research in Advanced Software Science and Engineering〉

Project Professor
HONIDEN, Shinichi
Professor Emeritus, NII
Doctor of Engineering

Specialties: Software Engineering, Agent Engineering, Self-adaptive Engineearing
Research themes: We assume that Software(S) satisfies Requirement(R) on the condition of Domain(D). My research aim is how to design the software architecture to modify S by itself to adjust the change of R or D.

〈Research Center for Medica Bigdata〉

Project Associate Professor
MURAO, Kohei
Ph.D.

Specialties: Medical image processing/ Diagnosis support/ Cloud platform/ Integration of HPC and Database platform
Research themes: Medical image processing to support diagnosis and treatment. Construction of cloud platform (database and computing environment) for handling sensitive information. Linkage of HPC and database infrastructures with secure and fast performance.

〈Center for Strategic Cyber Resilience Research and Development〉

Project Associate Professor
HASEGAWA, Hirokazu
Ph. D.

Specialties: Cybersecurity, Information Networks
Research themes: Research on security technologies to counter cyberattacks.
Pursuing research and development on technologies for automatically designing, and recommending to managers, effective response measures to mitigate damage in the event of a cyberattack, with an emphasis on business continuity.

Project Associate Professor (As of Jun. 2024)
LIU, Jia
Ph. D.

Specialties: Information Security; Wireless Communications Engineering; System Information Science
Research themes: Physical Layer Security in Wireless Communication Systems; Large-scale Wireless Network Performance Modeling; Resilient Air-Space-Ground Integrated Networks; Game Theory for Network Economics

〈Research Center for Community Knowledge〉

Project Associate
MASUKAWA, Ryuji

Specialties: Software, Intelligent Informatics, Information Security
Research themes:
Visualization of performance information, research results, etc., of researchers. Web software development and deployment of machine learning. Support of network-based collaborative activities.

〈Center for Cloud Research and Development〉

Project Associate Professor
OE, Kazuichi
Ph.D.

Specialties: Computer System/Analysis of workloads/Replacement Algorithm/System Software
Research themes: Research for computer systems that can transparently access computer resources in on-premises and multiple cloud environments. Research for hybrid memory/storage systems.

Project Professor
TAKAHASHI, Katsumi
Ph.D. in the field of Information Science and Technology

Specialties: Data Security, Data Privacy
Research themes: I am developing NII RDC Secure Analysis Functions (e.g., secure computation) for safe and secure sharing of data and research results in data-driven research. I am studying in the relationship between privacy technologies and ethical/legal issues.

〈Research and Development Center for Academic Networks〉

Project Professor
AKASHI, Osamu
Vice Director, Research and Development Center for Academic Networks
Ph.D (Science)

Specialties: Distributed Computing/Network Management/Network Architecture
Research themes: The Internet is a huge distributed system and its stability is essential. This research focuses on autonomous and cooperative network management through feedback based on analysis of network behavior.

Project Associate Professor
KITAGAWA, Naoya
Ph.D.

Specialties: Network Systems, Information Networks, Information Security
Research themes: Pursuing research and development on highly reliable, secure systems, including the design of low-load, low-latency systems and the development of effective security measures that take into account the real-world operating conditions of various network services.

Project Professor
SASAYAMA, Koji
Head, SINET Promotion Office
Ph. D.

Specialties:
Telecommunication Network, Mobile Network, Photonic Network
Research themes: Research and development of mobile services in the academic network SINET, especially research and development on 5G mobile network and private 5G network construction.

Service Division

〈Research Center for Open Science and Research Data Platform〉

Project Assistant Professor
ASAOKA, Makoto
Master

Specialties: Media Informatics and Databases, Library Information Science,Humanistic and Social Informatics, Sociology
Research themes: Conducting research on research data publication and licensing from the perspective of data protection and protecting the rights of data providers. Also tackling the development of methods to securely share content that is difficult to publish due to issues of privacy protection or licensing.

Project Associate Professor
HAYASHI, Masaharu
Doctor of Knowledge Science

Specialties: Research on buliding research output publication infrastructure for academic institutions / Research on metadata sharing and utilization for research output
Research themes: Development of repository functions for publishing and utilizing research papers and research data. Research on provision and utilization of the repository function as a shared repository platform.

Project Assistant Professor
KAWAI, MASASHI
Ph.D.

Specialties: Scientometrics/ Bibliometrics/ Scholarly Communication
Research themes: Data analysis and system development for scholarly communication

Project Assistant Professor
MINAMIYAMA, Yasuyuki
Ph.D.

Specialties: Informatics/Web and service informatics/ Informatics/Intelligent informatics/ Humanities & social sciences/ Library/information science humanistic/social informatics
Research themes: Conducting research on interdisciplinary data curation to facilitate access and reuse of research data. Through analysis and formalization of data curation activities across fields, I will work to develop functions that provide highly reusable information packages in the research data management platform.

Project Assistant Professor
NAGAOKA, Chikako
Ph.D.

Specialties: Online Learning Environment, Sharing and Utilizing Learning Content, Open Education
Research themes: Design and development of online learning environments built around a learning management system (LMS) such as Moodle; additionally, the development of a platform to support the sharing of learning contents and the utilization of micro-credentials.

Project Associate Professor
SHIMOYAMA, Takeshi
Ph.D.

Specialties: Research Data Management Platform/ Research Data Provenance/ Information Security(Cryptanalysis)
Research themes: Engaged in research and development related to research data management platform GakuNin RDM, especially research integrity.

〈Academic Infrastructure Division〉

Project Associate Professor
SUZUKI, Hikofumi
M.E

Specialties: Network engineering, information security, authentication systems, lifelog utilization
Research themes: Modeling in network design and implementation; using AI technology to detect DDoS and other network attacks; development of authentication systems; safety confirmation and student guidance using lifelogs.

Names are listed in alphabetical order (of surnames).
The titles of listed researchers include Professor, Project Professor, Associate Professor, Project Associate Professor, Assistant Professor, Project Assistant Professor, Associate, and Project Associate.
Please refer to the URLs below for information on Project Researchers and Visiting Researchers, as well as to p. 55 of this publication for information on Professors Emeritus.
* Project Professors, Project Associate Professors, Project Assistant Professors, and Project Associates may not be listed in this publication, at their request or for other reasons.
List of Project Researchers: https://www.nii.ac.jp/en/faculty/list/project-profs/

〈Research and Development Center for Large Language Models〉

Project Assistant Professor
KIYOMARU, Hirokazu
Ph.D. (Informatics)

Specialties: Natural language processing; Language analysis; Foundation model
Research themes: Research and development on language analysis, a technology for recognizing the meaning and structure of text. Analysis of large text corpora to elucidate the mechanisms of large language models.

Project Researcher
LIU, Chaoran
Ph.D. (Eng)

Specialties: Time series analysis; Geometric deep learning; Robotics;
Research themes: Research focuses on expanding large language models to multimodal applications, such as audio, video, and robot manipulation/locomotion, as well as on developing lightweight implementations of these models on edge devices by considering network topology and utilizing techniques like quantization and distillation.

Project Associate Professor
ODA, Yusuke
Master of Engineering

Specialties: Natural Language Processing, Machine Translation, Language Foundation Models, Software Engineering
Research themes: Developing algorithms for machine translation and simultaneous interpretation. Developing algorithms for foundation models. Constructing and organizing large-scale language and multi-modal resources. Applying techniques on foundation models to software engineering.

Project Professor
SEKINE, Satoshi
Ph.D.

Specialties: Natural Language Processing, Knowledge Construction, Information Extraction
Research themes: Tuning technologies and Safety related technologies on Large Language Model

Project Professor
SUZUKI, Hisami
Ph.D. (Linguistics)

Specialties: Natural Language Processing, AI Assistant Research and Development
Research themes: Research on safety and transparency of large language models (LLMs), including dataset development for safety, human and automatic evaluation of LLMs on safety, and investigation into LLM transparency with safety-related domains.

Project Associate Professor
TAKAGI, Yu
Doctor of Science

Specialties: Large Language Models / Machine Learning / Cognitive Neuroscience
Research themes: We aim to understand and advance modern machine learning models, including large language models, from a human-centric perspective. To achieve this, we conduct research by leveraging biological information such as the brain and collaborating with the field of robotics.

Project Professor
TAKEDA, Koichi
Vice Director, Research and Development Center for Large Language Models
PhD in Informatics

Specialties: Natural Language Processing, Text Mining, Question Answering
Research themes: Research and development of Large Language Models (LLMs), in particular, evaluation and implementation of reliability and transparency of LLMs

Executives (related to research)

See p.54 for the list of Executives.

Director-General
KUROHASHI, Sadao
Professor, NII
Specially Appointed Professor, Kyoto University

Acting Director-General; Vice Director-General
KATAOKA, Hiroshi
Professor, NII

Vice Director-General
Chief Cyber Science Infrastructure Director
YASUURA, Hiroto
Project Professor, NII;
Professor Emeritus, Kyushu University

GLO Deputy Director
PLANAS, Emmanuel
Professor, NII;

Major Project Involvement

Applications Accepted (FY2023)

No. of applications accepted	Amount (in thousands of yen)
24	1,121,716

* Large-scale projects: Grants-in-Aid for Scientific Research S or higher grade, ERATO, CREST, PRESTO, MIRAI, and other projects with an annual research budget of ¥20 million or more.

Japan Science and Technology Agency (JST) CREST: Trusted AI Systems

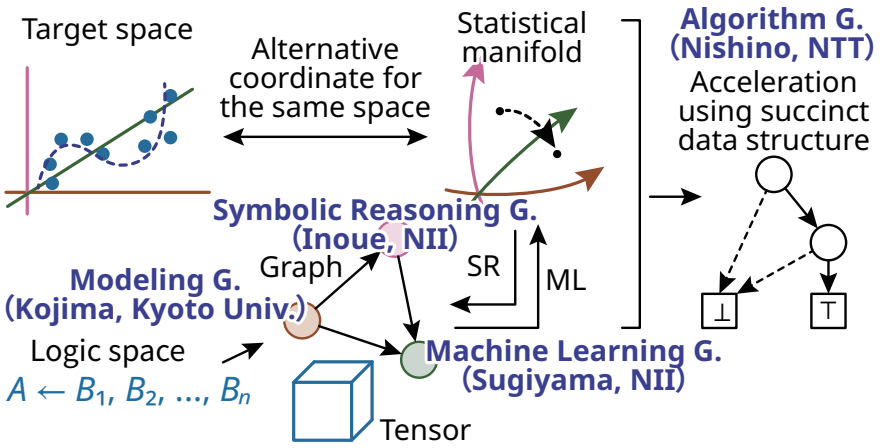
Machine Learning That Connects to Symbolic Reasoning

Principal investigator: SUGIYAMA, Mahito, Associate Professor, Principles of Informatics Research Division

With the success of deep learning, AI technology is being applied in wide-ranging areas of study, from the life sciences, physics, and chemistry to social and economic fields. However, as deep learning and other machine learning technologies come to be implemented in the real world and used in various situations, we are realizing issues inherent to machine learning, such as lack of interpretability, vulnerability to extrapolation, and biases, as well as issues that have emerged in relation to surrounding areas.

It is vital to take these issues seriously and develop trustworthy AI. Aiming to develop the fundamental technologies that this will be based on, this research project will bring together modern machine learning using massive parameters, with symbolic reasoning offering high interpretability of the reasoning process. We focus mainly on a geometric approach and design and create a machine learning system based on symbolic reasoning, which simultaneously addresses the issues of reliability of machine learning and the robustness of symbolic reasoning.

The key is to first construct a graph-based symbolic space that encodes the structure of the symbolic reasoning system, and then construct the parameter space of the machine learning model over this symbolic space. This approach will geometrically and algebraically lead to a space in which symbolic reasoning and machine learning are aligned. Since the target space and the model space are integrated to form a white-box system combining the characteristics of learning and reasoning, this should allow the results of machine learning to be explained by symbolic reasoning. Moreover, it is expected to achieve robust symbolic reasoning as an optimization in a continuous space.



Research Overview and Team Structure

JST Presto: Multisensory Integration in Biological Systems

Investigating the structure of multisensory systems using sensory-motor intervention, and applications of this in engineering

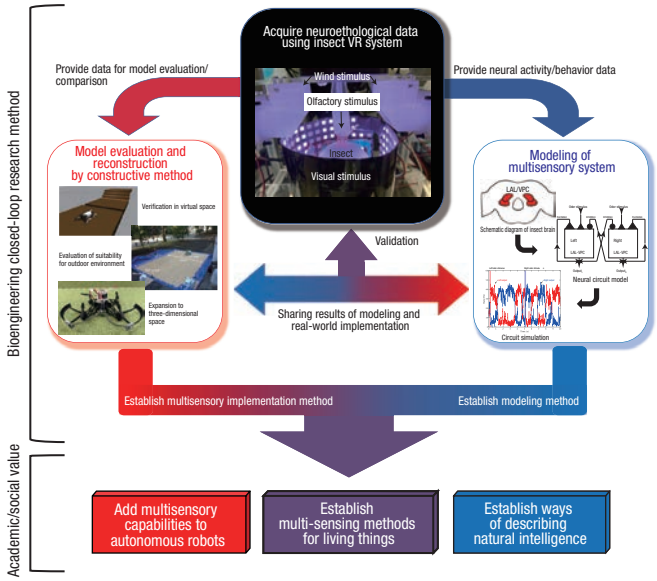
Principal investigator: SHIGAKI, Shunsuke, Assistant Professor, Principles of Informatics Research Division

Even with recent advances in robot motion performance and AI, robots have not yet been successfully implemented in society. Unlike artificial systems, the behavior of living things in the natural world has a sense of flexibility and appropriateness.

Most insects have only a few hundred thousand nerve cells in their whole bodies, making them clearly much smaller in scale than modern microcomputers, with their billions of transistors operating at speeds of tens of gigahertz. This leads us to believe that insects have an efficient system for functioning, completely different from artificial systems. If we could artificially recreate the structure of this insect system, we could develop an artificial system that is energy-efficient yet robust and adaptable. In other words, we hope to solve the problem of adaptability to unknown environments, which is a major reason why current robot systems have not gained ground in society, by artificially recreating the multisensory motor system of an insect.

This study aims to (1) perform neuroethological experiments using a virtual reality (VR) system that can intervene in insect sensory and motor functions, (2) describe neural circuits using a computational neuroscience approach, and (3) develop motion algorithms that generate situation-adaptive movements from multi-sensory information using data-driven modeling, in order to thoroughly identify the multisensory systems of insects in the same way as mechanical systems.

As well as identifying the adaptive behavior selection mechanisms of living creatures in response to multisensory stimuli, this will allow us to create an artificial system that can behave efficiently and adaptively in unknown environments with high uncertainty. This will contribute to understanding the structure of the incredible intellectual functions found in nature, and their applications in engineering.



JST Mirai Program

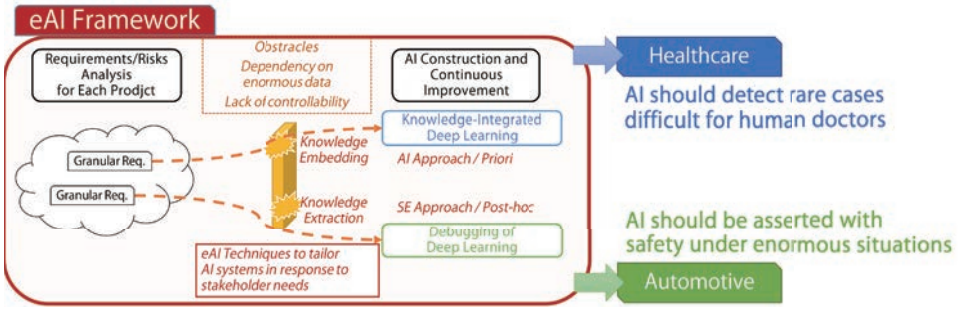
Engineerable AI Techniques for Practical Applications of High-Quality Machine Learning-based Systems

Principal investigator: ISHIKAWA, Fuyuki, Associate Professor, Information Systems Architecture Science Research Division

In this project, we are working on research and development of "Engineerable AI": technology to tailor AI systems to specific requirements, particularly in areas where safety and reliability are important, such as healthcare and autonomous driving. The focus is on technologies that can be utilized by engineers working on industrial applications of AI.

There are two specific technical challenges in application of deep learning: the dependency on enormous amounts of data and the difficulty of aligning fine-grained prediction performance. First, AI depends on large amounts of data, making it difficult to build reliable AI systems for situations where data are scarce but important, such as diverse and rare types of cancer symptoms. Second, it is difficult to control the behavior of AI systems, which means that for real-world perception functions relating to safety, it is difficult to adjust performance for different situations while taking risks into account, or to make improvements while keeping the good aspects of previous behavior.

In light of these technical challenges, in this project, we are working on techniques to embed domain knowledge in AI systems, and techniques to correct AI through analysis of AI errors. We will also provide a framework for comprehensively utilizing these technologies by thoroughly analyzing the needs and risks in the target domain and system. We are testing these Engineerable AI technologies in healthcare and autonomous driving, two examples of systems where safety and reliability are of vital importance.



Overview of eAI project

JST START: Project promotion business support

Popularizing automated driving through technology providing logical explanations of software quality

Principal investigator: HASUO, Ichiro, Professor, Information Systems Architecture Science Research Division

This project aims to set up a venture company providing an ICT service as a business, to analyze and improve the quality of software and explain its safety to customers and society. Strategically focusing on automated driving in particular, we will provide technology to dispel safety concerns, enabling automated driving to be accepted and popularized within society. In contrast to the current approach of statistical safety assurance, there is a growing need for a logical approach providing strong safety assurance and high explainability. We will address this need by applying the advanced fundamental research results of the ERATO HASUO Project.

Fundamental research into the technology to support the planned services and prototype implementation of the necessary software tools have already been completed during the main period of the ERATO HASUO Project (FY2016-FY2021). To develop these theoretical techniques as a business, research is required to improve the availability and portability of the technology, and the software tools need to be refined. This development will be carried out through this START project. As this is a highly advanced and unexplored technology, new research challenges may emerge in the course of business development. Thus, this START project will also involve research to resolve such issues. Through close collaboration with the ERATO HASUO Project (additional support period, FY2022-2024), which is carrying out fundamental and long-term theoretical research, we intend to accelerate both business development and academic research.

Figure. Technology rollout: Game-style demo and exhibition displays

Major Project Involvement

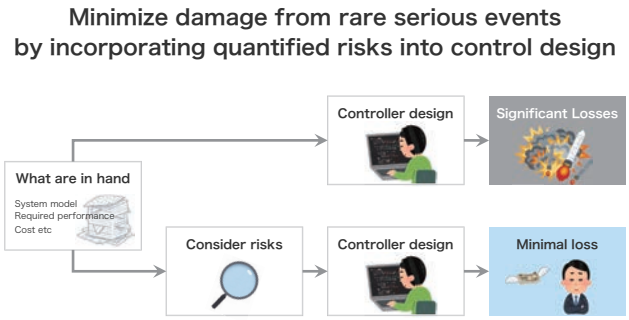
JST Presto: The Fundamental Technologies for Trustworthy AI

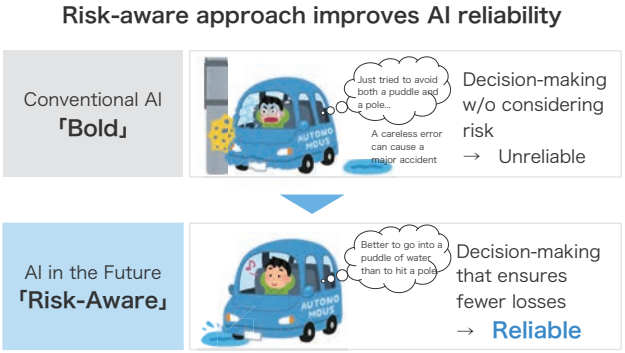
The Construction and Development of Risk-Aware Control Theory

Principal investigator: KISHIDA, Masako,Associate Professor, Principles of Informatics Research Division

Recent years have seen rapid progress in the automation of safety-critical dynamic systems that involve human lives, such as self-driving vehicles and aerospace systems. These systems must operate reliably even in highly uncertain environments. While numerous studies have focused on control technologies that enhance system reliability and safety by quantifying and incorporating uncertainty into design, existing control theories have failed to adequately address losses from rare, critical incidents in the design process. For safety-critical dynamic systems, however, it is essential to mathematically model both the probability and impact of unexpected, rare, and critical events. This modeling forms the basis for designing highly reliable control systems that balance performance and cost with risk tolerance.

In this research, we focus on developing a risk-aware control theory that addresses tail risks—events with extremely low probability of occurrence but potentially catastrophic consequences. This theory will mathematically analyze both the probability of occurrence and the impact of rare yet significant events. By incorporating these analytical results into control design, we aim to achieve levels of reliability and safety that were previously unattainable with conventional control theory. Furthermore, after establishing this new control theory foundation, we will reformulate key control problems, derive their solutions, and extend existing control methods into risk-aware control approaches.





JST FOREST

Spatial Control of Sound and Its Applications

Principal investigator: KOYAMA, Shoichi, Associate Professor, Digital Content and Media Sciences Research Division

Environmental noise has long been a social issue, but controlling the sound space is still an unresolved problem, as there are difficult technical challenges to overcome. High levels of noise in industrial environments, and even relatively low levels of noise such as road traffic noise and aircraft noise, are known to affect human health in various ways.

Furthermore, issues with noise disrupting conversations and sleep in everyday life have become more noticeable now that more people work remotely on a daily basis.

Many technologies aiming to reduce noise already exist. Active noise control, where noise is canceled by a loudspeaker driving signal, is known to be effective for low-frequency sounds that are often found in environmental noise. But the applications of this technique are limited to reducing noise in one-dimensional spaces such as inside a duct, or in very small areas such as noise-canceling earphones/headphones. The aim of this research project is to develop innovative technologies to reduce environmental noise by achieving active noise control in three-dimensional space, and generating sound zones, whereby sound is only played to people who want to hear it.

Active noise control in three-dimensional space, or spatial active noise control, can only be achieved by simultaneously measuring and synthesizing sound spaces with high precision in real time. With an approach combining modeling based on wave theory with statistical signal processing, machine learning, and numerical optimization, we are researching the fundamental techniques of sound field analysis and synthesis to achieve spatial active noise control, and the applications of this technology.

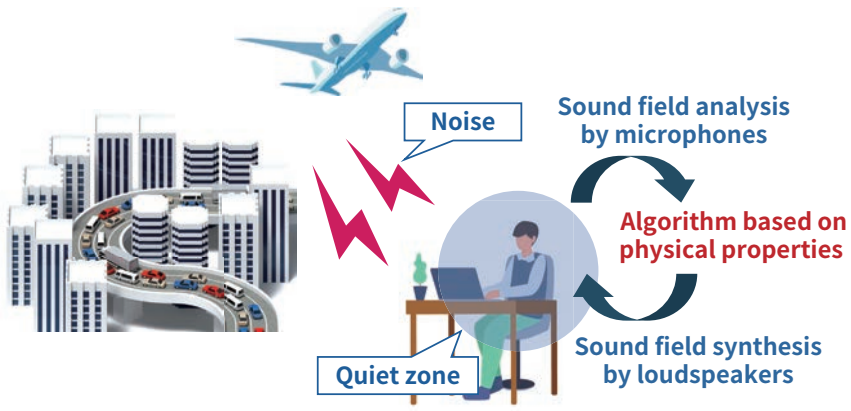


Fig. Sound space measurement and spatial active noise control

Kakenhi

Grants-in-Aid for Scientific Research (Kakenhi)

Venturing into a wide range of basic to applied research

Kakenhi are funds that provide broad support for scientific research based on the free ideas of the researchers themselves, and covers a wide range of academic studies spanning from basic to applied research. Both faculty members and researchers actively apply to Kakenhi for grants, and many are approved. The grants obtained from Kakenhi are also distributed to researchers in other institutions (co-investigators) for collaborative research work.
Similarly, many NII faculty members also participate as co-investigators in the Kakenhi-funded projects of researchers at other institutions.

Applications Accepted (FY2023)

	No. of applications accepted	Amount (in thousands of yen)
Project Leader (Principal Investigator)	64	393,048
Co-investigator (Other institutions → NII)	52	56,302

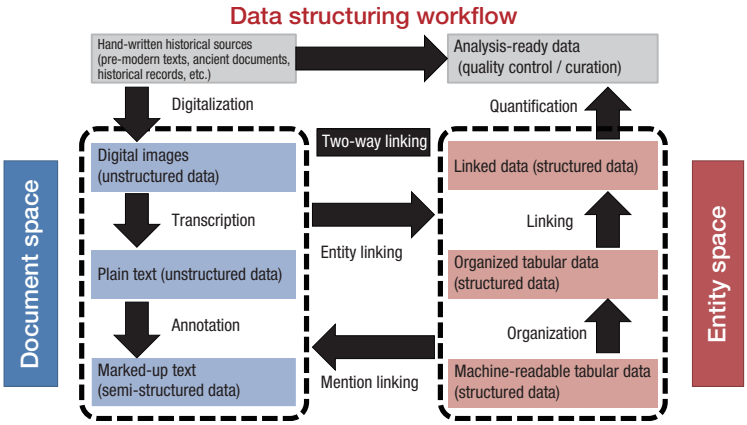
[Model Cases of Research Funded by Kakenhi]

Grant-in-Aid for Scientific Research (A)

Historical Big Data: A Multidisciplinary Research Platform for Connecting Historical Sources and Data-Driven Models

Principal investigator: KITAMOTO Asanobu, Professor, Digital Content and Media Sciences Research Division

Modern big data research stems from a data-driven approach, whereby the world is reconstructed and analyzed based on the large-scale collection and integration of data. The goal of historical big data research is to extend this approach to the past to reconstruct and analyze the world of the past in cyberspace. This research project focuses on a data structuring workflow for end-to-end integration of historical documents and applications that explore the past using data-driven models. We aim to improve the efficiency and quality of the data structuring workflow by applying cutting-edge techniques. We plan to build a historical big data research infrastructure to collect large amounts of historical records for various applications, such as climatological or seismological records, and analyze them with data-driven models. The role of computer scientists is to build an open multidisciplinary research platform to bring together humanities scholars interpreting historical sources and domain experts specializing in data-driven models. This research paves the way for modern social issues to be addressed based on knowledge of the past.



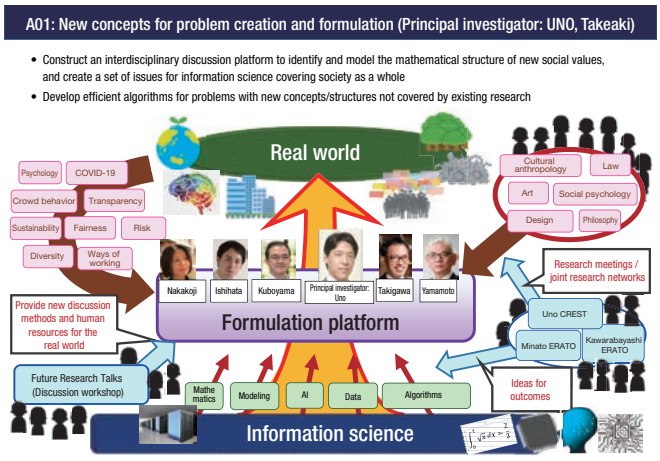
Conceptual diagram of data structuring workflow for historical big data

Grant-in-Aid for Transformative Research Areas (A)

New Problem Formulation on Next Generation Informatics and Researches on their Algorithms

Principal investigator: UNO, Takeaki, Professor, Principles of Informatics Research Division

Many of the fundamental problems currently considered in computer science were conceived forty or fifty years ago, and their overall structures have not changed. The world, however, has changed significantly since then, and we have new ways of understanding the structure of society and the human mind, such as social psychology. Additionally, many cases have emerged that cannot be handled by these fundamental problems. One example is the panic buying of toilet paper during the COVID-19 pandemic, which started by broadcasting the fact that a SNS post alerting short of papers was actually fake. This is an example of how social issues cannot be solved efficiently even if computer science problems of detecting fake news and rapid information broadcasting were solved, where these problems are considered to be emergent problems to solve recent social problems. In social psychology, this is referred to as a panic state: where people think “I am calm, but I don’ t know what the person next to me will do.”
This suggests that hoax prevention should be researched from a completely different perspective. In this research project, researchers in informatics and other fields including humanities, natural sciences and mathematics will engage in deep discussions by exchanging concepts, ways of thinking, and values. We will come up with a catalogue of issues that informatics should tackle and ways to address them. In order for difficult interdisciplinary discussions to be held in an effective way, we will also develop a methodology for such discussions between researchers from different fields that includes ways of thinking, communicating, listening, managing discussions, and building spaces.



Kakenhi

Grant-in-Aid for Scientific Research (S)

Graph Algorithms and Optimization: Theory and Scalable Algorithms

Principal Investigator: Professor, Principles of Informatics Research Division, KAWARABAYASHI, Ken-ichi

In recent years, as what is called the "fourth paradigm" of (data-intensive) scientific discovery has emerged, information processing technology has become indispensable to almost every field of science. Given that algorithms are the driving force of high-performance processing, their study is more vital than ever. For example, current algorithmic innovations in information retrieval, privacy protection, and other areas are fueling the creation of national-scale businesses. This study utilizes mathematical tools to enrich and strengthen the theoretical foundations of algorithms (especially graph algorithms), to try to increase the speed and scalability of algorithms.
There are three main research topics:
1. Structure analysis in discrete mathematics and graph algorithms
2. Online algorithm development and its application to machine learning
3. Application of algorithmic techniques to machine learning

Grant-in-Aid for Scientific Research (B)

Study on Decentralized Management of Large-scale Sensor Networks Utilizing Biological Mechanisms

Principal investigator: SATOH Ichiro, Professor, Information and Society Research Division

In the natural world, there are phenomena where the oscillations of multiple entities are autonomously synchronized, such as the expansion and contraction of cardiac muscles and emission of light by fireflies. In this study, we consider regular measurements from multiple sensor nodes making up a sensor network as oscillations at each node. The measurement cycles of the sensor nodes will be aligned through decentralized control, utilizing the mechanism of biological oscillation synchronization. We propose a method to improve the measurement quality of sensor networks, by either aligning the measurement timing (equivalent to phase) of multiple nodes within the synchronized cycle (simultaneous multiple measurement), or by shifting the measurement timing evenly (improving time granularity). We will perform simulations and implement this method using an actual sensor network to clarify its effectiveness and efficacy.

Grant-in-Aid for Early-Career Scientists

Shape Estimation in Underwater Environments Using Optical Information From a Wide Wavelength Range

Principal investigator: ASANO, Yuta
Assistant Professor, Digital Content and Media Sciences Research Division

A non-destructive, non-invasive, and non-contact method of obtaining 3D data on ocean floor shape, depth, and marine life is of top importance for investigating underwater and marine resources. Previously, in order to acquire high-precision and high-resolution 3D data, methods have been developed to measure depth using spatial features in images and features of the travel time and phase of light. However, since these methods were generally based on the assumption of acquiring images in air, they cannot be directly applied to underwater environments, where light is absorbed, scattered, and refracted, which means there are various constraints. The aim of this research is to develop a non-destructive, non-invasive, non-contact and extensive, high-resolution, and high-accuracy technique for shape estimation in underwater environments by comprehensively analyzing information from a wide wavelength range, using the effects of the physical phenomenon of light, previously considered an obstacle to analysis.

Grant-in-Aid for Scientific Research (B)

Improving Security and Performance of Network-On-Chip Using Approximate Computing

Principal investigator: KOIBUCHI Michihiro, Professor, Information Systems Architecture Science Research Division

One of the goals of Society 5.0 is to achieve "a sustainable and resilient society that ensures the safety and security of citizens." To make this a reality, we need semiconductor chips with zero trust security. This research explores network-on-chip technology to prevent information leakage and computation interference. Specifically, to prevent information leakage by hardware Trojans, identity theft, DoS (Denial of Service) attacks, and side channel attacks, we will investigate (1) information hiding using approximate computing techniques of voltage overscaling and lossy compression and (2) application-level anti-tamper technology using altered data for calculation. The eventual goal is to achieve new technology combining stronger security with higher performance.

Grant-in-Aid for Scientific Research (C)

Current Landscape of Overlay Services and their Impact on the Use of Preprints

Principal investigator: NISHIOKA, Chifumi, Assistant Professor, Digital Content and Media Sciences Research Division

With the spread of Open Science, there is a growing movement towards making preprints (versions of papers to be published in academic journals before they have been peer reviewed) available on preprint servers. Overlay services, which provide academic authentication such as peer review for preprints, have started to become available. This study will systematically organize these overlay services based on the form of academic authentication and how open they are. We will look at the current state of overlay services and their acceptance in Japan and other countries. By observing changes over time in the number of citations of preprints authenticated by overlay services, we aim to quantitatively identify the impact of overlay services on the use of preprints.

Grant-in-Aid for Scientific Research (B)

Understanding Finger-Braille Interaction

Principal Investigator: BONO, Mayumi
Associate Professor, Information and Society Research Division,

The purpose of this study is to shed light on the transmission and comprehension mechanisms of finger-Braille communication. The project aims at creating a research environment that enables linkage analysis and analysis of speech content, by developing a technique for transcribing and building a database of finger-Braille interactions. People with deafblindness are affected by visual and auditory impairments. Finger-Braille is a means of communication used principally by persons with "blind-first deafblindness," who first lose their sight and later their hearing. In the finger-Braille method, six fingers of the person with deafblindness (index to ring fingers of each hand), which are likened to the six keys on a Braille typewriter, are tapped directly ("Tokyo Deafblind Association" website). In this study, conversational and interactional analyses are performed on finger-Braille dialogue data that have already been recorded. To enable these analyses, it was essential to develop a method of transcribing the interaction by matching the positions of the finger-Braille strokes to the speech occurring simultaneously. The analysis results obtained with this method will be shared with the deafblind community. The possibility of extending this line of research will be examined using the method of party research.

Human Resource Development

Top SE

Educational Services for Developing a Top-Level IT Workforce

GRACE Center provides a scientific educational program on intelligent "Monodzukuri" for professionals, so that they can master cutting-edge software engineering through learning basic theory and practical training. The program aims to cultivate world-class human resources in the IT field who have the foresight capable of creating IT innovations that meet the changes in the future.

We launched the Data Science Series in 2021 AY and the Large Language Model Series in 2024 AY. These series are designed to provide the courses from the basics to applications of software development in the world that continues to change with AI.

Advanced Top SE Course

Leveraging the latest technologies to solve difficult cutting-edge challenges

Professional Study

Instructors provide one-on-one consultation on analyzing hard issues faced by development sites, as well as on task setting and creating, executing, evaluating, and deploying solutions. For those who wish to go on to a doctoral course, instructors also supervise students on writing their dissertations.

■Examples of Professional Study

- Adaptation of machine learning to machining time estimation
- Proposal of quality improvement assist system for upstream processes using natural language AI technology
- Evaluation of LC4RI for DevOps

Problem analysis — Task setting
↓ What needs solving?
Problem solving
↓ How will it be solved?
Evaluation — Standardization
What to do with the results?

Professional Study Process

Latest technologies, tools, and knowledge

Advanced software engineering seminars

Over the period of one year, instructors and all the students investigate, try, report, and discuss the most advanced software technologies useful for solving problems in development sites, and share their findings and knowledge.

■Examples of advanced software engineering seminars

- Microservices
- Machine learning
- IoT

Top SE Course

Mastering the basic technology of software engineering

Practical Software Development Training

Training to solve problems using techniques learned in actual tasks in software development. Students work in groups on tasks given by the instructor, or individually on tasks proposed by the students themselves. Instructors also give advice as needed.

■Examples of Practical Software Development Training

- Evaluation for the quality of SPADE
- Clarification of requirements by interpreting training model in machine learning system
- **Design Thinking-driven Requirements Elicitation Method for the New Normal Era**
  Non-verbal Requirements Elicitation from Remote Workshop Prototyping
- Organizing the issues of case study about vulnerability to practice secure programming

Basic knowledge

Lectures

We offer 43 courses in nine areas: requirements engineering, formal specification, testing and verification, architecture, security, the cloud, agile, data science and large language models, which are related to the design, implementation and testing of software systems, system infrastructure, development management, and innovation creation.
Many of the lectures incorporate exercises built through industry-academia collaborations, and are designed to be practical in the workplace.

Some of Cutting-Edge lectures

Series of Requirements Engineering

- Design Thinking for Requirements Engineering
- Art Thinking for Requirements Engineering

Series of Security

- Practical exercises in security threat analysis

Series of Formal Specification

- Specification and Theorem Proving Techniques for Reliable Software

Series of Data Science

- Introduction to Business Analytics
- Big Data IT Infrastructure

Series of LLM

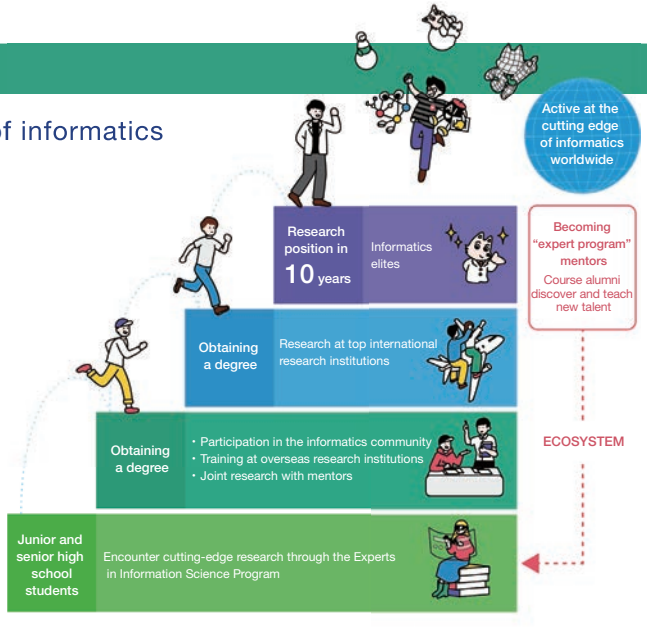
- Development of Applications incorporated LLM
- Application of LLM to Software Development

Experts in Information Science Program

Discovering and nurturing young talent in the field of informatics

From FY2019 to FY2022, the Experts in Information Science Program was implemented by the NII and its partner institutions as part of the Global Science Campus (GSC), a next-generation human resources development project by the Japan Science and Technology Agency (JST). From FY2023, the program is promoted by NII as an implementing agency of the Japan Science and Technology Agency's Science and Technology Challenge Program for Next Generation (STELLA program), in collaboration with the Information Processing Society of Japan and The Japanese Committee for International Olympiad in Informatics.

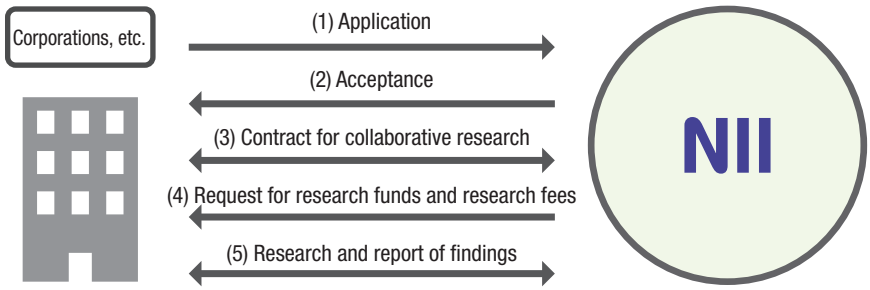
In this program, over 40 high school students and technical college students from across the country, selected from public applications and recommendations by the Japanese Committee for International Olympiad in Informatics, conduct research under the guidance of Japan's top young researchers, including ACT-I researchers and ACT-X researchers. This is not just a one- or two-year program for imparting basic research skills. This program represents an ambitious effort to develop students' future research style, seeing them through approximately ten years of research activity as emerging global researchers and engineers beginning from when they graduate from high school.



Future of the Experts in Information Science Program and concepts for building ecosystems

Collaborative Research Promotion

NII actively conducts collaborative research with the private sector through external funds for commissioned research and other means.
In addition, through calls for applications for open collaborative research, we are further promoting informatics studies and breaking new ground in research in collaboration with other academic fields, with the aim of generating new theories, methodologies, and applications (future value) from informatics that will bring incalculable real value to people and society.



[Various Collaborative Research Projects with Private-sector Institutions]

Collaborative Research with the Private Sector

https://www.nii.ac.jp/research/collaboration/minkan/

NII receives researchers and research funds from outside institutions in the private sector to conduct joint research with NII faculty members. In principle, projects last one year, although multi-year contracts are also possible.

(1) Receiving researchers only
We accept researchers dispatched by outside institutions in the private sector to conduct collaborative research at NII while holding their regular jobs. Essential overhead expenses are covered by research fees up to a set limit.

(2) Receiving research funds only
We receive the research funds required for collaborative research from the private sector. Collaborating researchers conduct their research at their respective locations.

(3) Receiving researchers and research funds
We receive research funds and research fees to conduct collaborative research.

Projects Performed (FY2023)

	No. of projects accepted	Research funds received (in thousands of yen)
FY2021	56	193,051*
FY2022	30	198,347*
FY2023	26	88,367*

*Includes expenses by collaborative research units.

[Research to Build Broad Collaboration with Researchers and Create Value]

NII Open Collaborative Research

https://www.nii.ac.jp/research/collaboration/koubo/

NII conducts open calls for applications for collaborative research, with NII faculty members acting as liaison officers. The following three types of open collaborative research proposals are accepted in the second half of each fiscal year.

- **Strategic research proposals** based on strategic subjects set by NII
- **Proposals for research project meetings** with the aim of paving the way for new collaborations and advancements in research subjects, mainly through meetings at the International Seminar House for Advanced Studies in Karuizawa
- **Open subject proposals** where applicants are free to set their own research subjects

This open collaborative research program accepts applications mainly from researchers affiliated with institutions in Japan, researchers with a wide range of affiliations can become collaborative researchers, including faculty members of universities and institutions in Japan and abroad, technical colleges, researchers at private-sector corporations, as well as graduate students. We encourage everyone to take advantage of this open collaborative research program and take a new step forward.

Applications Accepted (FY2023)

	No. of applications accepted
Strategic research proposals	27
Proposals for research project meetings	2
Open subject proposals	18
Total	47

[List of Strategic Research Themes (13 themes)]

1. Proposals for research to support living together with COVID-19
2. Proposals for innovative core functions and applications/services utilizing SINET6
3. Proposals for cybersecurity analysis technology using NII-SOCS data
4. Proposals for establishing a research data management system in universities in the era of open science
5. Proposals for infrastructure for building and utilizing “datasets” as research resources
6. Proposals for CPS/IoT services and system platform design for realizing more efficient activities in society
7. Proposals for quality engineering techniques in uncertain AI and CPS/IoT systems
8. Proposals for innovative models and algorithms for more deeply utilizing cultural assets
9. Proposals for base technology for next-generation internet
10. Proposals for technologies and methods for promoting digital innovation in education and research
11. Proposals for algorithms and programming for quantum information processing
12. Proposals for base technologies related to synthetic media for realizing a people-centric AI society
13. Proposals for research into communication assistance technology for supporting a diverse range of working styles

Intellectual Property

Through the creation, acquisition, and management of intellectual property, NII encourages contributions to society by means of industry–government–academia collaborations.

Number of Invention Reports, Patent Applications, and Registrations (total number since FY2004)

(as of the end of March 2024)

No. of Reports

313	Ownership: Organization	298
	Ownership: Individual	15

No. of Applications

378	Japan	301
	Outside Japan	77

No. of Registrations

191	Japan	152
	Outside Japan	39

List of Japanese Patents Owned

Title of invention	NII inventor	Sole application	Registration No.
Airing structure of three-dimensional integrated electrical circuit and layout method thereof	KOIBUCHI Michihiro	●	5024530
Quantum key distribution method, communication system, and communication device	WATANABE Yodai	●	4862159
Time reference point information transmitting system and receiver	HASHIZUME Hiromichi	●	4621924
Collection/delivery route selection system	SATOH Ichiro	●	4374457
Route switching method, server apparatus, boundary node apparatus, rout switching system, and switching program	URUSHIDANI Shigeo		5062845
Direct path establishing method, server device, sender network node device, direct path establishment network, and program thereof	URUSHIDANI Shigeo		4999112
Path management control method, path management control program, path management controller, and path management control system	URUSHIDANI Shigeo		4806466
Quantum computing device and method for Ising model	YAMAMOTO Yoshihisa	●	5354233
Measuring device, measuring system, and measuring method	HASHIZUME Hiromichi	●	5593062
Information search/display apparatus, method, and information search/display program	SONEHARA Noboru	●	5599068
Information search/display apparatus, method, and information search/display program	SONEHARA Noboru	●	5608950
Information search/display apparatus, method, and information search/display program	SONEHARA Noboru	●	5608951
Information providing apparatus, method, and program	SONEHARA Noboru		5614655
Control server, control method, and control program	AOKI Michihiro		5682932
Doppler radar system, Doppler radar transmitter, and transmission wave optimization method	HASHIZUME Hiromichi	●	5704695
Speed/distance detection system, speed/distance detection device, and speed/distance detection method	HASHIZUME Hiromichi	●	5739822
Information processing apparatus, schedule determination method, and computer program	KAWARABAYASHI Ken-ichi	●	5733722
Search tree drawing apparatus, search tree drawing method, and program	JI Yusheng		5754676
Encoding apparatus, method, program, and recording medium	ONO Nobutaka		5789816
Word-order rearrangement device, translation device, translation model learning device, method, and program	MIYAO Yusuke		5800206
Acoustic signal analyzing apparatus, method, and program	ONO Nobutaka		5807914
Data delivery system, data delivery apparatus, and method	FUKUDA Kensuke		5818262
Data distributed management system, apparatus, method, and program	FUKUDA Kensuke		5818263
Acoustic signal analyzing apparatus, method, and program	ONO Nobutaka		5911101
Image search apparatus, method, and program	SATOH Shin'ichi		5979444
Distance measuring method and radar device	HASHIZUME Hiromichi	●	6029287
State detection of superconducting qubits using light	NEMOTO Kae		6029070
Optical parametric oscillator, and random signal generator and Ising model calculator using the same	YAMAMOTO Yoshihisa		6029072
Word-order rearrangement device, translation device, method, and program	MIYAO Yusuke		6040946
Signal processing apparatus, method, and program	ONO Nobutaka		6005443
Spoken language evaluation device, parameter estimation device, method, and program	ONO Nobutaka		6057170
Signal processing apparatus, signal processing method, and computer program	ONO Nobutaka	●	6099032
Interactive information search device using gaze interface	KANDO Noriko	●	6099342
Face-detection prevention device	ECHIZEN Isao	●	6108562
Legal reasoning presentation method, legal reasoning presentation system, and program	SATOH Ken	●	6112542
Ising model quantum computing device and Ising model quantum computing method	UTSUNOMIYA Shoko		6143325
Word-order rearrangement device, translation device, translation model learning device, method, and program	MIYAO Yusuke		6083645
Initialization method for superconducting qubits	NEMOTO Kae		6230123
Generation model creation device, estimation device, and the methods and programs thereof	ONO Nobutaka		6241790
Ising model quantum computing device, Ising model quantum parallel computing device, and Ising model quantum computing method	UTSUNOMIYA Shoko		6255087
Ising model quantum computing device	YAMAMOTO Yoshihisa		6260896
Adaptive positioning interval setting system, adaptive positioning interval setting method, behavior model calculation device, and behavior model calculation program	TAKASU Atsuhiro		6253022
Quantum key distribution system and quantum key distribution method	YAMAMOTO Yoshihisa		6257042
Audio signal processing apparatus and method	ONO Nobutaka		6278294
Computation using a network of optical parametric oscillators	UTSUNOMIYA Shoko		6300049
Network system for information processing equipment	KOIBUCHI Michihiro	●	6325260
Data cache method, node device, and program	URUSHIDANI Shigeo		6319694
Virtual state definition device, virtual state definition method, and virtual state definition program	URUSHIDANI Shigeo		6332802
Coupon system	AIHARA Kenro		6347383
Magnetic resonance equipment	NEMOTO Kae		6347489
Light generating device and light generating method	BYRNES Timothy	●	6376697
Ising model quantum computing device	UTSUNOMIYA Shoko		6429346
Information processing apparatus and information processing method	KAWARABAYASHI Ken-ichi		6445246

Title of invention	NII inventor	Sole application	Registration No.
Object region identification method, apparatus, and program	SATOH Shin'ichi		6448036
Image processing apparatus, image processing method, and recording medium	SATO Imari		6471942
Biological detection device, biological detection method, and program	YAMAGISHI Junichi	●	6480124
Noise addition device and noise addition method	ECHIZEN Isao		6501228
Virtual currency management program and method	OKADA Hitoshi		6544695
Network control device, network control method, and network control program	KURIMOTO Takashi		6550662
Information extraction apparatus, information extraction method, and information extraction program	SAKAMOTO Kazunori	●	6562276
Word rearrangement learning device, word rearrangement device, method, and program	MIYAO Yusuke		6613666
Observer detection device, method, program, and computer-readable recording medium	KONISHI Takuya		6614030
Digital holographic recording device, digital holographic reproducing device, digital holographic recording method, and digital holographic reproducing method	SATO Imari		6628103
Image processing apparatus, image processing method, and program	ZHENG Yinqiang		6671653
Image processing apparatus and method, image processing program, and projection device	SATO Imari		6757004
Sound source separation device	ONO Nobutaka		6763721
Image processing apparatus and method	BISE Ryoma	●	6799331
A control program and recording medium of the optical ultrasonic imaging method and apparatus, and ultrasonic wave imaging apparatus	BISE Ryoma	●	6799321
Computing apparatus, program and method for coupled oscillator systems	UTSUNOMIYA Shoko		6803026
In the Ising-model computing device	UTSUNOMIYA Shoko		6818320
Information transmitting apparatus, information receiving apparatus, information transmission system and program, positioning system, luminaire and lighting system	HASHIZUME Hiromichi		6847411
Network evaluation method, evaluation apparatus and program	KURIMOTO, Takashi		6875702
A control program and recording medium of the image processing apparatus and method, and image processing apparatus	KODAMA, Kazuya	●	6908277
Three apparatus, program, information processing system, and control method	KURIMOTO, Takashi		6944155
Three apparatus, program, information processing system, and control method	KURIMOTO, Takashi		6944156
In the Ising-model computing device	UTSUNOMIYA, Shoko		6980185
Shape measuring apparatus and method	SATO, Imari	●	6979701
The mobile unit's position measurement system	AIHARA, Kenro	●	7012985
Encoding apparatus, encoding method, and program	YAMAGISHI, Junichi		7019138
In the Ising-model computing device	UTSUNOMIYA, Shoko		7018620
The impact force evaluation system	MIZUNO, Takayuki	●	7040786
Information search system	KAWARABAYASHI, Ken-ichi	●	7169628
Learning apparatus, learning method, speech synthesis apparatus, speech synthesis method, and program	YAMAGISHI, Junichi	●	7109071
The biometric feature a surreptitious photographing preventing fitting unit and a surreptitious photography prevention method	ECHIZEN, Isao	●	7056933
An image padding method, image padding apparatus, and storage medium	CHEUNG, Gene		7154507
Radio communication system, radio terminal, a central control station, and wireless communication method	KANEKO, Megumi		7185231
Wireless communication control method	KANEKO, Megumi		7156644
Imaging apparatus and methods	SATO, Imari	●	7193851
A sample observation method and sample observation apparatus, and a microscope	SHIMANO, Mihoko	●	7161218
System for the transmission of data	HASHIZUME, Hiromichi		7213494
The flow visualization system, people flow visualizing device, people flow visualization method and program	AIHARA, Kenro		7138879
Shape measuring apparatus and method	SATO, Imari	●	7117800
Encoding method, encoding apparatus, and program	CHEUNG, Gene		7161736
Radio communication method, radio communication system, base station apparatus, radio terminal, and radio communication program	KANEKO, Megumi		7219900
To provide a network constructing method, a network design device and a network design program	UNO, Takeaki		7239932
Information Processing Apparatus, Information Processing System, Program, And Information Processing Method	ECHIZEN, Isao	●	7260236
The commercial detection apparatus	KATAYAMA, Norio	●	7268848
Radio Communication Control Method, Radio Communication System, Radio Terminal, And Radio Communication Program	KANEKO, Megumi		7270914
Image processing method and apparatus	ZHENG Yinqiang	●	7284502
Method for obtaining quantum efficiency distribution display method of quantum efficiency distribution, acquisition program of the quantum efficiency, the quantum efficiency, fluorescence spectrophotometer. The meter and display device	SATO, Imari		7284457
The impact force evaluation system	MIZUNO, Takayuki	●	7315185
Speech Synthesizing Apparatus	YAMAGISHI, Junichi	●	7336135
The Legal Reasoning Method, Legal Reasoning Presentation Program And Legal Reasoning Presentation System	SATO, Ken	●	7343158
In the Ising-model computing device	UTSUNOMIYA, Shoko		7352916
Information Processing Apparatus, Information Processing Circuit, Information Processing System, And Information Processing Method	WAGA, Masaki	●	7383273
The photoacoustic wave measuring apparatus, method, program, and recording medium	SATO, Imari		7422970

See all patents held by NII (in Japan) at the following URL:https://www.nii.ac.jp/en/about/overview/chizai/

List of Registered Trademarks

(as of the end of March 2024)

Trademark Mode	Registration No.
NII	4811291
NII	4830960
Net Commons	4832775
Picture + SINET	4934163
NAREGI	4952143
Top SE	4943324
WebELS	4980388
Net Commons	5182361
n c net commons	5152641

Trademark Mode	Registration No.
neXt commons	5191260
researchmap	5261160
GRACE+ Picture	5275386
GAKUNIN	5341899
Picture (Palette)	5498318
Picture (GakuNin)	5498319
Info dog	5538785
Picture (Info dog)	5538784

Trademark Mode	Registration No.
Picture (CiNii)	5580217
PrivacyVisor	5653596
Eduroam	6029580
(Picture) Eduroam	6029579
(Picture) School cap and cloud	6062452
QNNcloud *	6072214
(Character) Bit-kun	6297315
(Character) Top SE	6335656

Trademark Mode	Registration No.
Picture(Quantum Academy of Science and Technology)	6552929
CADDE	6597043
CADDE	6597044
GakuNin LMS	6624512
GakuNin LMS	6624513
Picture(GakuNin LMS)	6624514
GakuNin RDM	6607174
GakuNin RDM	6607175

Trademark Mode	Registration No.
Picture(GakuNin RDM)	6607176
Picture(GakuNin RDM)	6607177
JAIRO Cloud	6693613
Picture (JAIRO Cloud)	6732251
SYNTHETIQ VISION	6701319

QNNcloud is a registered trademark in Europe and China.

Collaboration with Industry, Government, and Academia
(Advancing Practical R&D and Collaborative Activities)

NII carries out practical R&D in order to address real social issues in the field of informatics. Collaborations between industry, government, and academia are critical to implementing our R&D achievements in the real world. NII engages in industry–government–academia collaborations to strengthen and deepen such collaborations, as well as to help ensure that our R&D meets the needs of businesses and local authorities.

Action Program for Industry–Government–Academia Collaborations

Needs of businesses, local authorities, etc.

Advanced technologies/ seeds of innovation

Assistance with decision-making at the research conceptual phase
Need to keep abreast of the latest research and technological trends in the world, and be informed of the relevant businesses, research institutes, and researchers.

Preparation/decision on research launching
Need to decide on the timing and make preparations for research launching within the company.

Search for solutions

Outsourcing of research
Need to network with research people to complete research organization. Need to leverage outside research capabilities for research skills and know-how that cannot be covered within the company.

Overall coordination and collaboration
With research challenges across a broad span of informatics domains, need to work on overall coordination and collaboration.

Skills acquisition/ human resource development

Human resource development for research
Need to develop future human resources for research and to acquire new research skills.

Human resource development for business
Need to work on acquiring the advanced technological skills necessary for future business, and developing the human resources that are lacking in business operations.

NII's Collaborative Activities with Industry, Government, and Academia

NII Shonan Meetings
Proposal of seminar topic from corporate organizer

Industry–Government–Academia Networking Seminars
Presentation of latest research findings and case examples of collaboration

Industry–Government–Academia Collaborative Workshops
Creation of matching opportunities by introducing cutting-edge research and sharing challenges

Academic Consultation
Technological suggestions, advice, and other consultations from researchers

NII Open Collaborative Research
Searching for academic partners according to research theme

Joint Research Unit
Establishment and management of a research organization with industry–academia collaboration

Comprehensive Partnerships for Joint Research
Solving diverse challenges across research domains through cooperation at the organizational level

Joint Research (including hosting researchers)
Solving problems by bringing together research resources

Commissioned Research
Supplying findings from research commissioned by corporations, etc.

Top SE
Developing top-level IT human resources

Academic Consultation by Researchers

NII offers consulting services that aim to expand the framework for industry–government–academia collaborations, explore possible collaborations with new partners, and contribute to society at large. Through communications between researchers and business people, our consulting services support startups by providing relevant policy advice from researchers on various issues that are likely to lead to innovations through industry–academia collaboration and benefit society.

We want to know the proper target value for our data

We want to know about analysis and what is technologically possible

We want to decide policies quickly

NII Academic Consultation

Knowledge Gained as Researchers

- Limits of technological possibilities from the perspective of cutting-edge research (goal-setting advice)
- Insights and expertise on new developments
- Identifying key personnel that are often overlooked (organizational advice)
- Analyzing how to carry out initiatives effectively (policy and planning advice)

NII Offerings

- Advice by way of lectures and group meetings
- Consultation on policymaking under a short-term contract
- Group consultation by multiple faculty members from different research domains is also available

Innovation Produced by Knowledge

Model Case of Collaboration with Industry, Government, and Academia

Discussion	Coordination	Research Contract	Research	Delivery of Findings	Licensing	Using the Findings
Conduct interview about corporate goals and issues. Industry–government–academia networking seminars, collaborative workshops, and other opportunities are also available.	Make proposal for industry–government–academia collaboration to meet requests.	Set conditions for joint research and other terms, and enter into research contract.	Carry out research with corporate and NII researchers collaborating.	Generate intellectual property and other deliverables (patents, computer programs, etc.).	Get license for intellectual property to leverage findings.	Company uses findings to develop products and services, as well as their own business operations.

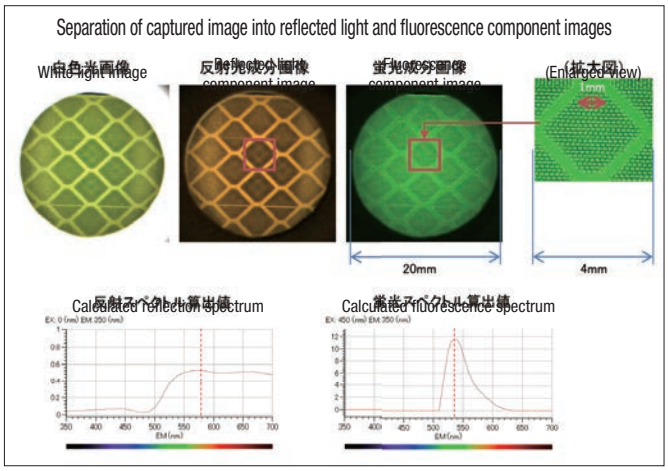
The case above is provided as an example of industry–government–academia collaboration. There are many other possible cases.

Example Case of Collaboration with Industry, Government, and Academia: NII - Hitachi High-Tech Science Corporation

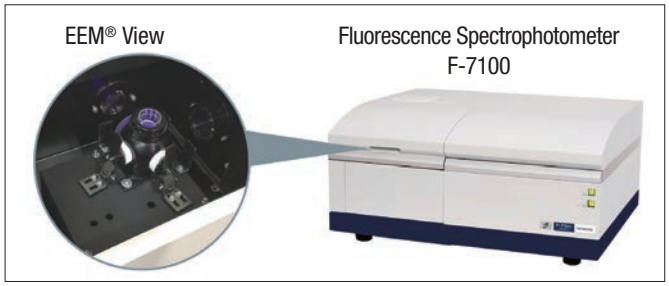
Achieving visualization of separated reflected light image and fluorescence image of objects

EEM® View: CMOS Camera Imaging System for Fluorescence Spectrophotometer

A new technology capable of simultaneously capturing both spectroscopic images and spectral data. The computational algorithm developed by NII Professor SATO, Imari and Associate Professor ZHENG, Yinqiang (Current affiliation: University of Tokyo) of the Digital Content and Media Sciences Research Division has made it possible to separate and visualize the fluorescent component and reflected component of images. By integrating it into Hitachi's fluorescence spectrophotometer, an object's spectral data and the fluorescence/reflected light images taken by the CMOS camera can be captured at the same time. These captured sample images can then be subdivided into 25 sectors to obtain enlarged images and spectral fluorescence/reflection data for each sector. Whereas conventional fluorescence spectrophotometers are limited to obtaining the average spectral data for the entire sample, this technology allows visualization of the reflection/fluorescence spectra, making it possible to observe parts of the image with fluorescence emissions and obtain spectral data for specific locations, and enabling higher-precision measurements of fluorescent substances. The fluorescence analysis tool in this device holds promising uses for R&D and quality control in a wide range of fields, not only in electronic and industrial materials for LEDs and display devices—areas in which the need for fine-grained measurement technologies is increasingly urgent—but also in areas such as food inspection, life sciences, and biotechnology.



The image separation algorithm separated the captured image into its reflected light component and fluorescent component. In the images, the reflected component is orange and the fluorescent component is green. These colors correspond to the respective spectral colors in the reflection and fluorescence spectra.



A dedicated fluorescence spectrophotometer measurement system capable of simultaneously capturing both spectroscopic images and spectral data.
*EEM® is a registered trademark of Hitachi High-Tech Science Corporation in Japan.

Research Seeds Collection: NII SEEDs

Since FY2014, NII has been publishing NII SEEDs every year to present our cutting-edge research in informatics that has great potential for industrial applications, as well as to provide an opportunity for joint research and partnerships with the industrial sector and government agencies.
The latest issue entitled, "NII SEEDs 2022: Creating Innovation and Future Value through Informatics," showcases the research results of 24 researchers in a special report format classified into six categories: Foundation of Informatics, Information Infrastructure Science, Software Science, Multimedia Information Science, Intelligent Systems Science, and Information Environment Science. In addition, the issue begins with a section called "Researcher file" that features two of our researchers and highlights their personalities, the trajectories of their careers, their thoughts on research work, and much more.

NII SEEDs website (in Japanese)
https://www.nii.ac.jp/seeds/

International Exchange

NII set up Global Liaison Office (GLO) to promote international exchange with overseas universities and research institutes. GLO handles various activities including entering into international exchange agreements through Memorandum of Understanding (MOU), running the NII International Internship Program for students from institutes under MOU agreements with NII, and coordinating MOU Grant/Non-MOU Grant to dispatch and invite researchers and students under research exchange grants.

International Exchange Agreements (MOU)

NII enters into international exchange agreements through MOU to systematically and actively promote international exchange with overseas universities and research institutes. As of April 2024, we have agreements with 122 institutions in 35 countries and regions.

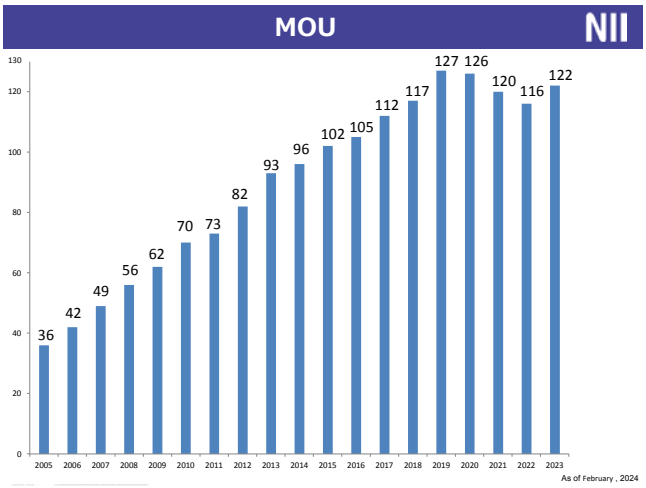
*See next page for the list of institutions.

NII International Internship Program

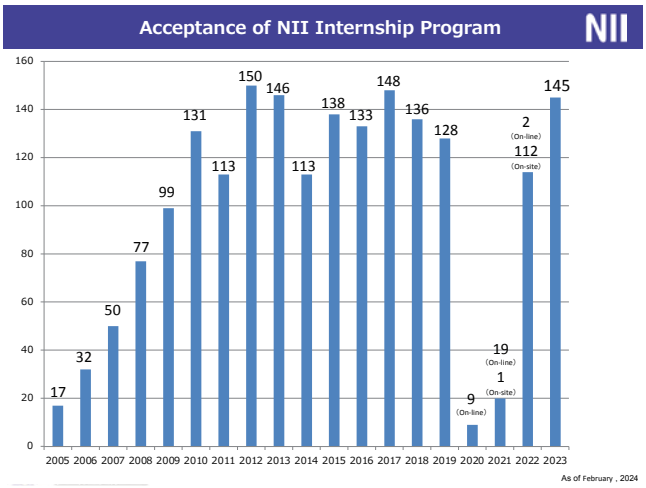
The NII International Internship Program welcomes students in masters or doctoral courses from institutions having MOU with NII.

We accept applications from MOU signatory institutes twice a year on a broad range of nearly 100 research topics proposed each time by NII faculty members. Students work on their research topics under the supervision of their NII academic advisor during the internship period of two to six months (up to 180 days). Living expenses for the duration of the internship are covered and certificates of completion are issued upon completion. Since the start of the program in FY2005, NII has accepted more than 1,700 students and the program has greatly contributed to NII's research activities by promoting exchanges with MOU signatory institutions, presentations at international conferences, and a greater number of international papers, as well as other positive effects.

Number of MOU signatory institutes



Number of accepted students to the NII International Internship Program



MOU/Non-MOU Grant

MOU Grant was established in FY2005 and Non-MOU Grant was established the following year as a financial assistance program for research exchange with our partner and non-partner institutions. With the aim of promoting and intensifying research exchange, MOU Grant dispatches and invites researchers and students for research exchanges with institutes under MOU, while Non-MOU Grant accepts foreign researchers for research exchanges with institutes without MOU. Expenses (travel and stay expenses) are covered for NII faculty and students, as well as for overseas researchers.

List of International Exchange Agreements (MOU)

35 countries and regions

MOU for research cooperation: 107institutes

(As of March 2024)

Area	Country/Region	Affiliation
Africa	Egypt	Egypt Japan University of Science and Technology(E-JUST)
America	Argentina	The Faculty of Exact and Natural Sciences of Buenos Aires University
	Brazil	Pontifical Catholic University of Campinas
	Canada	School of Computer Science, McGill University
		Polytechnique Montréal
		Simon Fraser University
		Department of Computing Science - Faculty of Science, College of Natural and Applied Sciences and the Department of Electrical & Computer Engineering - Faculty of Engineering College of Natural and Applied Sciences, University of Alberta
		Faculty of Mathematics, University of Waterloo
		York University
	Chile	Pontificia Universidad Católica de Chile
	United States of America	Language Technology Institute (LTI), Carnegie Mellon University
		International Computer Science Institute
		Indiana University, School of Informatics, Computing, and Engineering
		New Jersey Institute of Technology
		University of Illinois at Urbana Champaign
		University of Michigan-Dearborn, College of Engineering and Computer Science
		University of Southern California, Viterbi School of Engineering
		College of Engineering, University of Washington, Seattle
Asia	China	Institute of Computing Technology, Chinese Academy of Sciences
		School of Electronics Engineering and Computer Science, Peking University
		The School of Electronic Information and Electrical Engineering of Shanghai Jiao Tong University
		Tongji University
		School of Information Science and Technology, Department of Automation, Tsinghua University
		University of Science and Technology of China (USTC)
	India	Indraprastha Institute of Information Technology, Delhi
	Korea, Republic of	Department of Computer Science and Engineering, Seoul National University
	Saudi Arabia	King Abdullah University of Science and Technology(KAUST)
	Singapore	School of Computing, National University of Singapore(NUS)
	Taiwan	Research Center for Information Technology Innovation, Academia Sinica
		College of Electrical Engineering and Computer Science, National Taiwan University
		National Tsing Hua University, College of Electrical Engineering and Computer Science (NTHU EECS)
	Thailand	School of Engineering and Technology, Asian Institute of Technology
		Department of Computer Engineering, Faculty of Engineering and Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University
		School of Information Science and Technology, Vidyasirimedhi Institute of Science and Technology (VISTEC)
	Viet Nam	Hanoi University of Science and Technology(HUST), School of Information and Communications Technology
		International Research Institute, Multimedia Information, Communication, and Applications (MICA)
		Vietnam National University - Ho Chi Minh - University of Information Technology (VNU-HCM-UIT)
		Vietnam National University - Ho Chi Minh - University of Science (VNU-HCM-US)
		Vietnam National University, University of Engineering and Technology (VNU-UET)
Europe	Austria	Vienna University of Technology
	Belgium	University of Namur
	Czechia	Faculty of Electrical Engineering, Czech Technical University in Prague
	Finland	Aalto University, School of Electrical Engineering and School of Science
	France	Centre de Recherche en Informatique de Lens (CRIL)
		Claude Bernard University Lyon 1
		Clermont Auvergne INP, School of Engineering ISIMA, LIMOS Laboratory (The Blaise Pascal University of Clermont-Ferrand)
		National Center for Scientific Research (CNRS)
		Ecole Normale Supérieure de Lyon (ENS Lyon)
		Grenoble INP
		Institut National de Recherche en Informatique et en Automatique (INRIA)
		Institut National des Sciences Appliquées de Lyon (INSA Lyon)
		Institut de Recherche en Informatique et Systèmes Aléatoires (IRISA)
		Laboratory of Digital Sciences of Nantes(LS2N), Nantes Université

Area	Country/Region	Affiliation
Europe	France	Sorbonne Universite, Computer Science Laboratory of Paris 6 (LIP6)
		Toulouse INP-ENSEEIHT
		Université Côte d'Azur(Université Nice Sophia Antipolis)
		Université Grenoble Alpes (Université Joseph Fourier-Grenoble 1)
		Université Paris Saclay, Graduate School of Computer Science(Université Paris Sud)
		Université Toulouse III - Paul Sabatier, Institut de Recherche en Informatique de Toulouse (IRIT)
	Germany	Berlin Institute of Technology (TU Berlin)
		The German Academic Exchange Service (DAAD)
		Institute of Information Systems, German Research Center for Artificial Intelligence (DFKI)
		Georg-August-Universität Göttingen, Institute of Computer Science, Center for Computational Sciences, Campus Institute Data Science, Research Department of the State and University Library
		RWTH Aachen University (Faculty of Mathmatics, Computer Science and Natural Sciences)
		Saarland University
		Technische Universität Braunschweig (TU Braunschweig)
		Technical University of Munich, the Department of Informatics and the Department of Electrical Engineering and Information Technology (TUM)
		Faculty of Applied Computer Science, University of Augsburg
		Faculty of Engineering, University of Freiburg
		Department of Computer and Information Science at the University of Konstanz(ISGUK)
		The Faculty of Science at the University of Potsdam
	Ireland	Dublin City University
		Lero - the Irish Software Research Centre
		School of Computer Science and Statistics and ADAPT Centre, Trinity College Dublin (TCD)
	Italy	Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria
		Dipartimento di Informatica - Scienza e Ingegneria (DISI), Università di Bologna
		UNIVERSTÀ DEGLI STUDI DI FERRARA (UNIFE)
		University of Torino, Department of Computer Science
	Netherlands	Faculty of Electrical Engineering, Mathematics and Computer Sciences of Delft University of Technology(TU Delft)
	Norway	The Department of Information Science and Media Studies, University of Bergen
	Portugal	Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa (INESC-ID)
		INESC Technology and Science (INESCTEC)
		University of Minho
	Spain	Facultat d'Informàtica de Barcelona, Universitat Politècnica de Catalunya (UPC)
		Universidad Politécnica de Madrid (UPM)
		Universitat Politècnica de València (UPV)
	Sweden	School of Elecrical Engineereing and Computer Science (EECS), KTH Royal Institute of Technology
	Switzerland	Institute of Electrical and Micro Engineering and School of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne
		Università della Svizzera italiana
		University of Zurich
	United Kingdom	The Alan Turing Institute
		Cardiff University, School of Computer Science and Informatics
		Department of Computing at Imperial College London
		School of Computing, Newcastle University
		Faculty of Science, Technology, Engineering & Mathematics, The Open University
		Department of Computer Science, Faculty of Engineering Science, University College London
		University of Bath
		School of Computer Science, College of Engineering and Physical Sciences, University of Birmingham
		School of Computer Science, and school of Electrical, Electronic and Mechanical Engineering at Faculty of Engineering, UNIVERSITY OF BRISTOL
		Department of Computer Science & Technology, University of Cambridge
		School of Informatics, University of Edinburgh
		Department of Computer Science and The Mathematical Institute, Mathematical, Physical and Life Sciences Division,University of Oxford
Oceania	Australia	CSIRO(Data61)
		Monash University
		Royal Melbourne Institute of Technology
		University of Melbourn's school of Computing and Information Systems
		The Faculty of Engineering and Information Technologies,The University of Sydney

MOU for development and operational cooperation: 15 institutes

Country/Region	Affiliation
Asia-Pacific	Asia Pacific Oceania Network (APOnet) Collaboration
	East Asia Resilient Backbone Network (EARBN)
United States of America	North American Coordinating Council on Japanese Library Resources (NCC)
	The New Venture Fund (NVF) on behalf of the Scholarly Publishing & Academic Resources Coalition (SPARC)
Republic of Korea	Korea Education & Research Information Service (KERIS)
	Korea Institute of Science and Technology Information (KISTI)
Federal Republic of Germany	Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen
	German National Library of Science and Technology (TIB)
	German National Library of Medicine (ZB MED)
	Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen (GWDG)
Europe and others	European Organization for Nuclear Research (CERN)
	OpenAIRE
EU	Gigabit European Academic Network (GÉANT)
Asia-Pacific/EU	Asiapacific-Europe Ring(AER) Collaboration
North America and Europe	Advanced North Atlantic (ANA) Collaboration

International Exchange

NII Shonan Meeting

https://shonan.nii.ac.jp

NII launched the NII Shonan Meeting in February 2011. The NII Shonan Meeting constitutes the first seminar series in Asia in the style of the Dagstuhl Seminars, which brings together top-class researchers from around the world for intensive discussions on issues in the field of informatics with the goal of solving difficult problems. The meetings are jointly hosted by NII and Kanagawa Prefecture under a partnership agreement.

The venue, Shonan Village Center, is easily accessible from Narita Airport and Haneda Airport, and is located in an environment blessed by nature where participants can focus on their research work. More than 170 seminars have been held so far. In August 2014, we also launched NII Shonan School, which is intended primarily for students and young researchers.

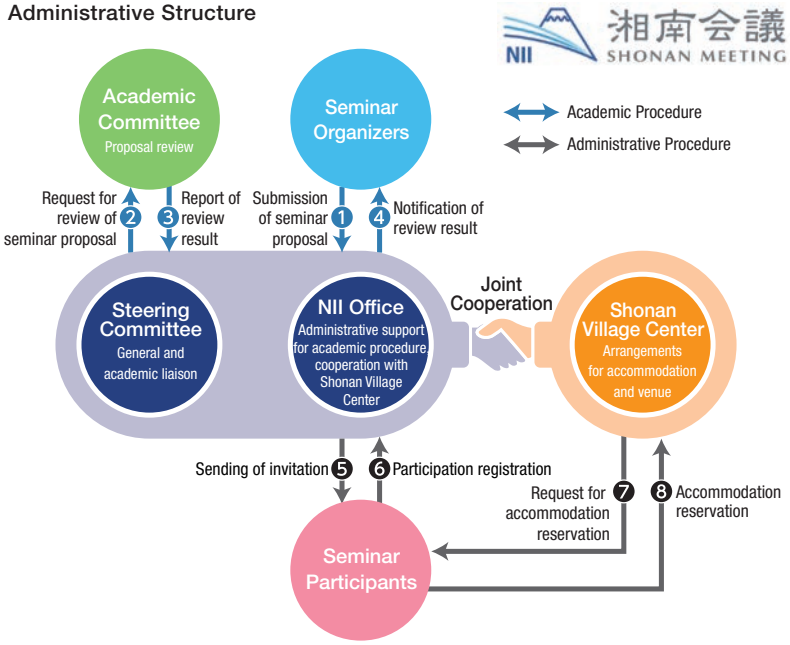
*Dagstuhl Seminar: A renowned seminar series in the field of informatics held almost every week in Dagstuhl, Germany. It is famous for its training camp style format where participants stay for about a week to hold intensive discussions on a specific topic.

Shonan Village Center

Support Setup

The Office of NII Shonan Meeting and Shonan Village Center staff manage various activities on behalf of seminar organizers, including sending invitations, providing information on accommodations, and preparing the venue on seminar days. The program also includes events such as historical walks through Kamakura to cultivate personal exchanges and friendships among participants.

Administrative Structure



NII Shonan Meeting Memorial Lectures

The NII Shonan Meeting Memorial Lectures are held annually and co-hosted by NII and Kanagawa Prefecture. NII researchers give open lectures on the latest research topics in the field of informatics.

NII Shonan Meeting Memorial Lecture

Call for Seminar Proposals

We accept seminar proposals for the NII Shonan Meeting throughout the year. The deadlines for submission are twice a year, June 15 and December 15. Following the review of the proposal by the Academic Committee at NII, seminar organizers will be notified of the result.

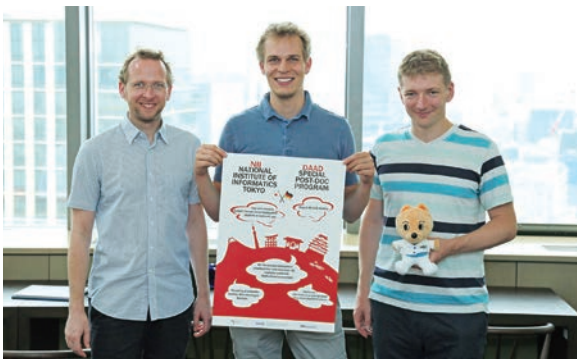
Contact: Office of NII Shonan Meeting, **shonan@nii.ac.jp**

Agreement with the German Academic Exchange Service (DAAD)

https://www.nii.ac.jp/en/glo-daad/

NII has a special agreement with the German Academic Exchange Service (DAAD) that allows German postdoctoral researchers to carry out research projects under the supervision of NII faculty members.

Under this agreement, postdocs can stay at NII for a minimum of three months (six months is recommended) and up to a maximum of two years with the support of DAAD. During their stay, they will carry out their own programs and receive research advice from the faculty at NII. The postdocs can also enlist the help of Master's and Ph.D. students and engineers on conducting projects. Since NII is an inter-university research institute, they can visit NII's partner universities and research institutes in Japan to build their network in Japan.



Japanese-French Laboratory for Informatics (JFLI)

https://jfli.cnrs.fr/

The Japanese-French Laboratory for Informatics (JFLI) was founded in 2008 as a hub for informatics research exchange between France and Japan by five institutions, namely the National Center for Scientific Research (CNRS) in France, Sorbonne University (University of Paris VI), The University of Tokyo (Graduate School of Information Science and Technology), Keio University, and NII. It was turned into a Joint International Unit (UMI) of CNRS in 2012, and has since been more active in conducting research exchange.

JFLI carries out collaborative research with a special emphasis on the important and challenging areas of informatics. The main research topics are (1) next-generation networks; (2) high-performance computing; (3) software, programming models, and formal methods; (4) virtual reality and multimedia; and (5) quantum computing. The institutions have all engaged in collaborative research, including Japanese institutions accepting researchers and graduate students from French research institutes. Workshops for enhancing collaborative research and research presentations that serve as venues for graduate internship students to present their research are also held regularly. The JFLI Seminar is another one of its regular activities. Networks of researchers have been forming as a result of such activities conducted through JFLI. In March 2016, a JFLI-wide workshop was held at NII that invited outside researchers who have been involved with JFLI. JFLI also organizes joint workshops with universities and other non-member institutions. There are now plans to collaborate with other UMIs of CNRS across the Asian region with similar research interests.

Going forward, JFLI will continue working to promote informatics research through research collaboration between the two countries and in partnership with universities in Japan.

Sylvie Retailleau, French Minister of Higher Education and Research (May 2023),
with KUROHASHI Sadao, NII Director-General

Informatics Program,Graduate Institute for Advanced Studies, SOKENDAI

Establishment of Graduate School

The Graduate University for Advanced Studies (SOKENDAI) was founded as the first graduate university in Japan with the aim of fostering original, world-class academic research that transcends the boundaries of traditional disciplines, and pioneering advanced fields of study that create new lines of scientific inquiry.

In April 2002, NII joined up with SOKENDAI to launch a three-year doctoral program in Informatics. The first graduates of the program emerged in March 2005. In AY2006, a five-year doctoral program was launched, allowing students to directly obtain a Ph.D. in five years.

Starting in the AY2023, as SOKENDAI shifts away from a six-school system to a system of 20 programs under the Graduate Institute for Advanced Studies, “Informatics” will be offered as one of the programs.

SOKENDAI (Hayama Campus)

Content and Structure

The Informatics Program aims to cultivate young IT researchers and engineers with the capacity to serve on the international stage as 21st-century leaders. Students will be able to earn a Doctor of Philosophy (Informatics) degree, or a Doctor of Philosophy (Science) degree, depending on the content. Students receive education and research guidance in six fields: (1) Foundations of Informatics; (2) Information Infrastructure Science; (3) Software Science; (4) Multimedia Information Science; (5) Intelligent Systems Science; and (6) Information Environment Science. Approximately 60 courses are offered.

Lecture at the Informatics Program

Features of the Program

The Informatics Program actively accepts international students from abroad, so there are lively cross-cultural exchanges between students. Around 20% of all the students already have a track record of professional work experience.

Number of students in the Informatics Program

(as of April 2024) *( ) indicates number of international students

Five-year doctoral program	Three-year doctoral program	Total
57(23)	29(16)	86(39)

【Message from the Dean of the Informatics Program】

TAKEDA, Hideaki

Professor/Director, Principles of Informatics Research Division

Ultimating Informatics.

The Informatics Program consists of six multi-disciplinary research fields: Foundations of Informatics, Information Infrastructure Science, Software Science, Multimedia Information Science, Intelligent Systems Science, and Information Environment Science. These fields cover not only traditional computer science and information engineering including AI, data science and mathematical modeling, but also social science including social modeling, social simulation. Our program is aiming at attacking problems in these domains from basic, applied, and practical points of view, and, at the same time, at educating and fostering not only researchers but also highly-skilled professionals, who will be next leaders in informatics.

Our program has the Five-year doctoral program and the Three-year doctoral program: the former is for students having a bachelor degree where students can sufficiently develop their research objectives, while the latter is for students who earned a master degree where students can concentrate on research themes through enriching their research experiences. Our dual-degree program provides students with opportunities to go abroad to be supervised on their Ph.D. research topics at our partner universities/institutions. Moreover, students can study their research themes as international collaboration, participate in various research projects at NII, and are trained to play important roles as an international researchers. The fact that we have a high percentage of foreign students is also an important advantage of our program. Most lectures are given in English, and seminars and discussions at laboratories are held in English. Students in our program come from a diverse range of countries, and the cross-cultural exchange among students is also a valuable environment for young people who aspire to international careers.

By offering an enriched cross-disciplinary and cross-cultural environment, we aim at having our students trained with global perspectives and visions in having their extensive knowledge and high expertise in informatics.

Research by Current Students

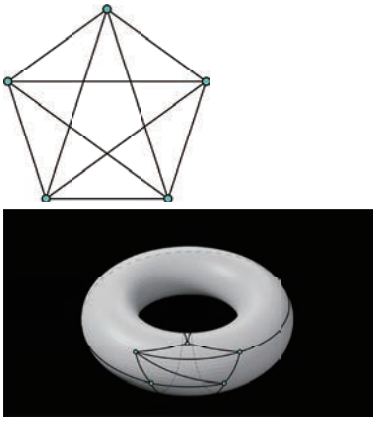
HOUDAIGOUI, Sarah

Commenced doctoral program in 2024 (Three-year doctoral program)

Main supervisor: Prof. KAWARABAYASHI, Ken-ichi

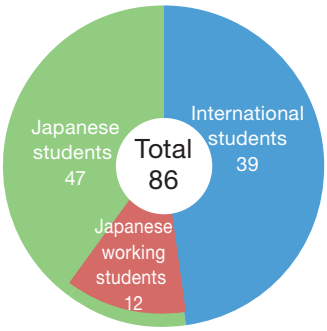
In informatics, a graph is a structure consisting of nodes which are connected by links. The study of graphs (called graph theory) has numerous applications, for instance in the design of printed circuits, the analysis of social networks, or the road traffic.

I am currently working on graphs that can be drawn on surfaces without any of their links crossing. My goal is to show that the size of a minimal graph that cannot be drawn on a given surface is bounded by a polynomial that only depends on the complexity of the surface, the current bound being double exponential.

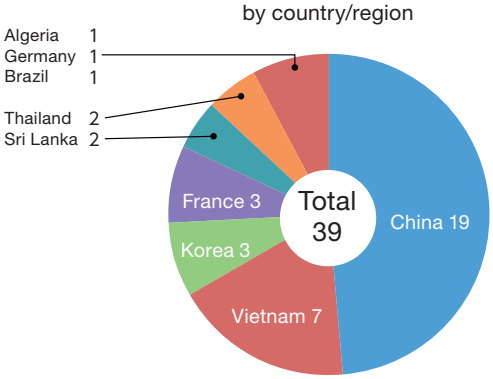


Student Data (as of April 2024)

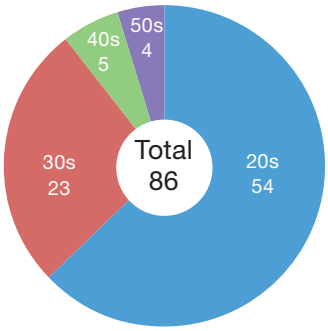
Number of students



Number of international students by country/region



Age distribution of students



Career paths of students after course completion

(over the past three years) *( ) indicates number of international students

Year of completion	University/Research institution	Private sector	Undetermined	Total
AY2023	4 (2)	5 (2)	3 (3)	12 (7)
AY2022	6 (4)	10 (5)	3 (3)	19 (12)
AY2021	8 (5)	5 (1)	3 (3)	16 (9)

Graduation and Outstanding Student Award Ceremony (September 2023)

Curriculum

The Informatics Program provides research and education conducted by world-class researchers within the state-of-the-art environment and international atmosphere of NII.

The Informatics Program covers a wide range of interdisciplinary fields, from fundamental sciences such as mathematics, and basic studies such as computer architecture and networking, to software and media engineering, AI, information sociology, and research informatics. Since it was established, the program has offered a flexible educational system that can be tailored to meet the different needs of students, through small class sizes and research guidance. To foster capable individuals who can play an active role at the forefront of informatics, the program provides leading-edge research and educational guidance on a day-to-day basis. The academic year is divided into two semesters: first semester (April to September) and second semester (October to March).

Completion requirements include earning the prescribed credits, conducting research under appropriate guidance, and successfully defending a doctoral dissertation summarizing the results of research. Students are required to earn at least 16 credits under the three-year Ph.D. program and 42 credits under the five-year Ph.D. program. The period of enrollment is handled flexibly, so students with outstanding research achievements may have their enrollment period shortened. Students who withdraw from the five-year program before completing their studies may be awarded a Master's degree if they meet certain requirements.

Dissertation Work in Advanced Studies etc.

Dissertation Work in Advanced Studies ⅠA/ Dissertation Work in Advanced Studies ⅠB/ Dissertation Work in Advanced Studies ⅡA/ Dissertation Work in Advanced Studies ⅡB/
Dissertation Work in Advanced Studies ⅢA/ Dissertation Work in Advanced Studies ⅢB/ Dissertation Work in Advanced Studies ⅣA/ Dissertation Work in Advanced Studies ⅣB/
Dissertation Work in Advanced Studies ⅤA/ Dissertation Work in Advanced Studies ⅤB

Informatics Program

Subjects Under Research Guidance	Experiment and Seminar on Basic Knowledge in Informatics Ⅰ A (All professors) / Experiment and Seminar on Basic Knowledge in Informatics Ⅰ B (All professors)/ Experiment and Seminar on Basic Knowledge in Informatics Ⅱ A (All professors) / Experiment and Seminar on Basic Knowledge in Informatics Ⅱ B (All professors)
Foundations of Informatics	Introduction to Mathematical Logic (TATSUTA, Makoto) / Introduction to Algorithms(UNO, Takeaki) / Logic in Computer Science (TATSUTA, Makoto) / Discrete Mathematics (KAWARABAYASHI, Ken-ichi) / Computational Complexity Theory (HIRAHARA, Shuichi) / Computational Game Theory (Professors in Foundations of Informatics) / Sublinear Algorithms (YOSHIDA, Yuichi) / Algorithmic Market Design (Professors in Foundations of Informatics) / Combinatorial Optimization for Machine Learning (FUJII, Kaito) / Quantum Algorithms (SOEDA, Akihito)
Information Infrastructure Science	High-Performance Computing (AIDA, Kento; TAKEFUSA, Atsuko; KOIBUCHI, Michihiro; ISHIKAWA, Yutaka) / Information Sharing System Architecture (KURIMOTO, Takashi; TAKAKURA, Hiroki; SATO, Hiroyuki) / Computer System Design (GOSHIMA, Masahiro; ISHIKAWA, Yutaka) / Information and Communication Systems (FUKUDA, Kensuke; KANEKO, Megumi; JI, Yusheng)
Software Science	Introduction to Software Science 1 (All professors in Software Science) / Introduction to Software Science 2 (All professors in Software Science) / Distributed Systems (SATOH, Ichiro) / Software Engineering (ISHIKAWA, Fuyuki) / Database Theory (KATO, Hiroyuki) / Programming Languages and Theory (Professors in Software Science) / Mathematical Structures in Formal Methods (HASUO, Ichiro) / Software Verification (SEKIYAMA, Taro) / Probabilistic Models in Informatics (KITAMOTO, Asanobu) / Embedded Real-Time Systems (AOKI, Shunsuke)
Multimedia Information Science	Introduction to Multimedia Information Science (All professors in Multimedia Information Science; KURITA, Shuhei; SATO, Ryoma) / Fundamentals of Media Processing (YAMAGISHI, Junichi; KODAMA, Kazuya; IKEHATA, Satoshi; MO, Hiroshi; SATOH, Shin'ichi; KATAYAMA, Norio; SUGIMOTO, Akihiro; AIZAWA, Akiko; KOYAMA, Shoichi) / Applications of Multimedia Processing (YAMAGISHI, Junichi; SUGIMOTO, Akihiro; SATO, Imari; IKEHATA, Satoshi; MO, Hiroshi; KODAMA, Kazuya) / Interactive Media (ARAI, Noriko; KATAYAMA, Norio; KOYAMA, Shoichi; ASANO, Yuta)
Intelligent Systems Science	Introduction to Intelligent Systems Science 1 (AIZAWA, Akiko; YAMADA, Seiji; INOUE, Katsumi; KOBAYASHI, Taisuke; SHIGAKI, Shunsuke) / Introduction to Intelligent Systems Science 2 (BONO, Mayumi; TAKEDA, Hideaki; PRENDINGER, Helmut; MIZUNO, Takayuki; SUGIYAMA, Mahito; SUGAWARA, Saku) / Robot Informatics (SHIGAKI, Shunsuke; KOBAYASHI Taisuke) / Natural Language Processing(AIZAWA, Akiko; SUGAWARA, Saku) / Deep Learning (PRENDINGER, Helmut) / Communication Environments (BONO, Mayumi) / Data Mining (SUGIYAMA, Mahito) / Knowledge Sharing System (TAKEDA, Hideaki) / Computational Social Science (MIZUNO, Takayuki)
Information Environment Science	Introduction to Information Environment Science (All professors in Information Environment Science) / Practical Data Science (YAMAJI Kazutsuna) / ICT-enabled Business (OKADA, Hitoshi) / Introduction to Statistical Methods in Bibliometrics (SUN, Yuan) / Methodology of Scientometrics (NISHIZAWA, Masaki)
Others	Applied Linear Algebra (KISHIDA, Masako; SUGIMOTO, Akihiro; SATOH Shin'ichi) / Scientific Presentation (KANEKO, Megumi; WU, Stephen*Statistical Science Program; JONES, Caryn*Visiting Lecturer) / Scientific Writing (KANEKO, Megumi; WU, Stephen*Statistical Science Program; JONES, Caryn*Visiting Lecturer) / Introduction to Information Security Infrastructure(ECHIZEN, Isao; TAKAKURA, Hiroki; OKADA, Hitoshi) / Introduction to Big Data Science(Professors related to Big Data)

Partnership with Graduate Schools

NII actively cooperates on graduate school education with The University of Tokyo, Tokyo Institute of Technology, Waseda University, Japan Advanced Institute of Science and Technology, Kyushu Institute of Technology, The University of Electro-Communications, and Tokyo University of Science. In partnership with these institutions, we give lectures and accept graduate students for research supervision.

Partner Graduate Schools

University	Graduate School	Note
The University of Tokyo	Graduate School of Information Science and Technology	Since AY2001
Tokyo Institute of Technology	Graduate School of Information Science and Engineering	Since AY2002
	Interdisciplinary Graduate School of Science and Engineering	Since AY2003
	School of Engineering (undergraduate)	Since AY2016
	School of Engineering (graduate school)	
Waseda University	Graduate School of Fundamental Science and Engineering	Since AY2005
	Graduate School of Creative Science and Engineering	
	Graduate School of Advanced Science and Engineering	
Japan Advanced Institute of Science and Technology	Graduate School of Advanced Science and Technology	Since AY2008
Kyushu Institute of Technology	Graduate School of Computer Science and Systems Engineering	Since AY2010
	Faculty of Computer Science and Systems Engineering	
The University of Electro-Communications	Graduate School of Information Systems	Since AY2012
	Graduate School of Informatics and Engineering	
Tokyo University of Science	Graduate School of Science	Since AY2015

Research Students for Special Collaboration

As an inter-university research institute, NII accepts graduate students from other universities in Japan and overseas as research students for special collaboration (exchange graduate students). Research students for special collaboration are supervised by NII faculty members of the National Institute of Informatics according to their research topics.

University Affiliations of Research Students for Special Collaboration (AY2023)

Osaka University	Laboratory IRISA
Ochanomizu University	Lund University
The University of Tokyo	Pontifical Catholic University of Chile
Tokyo Denki University	Shanghai Center for Mathematical Sciences Fudan University
Tokyo University of Science	Southwest Jiaotong University
Aalto University	Southwest University
Beijing University of Posts and Telecommunications	Technische Universität Berlin
Bielefeld University	Technische Universität München
Chennai Mathematical Institute	Tianjin University
Czech Technical University in Prague	Université Paris-Saclay
Delft University of Technology	University of Bordeaux
École Normale Supérieure	University of Delaware
École Polytechnique	University of Konstanz
École Polytechnique Fédérale de Lausanne	University of Oxford
Georg-August-Universität Göttingen	Wuhan University
Institute for Systems and Computer Engineering, Technology and Science	

Number of Students Accepted through Both Schemes:
Partnership with Graduate Schools and Research Students for Special Collaboration (AY2023)

Master's course	Doctoral course	Total
43	42	85

Science Information NETwork (SINET) Available Nationwide at Ultra-High Speed with Low Latency

- A research infrastructure that anticipates the needs of the Society 5.0 era

The Science Information NETwork (SINET) is an information and communications network built and operated as a scientific information infrastructure for universities and research institutions throughout Japan. With nodes (network connection points) across Japan, the advanced network is provided to universities and research institutes in order to help support community-building among the numerous people involved in research and education, and to encourage wide distribution of scientific information. SINET is also interconnected with many research networks overseas, including Internet2 in the U.S. and GÉANT in Europe, to facilitate the circulation of research information between countries that is vital for advanced international research projects.

In April 2022, NII commenced full-scale operation of SINET6, an upgrade of SINET5, the previous version of its scientific information infrastructure.

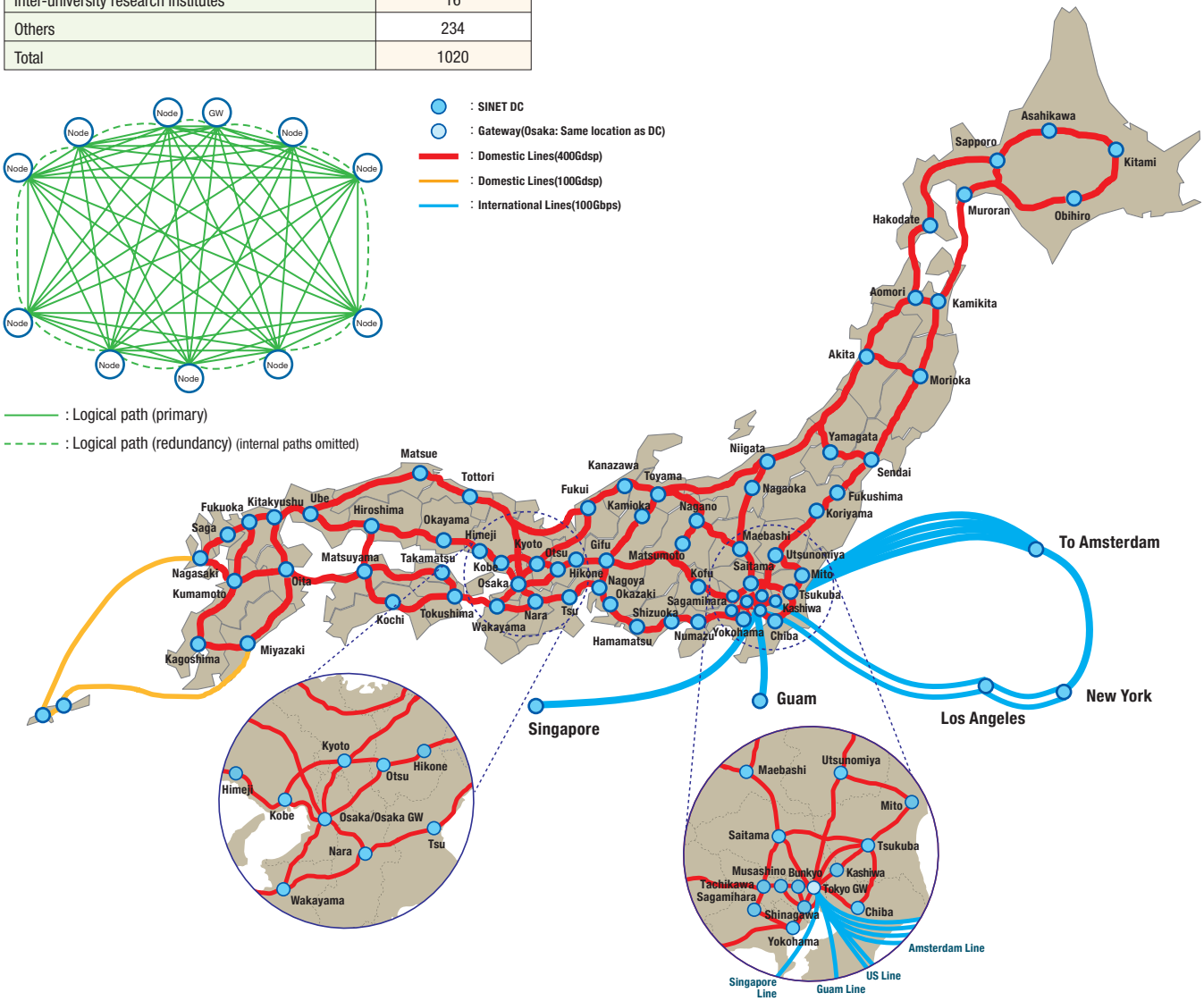
SINET organically connects cloud, security, and academic content by means of a nationwide 400-Gbps network, thereby providing more than 1000 universities and other institutions with advanced scientific information infrastructure.

At the same time, NII's wide-area data collection infrastructure has evolved into Mobile SINET. To enable flexible use of universities' analysis resources and optional cloud resources in data collection and analysis using 5G networks, we have begun a new empirical trial to test infrastructure functions directly connected to SINET. In terms of international lines, we have independently established a round-the-world network link and upgraded the Japan-US data link to 200 Gbps. In addition to our existing line between Japan and Singapore, in Asia we launched a new 100-Gbps data line between Japan and Guam, as part of our efforts to make our international network even more robust. From FY2024, we have significantly improved the bandwidth of the line between Japan and Europe, which has now started operating at 400 Gbps. By providing this network, we aim to increase Japan's contribution to international research projects.

These initiatives are expected to help further strengthen Japan's international collaboration and competitiveness, and to accelerate the fusion of cyberspace (virtual space) and physical space (real space), with a view to shaping Society 5.0, the proposed vision of Japan's future society.

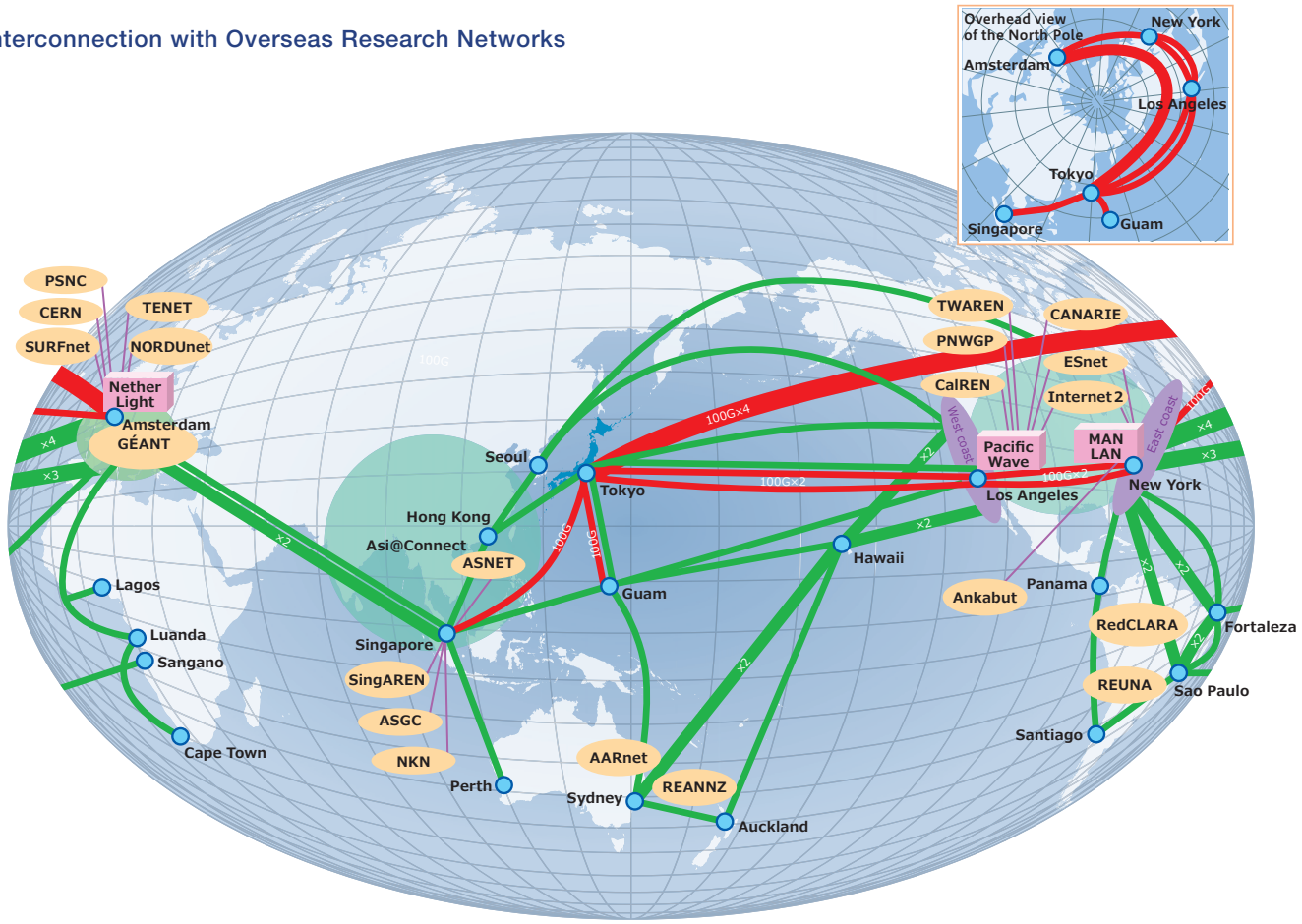
Number of member institutions in SINET (as of March 31, 2024)

National universities	86
Public universities	97
Private universities	441
Junior colleges	90
Technical colleges	56
Inter-university research institutes	16
Others	234
Total	1020



https://www.sinet.ad.jp/en/

Interconnection with Overseas Research Networks



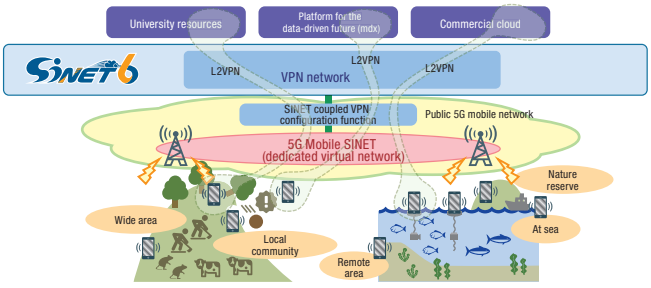
SINET6 Services

We provide new services through joint consideration and development, based on requests from universities and institutes.
SINET6 offers 400GE, 100GE, and other ultra-high speed network interfaces. To create a secure and flexible research environment at universities and research institutes, we are expanding our network services to better serve our users; this effort includes university LAN virtualization, L2 on demand, and wide-area data collection infrastructure. We also provide the world's most advanced high-speed file transfer software for users needing high-capacity data transfer.

Service		Notes
L3 Service	Internet connection (IPDual)	
	Full Route Provision	
	IP multicast (+QoS)	
	QoS per application	
	L3VPN(+QoS)	
L2 Service	L2VPN/VPLS(+QoS)	Rapidly increasing
	University LAN Virtualization	Expanding into a multicampus service
	L2 on demand (Basic)	Used frequently in high-capacity transmission experiments
	L2 on demand (International collaboration: NSI)	Used in international experiments
	L2 on demand (Cloud collaboration: REST)	
Mobile SINET	Secure mobile connection	Pilot test in progress
Redundancy of Access Line	Multihoming	
	Link aggregation	
	Redundant trunk group service	
	Data center connection redundancy service	
Stabilization of Network Operations	New DDoS mitigation	Security measure function
Next-Generation Network Functions	SINET Edge	Scheduled new services expansion
Enhanced Transfer Performance	Performance measurement	
	High-speed file transfer	Achieved world's fastest at 416 Gbps between Japan and the U.S.

Mobile SINET https://www.sinet.ad.jp/wadci/

In April 2022, we started trial operation of a new wide-area data collection infrastructure, under the name of Mobile SINET. It offers a one-stop solution for data collection and processing from mobile terminals for environmental, ecological, IoT research, and other applications, with a view to the realization of Society 5.0.
To send and receive valuable research data generated in remote areas, at sea, and other locations where a wired network is unavailable, the service offers a secure communication environment connected directly to SINET over public 5G mobile networks. A trial was launched in April 2024 with the updated infrastructure, in preparation for full-scale deployment of the service.



Concepts and Features of SINET6

https://www.sinet.ad.jp/en/

Five Major Concepts of SINET6

(1) Innovative Connectivity

Uses leading-edge technologies that minimize communication lags

The latest transmission technologies made it possible to create a full-mesh topology that minimizes transmission delays between all node connections.

(2) Ultra-High Speed

Delivers a high-speed 400 Gbps nationwide network

SINET6's state-of-the-art digital coherent technology created an overall stable 400 Gbps nationwide network.

(3) Robust and Reliable

Provides a highly robust and reliable network without interruptions or downtime

SINET6 adopts a multilayered advanced network architecture (physical layer, L2MUX network layer, IP/MPLS network layer), with redundancies configured at each layer, as well as bottleneck avoidance and bypassing features, which are all linked together to create a highly robust and reliable network.

(4) Internationalization

High-speed international lines directly connecting the U.S., Europe, and Asia

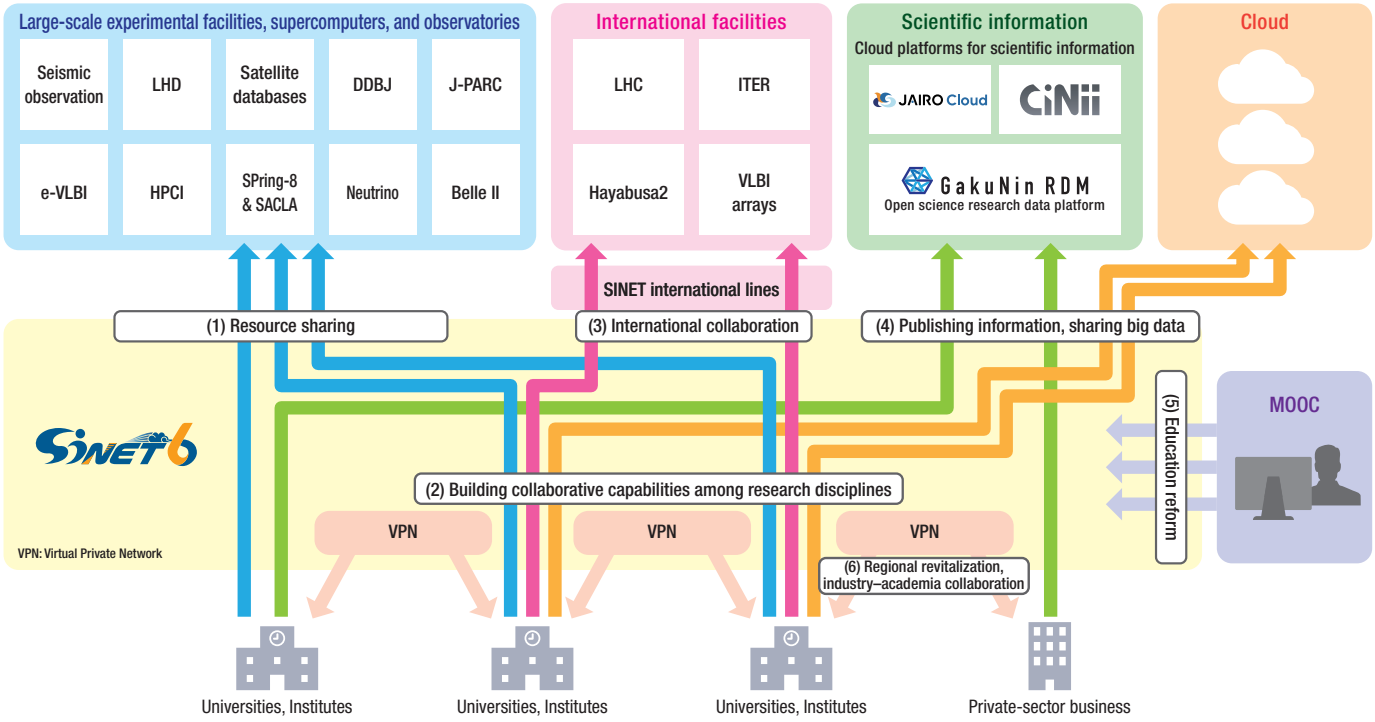
Low latency was achieved by adding a direct connection to Europe, eliminating the need to pass through the U.S. The Japan-U.S. connection was upgraded to 200 Gbps and in Asia there are now 100-Gbps connections to both Singapore and Guam. Japan, the U.S., and Europe are linked in a ring. All these network improvements further enhance support for international joint projects.

(5) Multifunctionality

Promotes a variety of developments in scientific information infrastructure, such as security, use of cloud systems, and academic content

Features of SINET6

SINET was built and operated as a platform for (1) resource sharing of large testing facilities; (2) building the collaborative capabilities among research disciplines; (3) international collaboration with countries worldwide; (4) publishing scientific information and sharing big data; (5) improving the quality of university education; and (6) knowledge-intensive centers of regional revitalization, local universities, and collaboration between industry and academia.

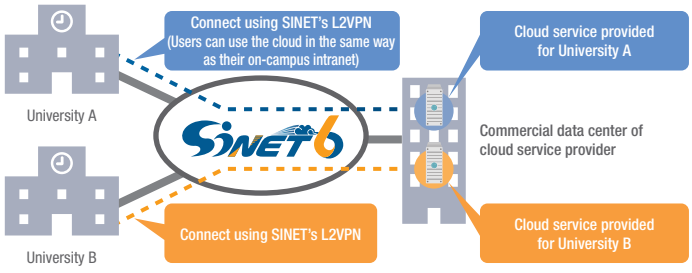


SINET Cloud Connection Service

https://www.sinet.ad.jp/connect_service/service/cloud_connection

The service allows member universities and research institutes to access secure and fast cloud environments by directly connecting SINET and commercial clouds using L2VPN.

Note that SINET does not offer cloud services. This service provides an environment that directly connects SINET to commercial clouds for the convenience of cloud users in member institutions.



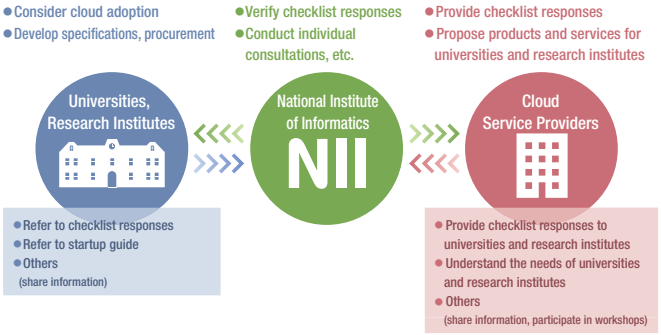
GakuNin Cloud: Support for Cloud Adoption and Use

GakuNin Cloud
https://cloud.gakunin.jp/
https://www.sinetstream.net/

To support the adoption and use of cloud computing by universities and research institutes, NII offers the GakuNin Cloud Adoption Support Service to provide relevant information. It also offers the GakuNin Cloud Gateway Service, for one-stop access to various cloud computing services, the GakuNin Cloud On-demand Configuration Service, to support the configuration of cloud computing environments, and SINETStream for developing wide-area data collection and analysis programs.

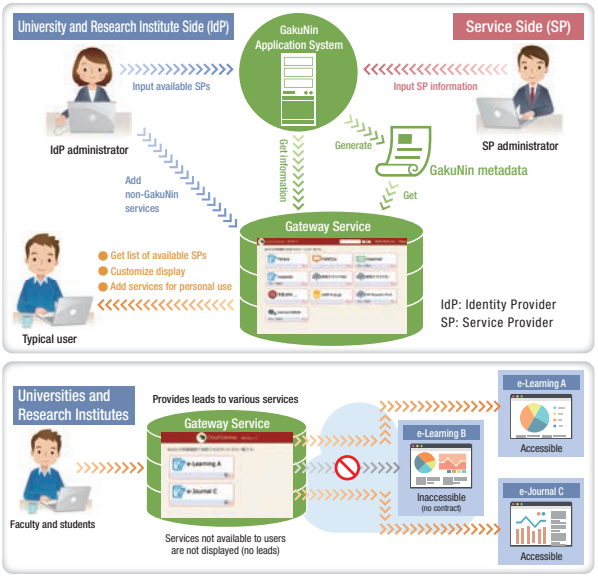
GakuNin Cloud Adoption Support Service

The GakuNin Cloud Adoption Support Service collects, distributes, and shares information on the criteria for selecting cloud services, as well as on their adoption and use, for universities and research institutes. We have developed and published a checklist of items that need to be confirmed before universities and research institutes adopt cloud services. We have also added the implementation status of cloud service providers to the checklist based on responses from providers. The responses are verified by NII and made available to institutions considering to adopt those services.
When developing specifications for cloud procurement, the verified checklist makes it possible to compare several cloud services with the same criteria and thereby select cloud services which meet the needs of the institution.
In addition, NII provides documents such as cloud startup guides and cloud use cases.



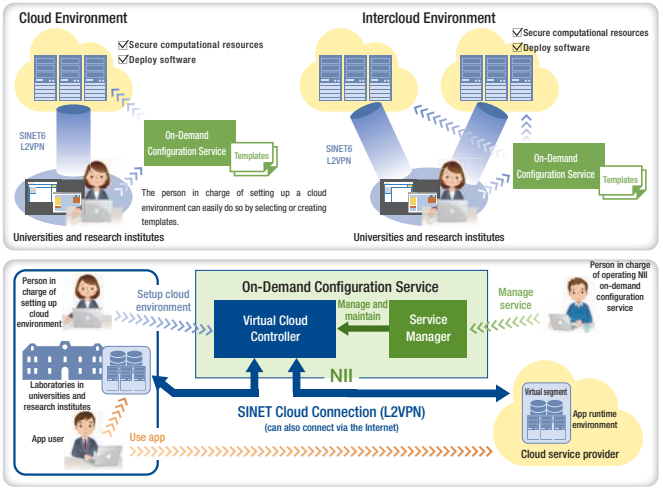
GakuNin Cloud Gateway Service

The GakuNin Cloud Gateway Service provides a portal for one-stop access to various cloud services required for conducting research and education, as well as to electronic journals and other online services.
Users (faculty and students) at universities and research institutes can see the various services available at their institution by accessing the portal site via the authentication platform operated by their institution. They can then quickly and easily use these services.
Moreover, IdP administrators at universities and research institutes can customize the list of services displayed to users, and the users themselves can add services, providing a high degree of flexibility and usability.



GakuNin Cloud On-Demand Configuration Service

The GakuNin Cloud On-Demand Configuration Service provides support for setting up complex applications environment over clouds.
Users of this service can install and set up an application environment on cloud resources relatively easily using prepared templates. The service is also applicable to the SINET6 Cloud Connection Service. This makes it possible to setup a secure on-demand intercloud environment consisting of computers at universities and research institutes and multiple cloud environments connected to SINET6, for use in research, education, and IT system operations.



SINET Cloud Connection: Provides cloud connection to member institutions by directly connecting SINET and commercial clouds. A SINET service allows high-performance, safe, and low-priced use of commercial cloud services.

GakuNin Cloud common services

Participants in GakuNin Cloud can access individual consultations (e.g., to examine the adoption of cloud services, define requirements, review specifications, deal with issues when using cloud services), participate in user meetings, workshops, and other events exclusive to participating institutions, participate in cloud utilization surveys, and access the GakuNin Cloud common community space.

Building an Authentication Infrastructure

GakuNin: Academic Access Management Federation in Japan

https://www.gakunin.jp/en/

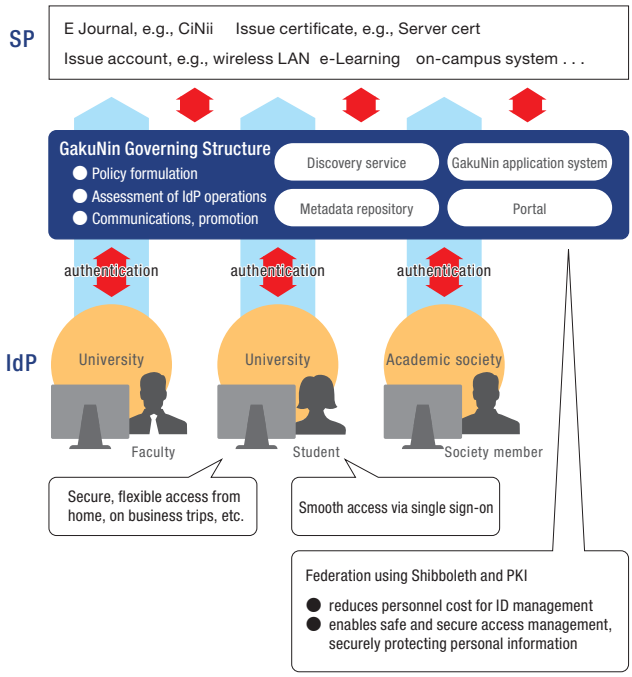
The Academic Access Management Federation in Japan, GakuNin, is a framework for utilizing the authentication platform of universities not only for on-campus services but also for collaboration with other universities and commercial services. GakuNin enables safe and secure use and provision of academic services on the Internet through identification of individuals and institutions. With Single Sign-On, users can seamlessly and automatically login to multiple on- and off-campus services with a single login. Meanwhile, for universities, creating an authentication platform compatible with GakuNin makes it possible to reduce personnel cost for ID management and raise the level of security measures.

Data on Participants (as of the end of March 2024)

Number of organizations (IdP: Identity Providers)	317
Number of service providers (SP: Service Providers)	Total 217

[Features]

- Users only need one ID (integrated authentication)
- Input password only once (single sign-on)
- Accessible anywhere on- and off-campus (remote access)
- Requires web browser only (software not required)
- Also supports client certificate authentication and/or multifactor authentication (centralized security level management)



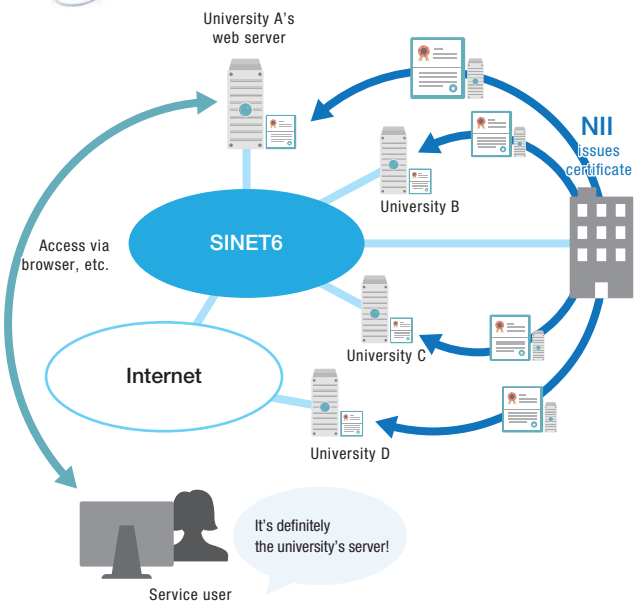
GakuNin strives to maintain its trustworthiness by conducting regular annual assessments of its operations. It also offers LoA1 (Level of Assurance 1) accreditation services in accordance with the U.S. federal government's Federal Identity, Credential and Access Management (FICAM) trust framework. The Steering Committee for Academic Authentication is also discussing the provision of higher assurance levels and the provision of services that utilize higher assurance levels.

At GakuNin, all related matters are planned, drafted, and managed by the Steering Committee for Academic Authentication. This committee includes five working groups, the "Operation Working Group," which examines matters relating to operations, the "Trust Working Group," which examines matters relating to trust in GakuNin, the "Library Service Working Group," which examines matters relating to GakuNin's library services, the "Working Group for Next-Generation Identity Federation," which examines ways to achieve new trust for the development and advancement of academic authentication, and the "eduroam Working Group," which examines the operation of eduroam JP.

Issuing Digital Certificates: UPKI Digital Certificate Issuance Service

https://certs.nii.ac.jp/

NII launched the UPKI Digital Certificate Issuance Service in January 2015 as a service for issuing digital certificates to universities and research institutes. Server certificates and client certificates are currently issued. We issue high-security server certificates that comply with the international standard WebTrust for Certification Authorities (WTCA). As and when needed, we also support the latest updates to the Baseline Requirements formulated by the CA/Browser Forum. The use of these server certificates enhances web security by certifying the authenticity of the web server provider (domain name and organization name) which makes it easier to distinguish authentic sites from phishing sites. We also issue client certificates to individuals of member organizations, which can be used for authenticating and signing emails, as well as for multifactor authentication and preventing identity theft.



Institutions using UPKI Digital Certificate Issuance Service (as of the end of March 2024)

Number of institutions	387
Number of domains	521

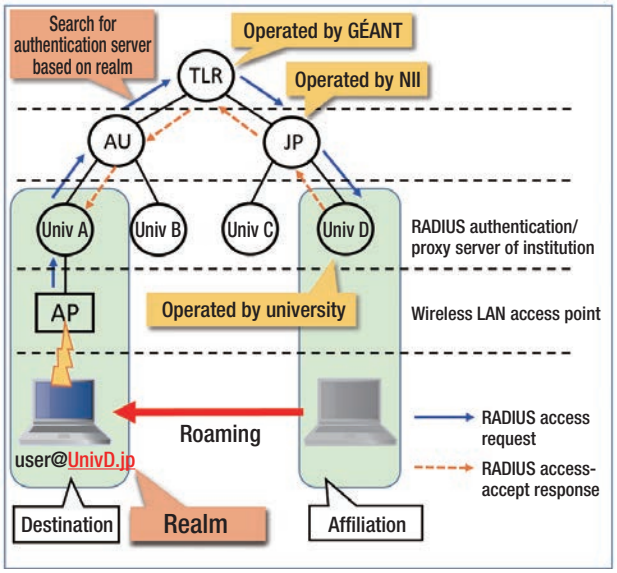
eduroam: World-wide Academic Wireless LAN Roaming Platform

https://www.eduroam.jp/en/

eduroam is an academic wireless LAN roaming platform developed by GÉANT (formerly TERENA) in Europe, enabling shared access of on-campus Wi-Fi across universities and other research and educational institutions. Introduced in Japan in 2006 as part of NII's University Public Key Infrastructure (UPKI) project under the name "eduroam JP", NII operates, provides support for, and develops the technology of the platform. eduroam is based on the industry-standard IEEE 802.1X, meaning that it is able to provide a safe and convenient wireless LAN environment.

eduroam JP participants (as of the end of March 2024)

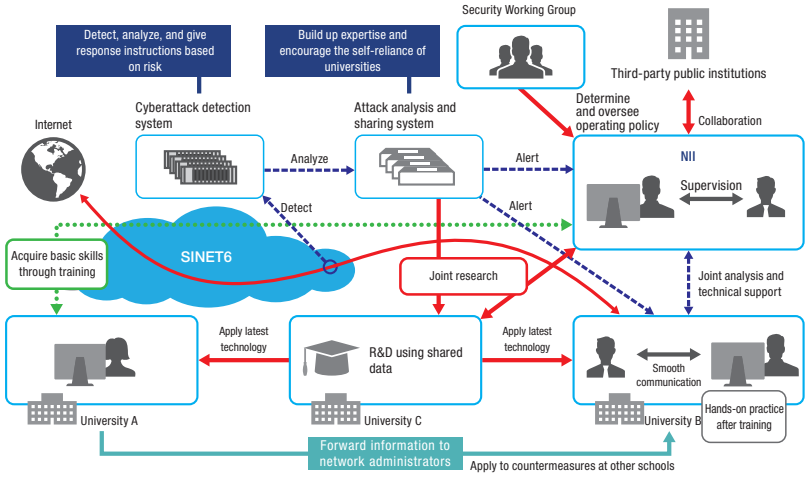
Number of participating institutions in Japan	423



Supporting Information Security Framework through Inter-University Collaboration

https://www.nii.ac.jp/service/nii-socs/

NII established the Center for Cybersecurity Research and Development in 2016 to support the creation of a framework that enables national universities and other institutions to quickly respond to incidents and accidents due to cyberattacks, while the NII Security Operation Collaboration Services (NII-SOCS) began operations in 2017.For advancement, the Center for Cybersecurity Research and Development was reorganized into the Center for Strategic Cyber Resilience Research and Development in FY2022. We develop cybersecurity experts through inter-university collaboration and at the same time apply our research findings as appropriate on detecting attacks and improving defense capabilities. Our aim is to improve the quality of cybersecurity infrastructure at national universities and other institutions and to carry out R&D that will provide an environment that promotes cybersecurity research, as well as a safe and secure educational and research environment for all academic and research fields.



Board for Scientific Research Digital Platform

The operation of Scientific Research Digital Platform, combining Science Information NETwork and Research Data Cloud, is handled by the Board for Scientific Research Digital Platform, a joint organization comprising universities and research institutes and NII, in collaboration with the information infrastructure centers of universities and research institutes and NII's seven R&D centers.

Universities and Research Institutes	National Institute of Informatics
Nationwide Sharing Information Technology Centers	
Board for Scientific Research Digital Platform	Research and Development Center for Academic Networks
Scientific Research Digital Platform Development and Promotion Committee	Research Center for Knowledge Media and Content Science
Steering Committee for Research Data Cloud	Center for Cloud Research and Development
Steering Committee for Network	Center for Strategic Cyber Resilience Research and Development
Steering Committee for DX/Cloud	Research Center for Open Science and Data Platform
Steering Committee for Security	Center for Research Data Ecosystem Development
Steering Committee for Information Security Policy at Higher Education Institutions	Center for Trust & Digital Identity Research and Development
Steering Committee for Academic Authentication	Academic Infrastructure Division
	SINET Promotion Office
	Academic Authentication Systems Office
	Cloud Promotion Office

Open Science

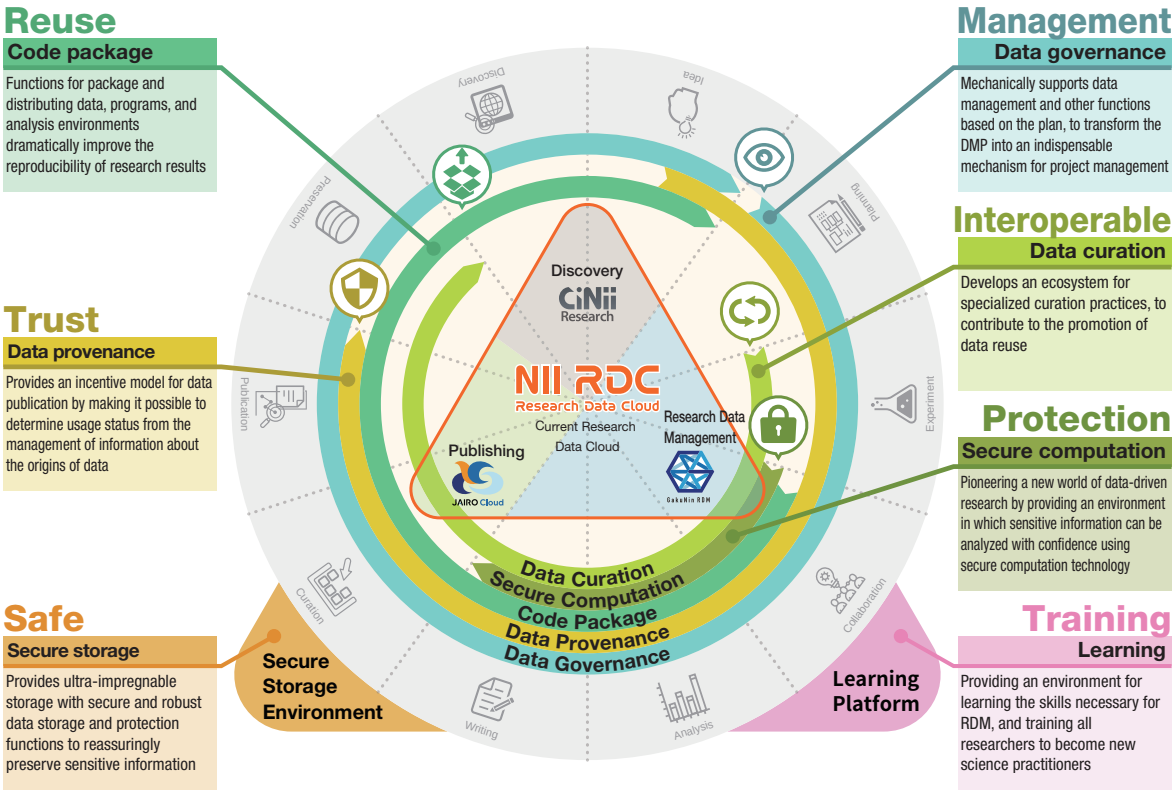
https://rcos.nii.ac.jp/en/

"Open science" is a way of conducting research in which papers, as well as research data, program source code, etc., are disclosed and shared over the internet. This is becoming a standard approach for contemporary research. NII has established three platforms for managing, publishing, and discovering various kinds of data generated in the process of research. Through these platforms and in cooperation with universities and research institutes across Japan, NII makes a major contribution to the development of open science in Japan.

Research Data Cloud

NII RDC Research Data Cloud

The NII Research Data Cloud (NII RDC) is an information platform that supports open science and research integrity and promotes data-driven research. It consists of three platforms that cover the lifecycle of research data: a research data management platform (GakuNin RDM), a publishing platform (WEKO3), and a discovery platform (CiNii Research).
To promote open science in a wide range of fields, over the next few years these common platforms for management, publishing, and discovery will be upgraded in terms of the following seven aspects: data governance function, data provenance function, code package function, secure computation function, secure storage environment, data curation function, and learning platform.



Research Data Management Platform

GakuNin RDM

A platform enables researchers and their supporters to help them manage and share research data and materials generated during research projects. GakuNin RDM (research data management) facilitates efficient management of files with collaborating researchers and features a powerful function for linking to data analysis platforms. For research integrity, the RDM platform records research trails without any burden on the researcher. The platform provides convenient management and customization features for research institutions as an RDM service.

Publishing Platform

WEKO3

A platform enables researchers and their supporters to publish and disseminate their research papers, research data, research findings, and other data on the Internet. Researchers can publish research results from their institutions' repositories in a suitable format for publication and dissemination by simply assigning identifiers and metadata using a function linked to a management platform or a web browser. The platform is equipped with flexibility and expandability to be used as a repository for efficiently publishing documents and a wide variety of other data.

Discovery Platform

CiNii Research

A platform aggregates information from the WEKO3 and other institutional databases and provides a comprehensive search for scholarly resources.
Research data are closely related to scholarly articles, bibliographies, and other literature, as well as the researchers and research projects that produced these academic resources. This discovery platform's core is a large-scale scholarly knowledge graph that interactively links all this information together. CiNii Research helps make discoveries by providing the ability to navigate these complex relationships intuitively.

Supporting Research Promotion and Research Integrity

GakuNin RDM

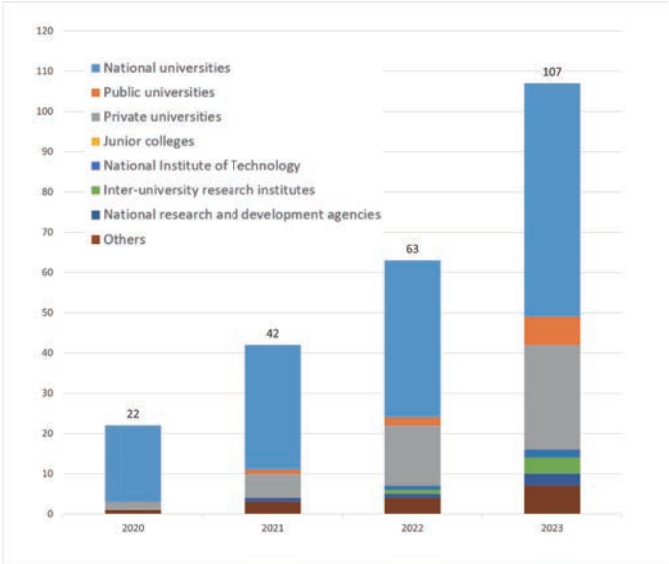
https://rdm.nii.ac.jp/

GakuNin RDM is a research data management platform for individual researchers or research groups that helps them to manage research data and related materials during the implementation of a research project. It links with existing storage and research software to enable version control of files related to research projects and access control among members in a closed space. It includes functions for recording research trails to enhance research integrity and for storing files.

Usage data (as of March 31, 2024)

Number of institutions using the service
107

■ Number of institutions using GakuNin RDM



Training in Research Data Management

GakuNin LMS

https://lms.nii.ac.jp/

To effectively promote open science, it is important not only to develop systems but also to train human resources in research data management (RDM). In cooperation with the Research Data Working Group of the Japan Consortium for Open Access Repository (JPCOAR), GakuNin LMS offers researchers and research supporters various learning courses featuring micro-content materials with synthesized audio and video and comprehension tests created by NII based on presentation materials on RDM developed and published by JPCOAR.
If the completion requirements are satisfied after taking a course with GakuNin LMS, a digital badge is issued. It is also possible to obtain a certificate of completion for RDM self-learning materials from NII.

Usage data (as of March 31, 2024)

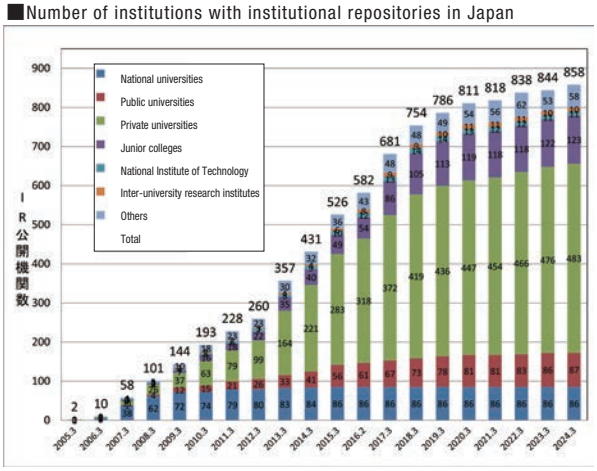
Number of institutions using the service
96

Support for Construction and Linkage of Institutional Repositories (JAIRO Cloud)

https://www.nii.ac.jp/irp/en/

NII supports the construction and linkage of institutional repositories that publicly disseminate the results of education and research conducted by universities and other institutions. As well as these activities, we promote open access, with the aim of helping establish the next generation of academic content platforms. NII has provided support for content expansion, system linkage and community building at academic institutions in Japan, and has built and operated institutional repositories for over 850 institutions.

■Number of institutions with institutional repositories in Japan



JAIRO Cloud: Shared Repository Service

NII provides an environment for a shared repository system as a cloud service, based on the NII-developed institutional repository software WEKO (http://weko.at.nii.ac.jp/), for institutions that have difficulty constructing and operating their own repositories.

JAIRO Cloud
Japanese Institutional Repositories Online Cloud

Usage data (as of the end of March 2024)

Number of institutions using the service
750

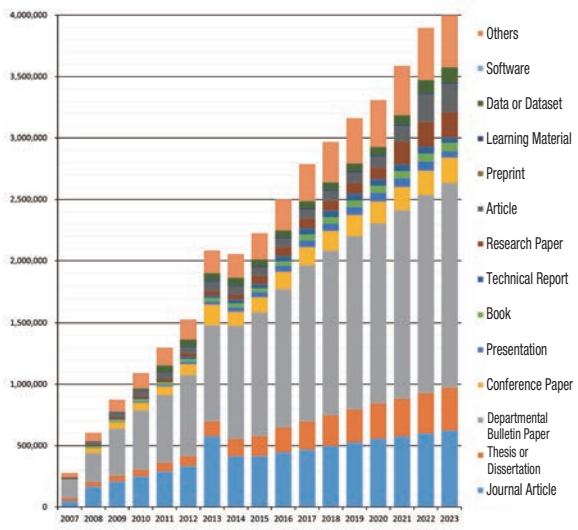
Integrated Search of Academic Information in Institutional Repositories in Japan

IRDB: Institutional Repositories Database

https://irdb.nii.ac.jp/en

Enables integrated searching of education and research results (journal articles, theses or dissertations, departmental bulletin papers, research papers, learning materials, etc.) at universities and other institutions that are stored in institutional repositories in Japan.
Full texts are available to users through this system as well as access via CiNii. This service took over from JAIRO, an institutional repository portal, which ended operations in March 2019.

■Number of IRDB records



Data on coverage (as of the end of March 2024)

Number of institutional repositories	Contents
785	4 million items

* Figures before FY2018 are JAIRO statistics
* Categories for the number of contents are based on the junii2 schema (NII Type) until FY2018, and on the JPCOAR schema from FY2019

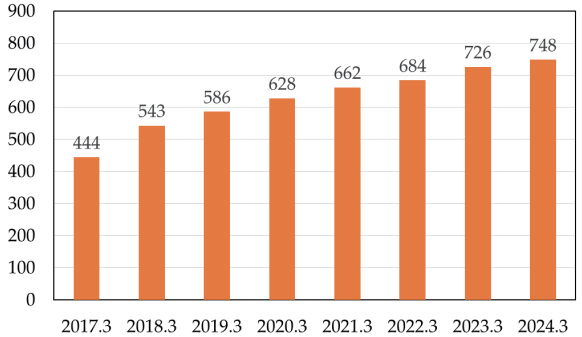
Japan Consortium for Open Access Repository

https://jpcoar.repo.nii.ac.jp/

JPCOAR: Japan Consortium for Open Access Repository

JPCOAR is a community of institutions with repositories where universities and other research institutions in Japan can work more effectively on their efforts to widely disseminate research results and enhance the significance of building and operating institutional repositories. The consortium is also working on improving scholarly communication, which includes open science, as well as on joint operation of the institutional repository service (JAIRO Cloud).
NII supports these activities as well as JPCOAR by providing assistance such as physical support for collaboration with university libraries.

■Number of JPCOAR Members



Current members (as of the end of March 2024)

Number of members	748

Publishing and Communicating Scientific Information CiNii

NII collects and structures academic research results produced by universities and research institutions and provides access to them through an easy-to-use interface.

CiNii https://cir.nii.ac.jp/

CiNii is a service enabling exhaustive searches of scientific information from academic articles, books, journals, and doctoral dissertations, among others. NII is working to expand the pool of data available and improve hit rates in text by linking various types of database services other than those from NII. CiNii also makes full use of intersystem links to university libraries and other facilities by providing search APIs (application programming interfaces) such as OpenSearch.
For smartphones and tablets too, a responsive design makes searching and displaying scientific information quick and convenient.

CiNii Research

https://cir.nii.ac.jp/

With its simple interface, CiNii Research makes it easy to cross-search documents, as well as many kinds of research data from external collaborating institutions, institutional repositories, and even KAKEN research project information.

Status of records (as of March 31, 2024)

Number of papers	Number of research data files
53.21 million	1,960,000

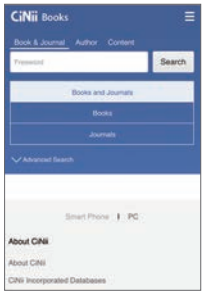
CiNii Books: Searching for Books in University Libraries

https://ci.nii.ac.jp/books/

Enables search of information on books and journals held by university libraries in Japan. Contains book and author information on about 13 million titles held by university libraries nationwide, which were stored through the Catalog Information Service (NACSIS-CAT) operated by NII.

Data on coverage (as of the end of March 2024)

Number of bibliographic records	Number of holding records	Number of participating libraries
13.70 million	152.67 million	1,348



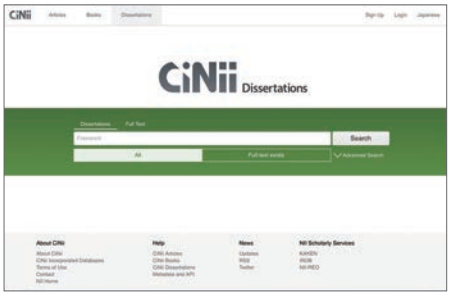
CiNii Dissertations: Searching for Doctoral Dissertations in Japan

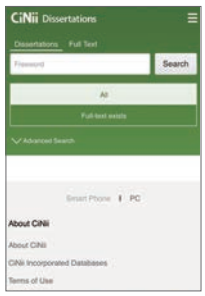
https://ci.nii.ac.jp/d/

Enables comprehensive centralized searching of doctoral dissertations in Japan.
In addition to dissertation texts digitized by the National Diet Library, enables searching and viewing of dissertation texts publicly available in institutional repositories of universities and research institutes.

Data on coverage (as of the end of March 2024)

Number of doctoral dissertation records	Number of full texts from dissertation records
710,000	Approximately 360,000





Database of Grants-in-Aid for Scientific Research

KAKEN: Database of Grants-in-Aid for Scientific Research https://kaken.nii.ac.jp/en/

This database enables users to browse adopted projects, as well as reports and summaries of research conducted through funds from the Grants-in-Aid for Scientific Research implemented by the Ministry of Education, Culture, Sports, Science and Technology and the Japan Society for the Promotion of Science. It provides access to the latest research in a wide range of fields in Japan. The system developed by KAKEN is also used in the JST project database (https://projectdb.jst.go.jp/), which contains research projects funded by the Japan Science and Technology Agency (JST).

Data on coverage (as of the end of March 2024)

Number of adopted projects
1,030,000

KAKEN 科学研究費助成事業データベース

Catalog Information Service

https://www.nii.ac.jp/CAT-ILL/en/

The Catalog Information Service consists of the online cataloging system (NACSIS-CAT) and the interlibrary loan system (NACSIS-ILL).

NACSIS-CAT: Online Cataloging System

NACSIS-CAT is a system for creating a unified and comprehensive database designed to instantly provide information on the academic literature (books and journals) archived at university libraries and similar institutions throughout Japan. To form the database efficiently, the cataloging system has the capability to refer to standard cataloging data (MARC), and university libraries and other institutions nationwide sharing the work of inputting records online.

Registration and usage data

(as of the end of March 2024, * indicates figure for one year, FY2023.)

Number of institutions participating in NACSIS-CAT	Cumulative number of registered book records	Number of institutions participating in NACSIS-ILL	Number of NACSIS-ILL copies*	Number of NACSIS-ILL loans*
1,348	148,090,000	1,123	304,000	71,000

NACSIS-ILL: Interlibrary Loan System

NACSIS-ILL is a system that makes use of the unified and comprehensive catalog database created by the NACSIS-CAT cataloging system to support the exchange of books and journal articles between libraries, thereby facilitating the provision of academic literature to researchers at universities and institutions.
NACSIS-ILL promotes more efficient library operations through ILL document copying and other services.

Database Sharing Service for Electronic Resources

Database Sharing Service for Electronic Resources has ERDB-JP (Electronic Resources Database-Japan) and Licenses (JUSTICE): Sharing license data service for electronic resource products.

ERDB-JP: Electronic Resources Database-JAPAN

https://erdb-jp.nii.ac.jp/en

ERDB-JP is a service that builds and shares knowledge bases (databases) of electronic resources, such as e-journals and e-books, published in Japan. ERDB-JP is operated by NII and the E-resources Data Sharing Working Group, which is made up of staff responsible for managing e-resources at universities. Content metadata are collected and updated in collaboration with partner institutions encompassing universities, publishers, and knowledge base vendors. The collected content metadata are made available under CC0 license. They can be exported and used to create lists of e-resource titles for use in OPAC and discovery services provided by universities and other institutions.
The application for ERDB-JP can now be carried out at the same time as the application for JAIRO Cloud.

Number of participating institutions
*Partner A: Can modify all contents in ERDB-JP; Partner B: Can modify own institution's contents only.

(as of the end of March 2024)

	National universities	Public universities	Private universities	Inter-university research institutes	Publishing companies	Others	Total
Partner A	46	9	50	4	2	34	145
Partner B	11	4	52	1	0	18	86
Total	57	13	102	5	2	52	231

Data registrations

(as of the end of March 2024)

Number of registrations	Number of new registrations (FY2023)
47,169	26,116

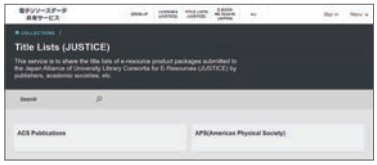
Licenses (JUSTICE)

This service enables sharing of license data for electronic resource products submitted to the Japan Alliance of University Library Consortia for E-Resources (JUSTICE) by publishers, academic societies, and other bodies.
Licenses (JUSTICE) was released for trial operation on April 1, 2022, and officially released on December 26, 2022.
Out of proposals submitted to JUSTICE for 2024 agreements, license information relating to "terms of use" and "administrative items" will be shared with JUSTICE member libraries for 60 proposals (38 publishers) for which permission to publish has been obtained (as of March 31, 2024).

E-Book Metadata (Japan)

This is a service to collect and consolidate bibliographic data, mainly in Japanese, held by e-book publishers, making it available to the general public. The prototype version was released on October 30, 2023.

Title Lists (JUSTICE)



This service enables sharing of title lists of electronic resource product packages submitted to the Japan Alliance of University Library Consortia for E-Resources (JUSTICE) by publishers, academic societies, and other bodies. Title Lists (JUSTICE) was released for trial operation on December 26, 2023. Of the proposals submitted to JUSTICE for 2024 agreements, the title lists will be shared for 120 files (11 publishers) that have been approved for publication. (As of March 31, 2024)

Digital Archives

https://reo.nii.ac.jp/index_en.html

NII is engaged in the following activities to store and provide digital scientific information on a permanent basis.

NII-REO: NII Repository of Electronic Journals and Online Publications

Back issues of online journals outside Japan (approximately 4.17 million records) and electronic collections in the field of humanities and social sciences (approximately 660,000 records) are stored on NII servers and provided to universities in Japan.
Electronic resources archived in NII-REO are maintained in collaboration with the Japan Alliance of University Library Consortia for E-Resources (JUSTICE).

Archived contents

(as of the end of March 2024)

Online journal archives	Years covered	Coverage
Springer Online Journal Archive	1832-1999	Journal titles: Approx. 1,100; Number of records: Approx. 2 million
Springer Lecture Notes in Computer Science	1973-1999	Titles: 1,501
Oxford Journal Archive Collection	1849-2003	Journal titles: 311; Number of records: Approx. 640,000
Kluwer Online	1997-2005	Journal titles: Approx. 800; Number of records: Approx. 350,000
IEEE Computer Society Digital Library (CSDL)	1988-2011	Journal titles: 30; Number of records: Approx. 350,000
Taylor & Francis Online Journals Classic Archives (science and engineering collection in three fields)	1798-1996	Journal titles: 124; Number of records: Approx. 220,000
Springer Journal Archive	1909-1999	Journal titles: 70; Number of records: Approx. 80,000
Springer Lecture Notes in Computer Science(Vol. 1501- Vol. 1760)	1998-2003	Journal titles: 259
Humanities and social sciences electronic collection	Years covered	Coverage
Nineteenth / Twentieth Century House of Commons Parliamentary Papers (19c HCPP & 20c HCPP)	1801-2004	Number of records: Approx. 186,000
Eighteenth Century House of Commons Parliamentary Papers (18c HCPP)	1660-1834	Number of records: Approx. 58,000
The Making of the Modern World:Goldsmiths'-Kress Library of Economic Literature (MOMW)	1450-1850	Number of records: books, 61,000; periodicals, 445
The Making of the Modern World, Part II (MOMW II)	1851-1914	Number of records: Approx. 5,000
Eighteenth Century Collections Online	1701-1800	Number of records: Approx. 180,000
Early English Books Online	1475-1700	Number of records: Approx. 130,000
America's Historical Imprints Series I:Evans	1639-1800	Number of records: Approx. 38,000
The Making of the Modern World Part III (MOMW III)	1890-1945	Number of records: Approx. 5,500

Promoting Scholarly Communication

https://www.nii.ac.jp/sparc/en/

SPARC Japan

Since FY2003, SPARC Japan has been working together with academic societies and university libraries in Japan, in collaboration with SPARC (USA) and SPARC Europe, to promote the digitization and internationalization of academic journals published by academic societies and other organizations in Japan, to help improve international standards for scholarly communication, and at the same time to promote the wider dissemination of the achievements of academic, scientific, and technological research in Japan.

In particular, the SPARC Japan Seminars promote open access and open science by addressing the latest issues relating to scientific information distribution in Japan and abroad, and by serving as a forum for exchange between scientific information stakeholders.
SPARC Japan also continues to collaborate on international initiatives (arXiv.org, CLOCKSS, SCOAP³).

Education and Training Services

https://contents.nii.ac.jp/hrd

We offer education and training services such as those below to develop human resources in universities and other institutions who work on academic information infrastructures in Japan.

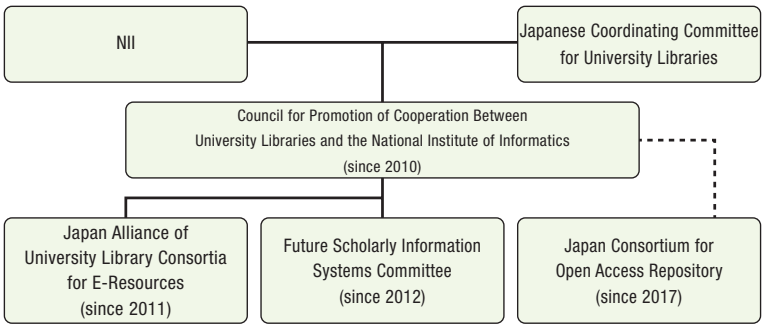
- Training courses (NACSIS-CAT/ILL self-learning/Self-learning materials on research data management)
- Specialized training courses (bibliography creation for catalog systems, information processing technology seminars)
- Comprehensive training (NII on-the-job training, comprehensive IT training for university librarians), etc.

Collaboration with University Libraries

https://contents.nii.ac.jp/cpc

Council for Promotion of Cooperation Between University Libraries and the National Institute of Informatics

NII entered into an agreement with the Japanese Coordinating Committee for University Libraries to promote services in collaboration with university libraries. The Council for Promotion of Cooperation Between University Libraries and the National Institute of Informatics was established under this agreement. The Council, together with the Japan Alliance of University Library Consortia for E-Resources and the Future Scholarly Information Systems Committee established under it, carries out collaborative and cooperative services related to digital materials and scholarly communication.
The Council has also partnered with the Japan Consortium for Open Access Repository for services related to institutional repositories.



Japan Alliance of University Library Consortia for E-Resources

https://contents.nii.ac.jp/en/justice

JUSTICE: Japan Alliance of University Library Consortia for E-Resources

One of the world's largest consortia of over 500 participating national, public, and private university libraries, with the aim of implementing a range of activities that provide stable uninterrupted access to scientific information from online journals and other resources.
NII established the JUSTICE Secretariat in the Library Liaison Cooperation Office to support the activities carried out by JUSTICE, with a full-time staff on loan from university libraries.

Future Scholarly Information Systems Committee

https://contents.nii.ac.jp/korekara

The Committee was established with the aim of further promoting activities related to the building, management, sharing, and provision of platforms for scholarly information resources. The Committee is composed of university library staff recommended by national, public, and private university library associations and councils, experts, and NII staff. In addition to identifying the various issues that are relevant to the future of scholarly information systems, the Committee also reviews future visions of systems and their operating communities, as well as plans to achieve these visions.
NII participates as a committee member and provides support for its activities by taking up the secretariat role for the Committee.

User Group Management Working Group

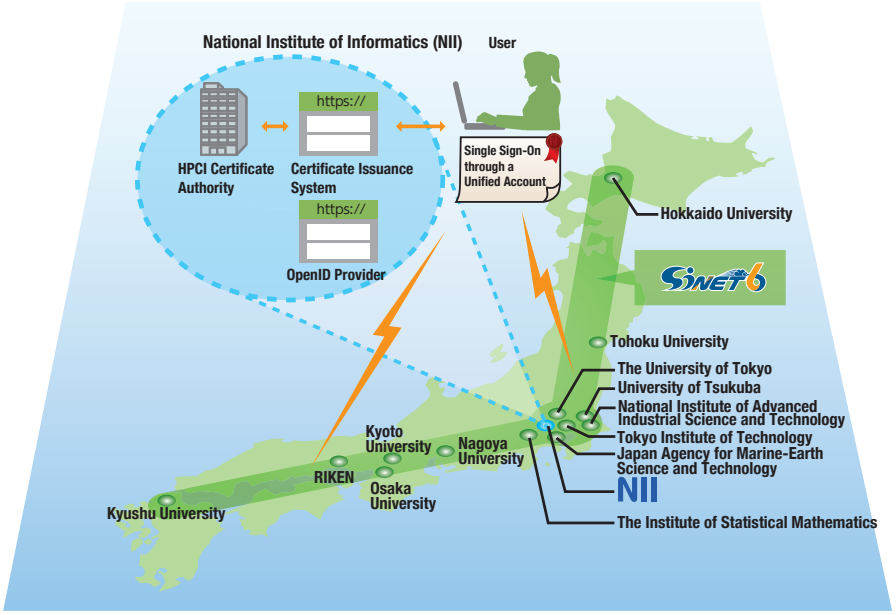
This working group manages online forums (Discord) and organizes events (e.g., workshops, seminars) to facilitate the smooth operation of online user groups. These allow the institutions using library system networks and their library staff to freely exchange information and opinions.

Working Group for Examination System Workflows

This working group performs four tasks: (1) examination of integrated discovery environments, (2) examination of data sharing of digital information resources, (3) examination of advanced metadata distribution, and (4) ERDB-JP operations work.The working group consists of university library staff and others in charge of contracts, management, and provision of electronic resources, or of cataloging work.

Operating and Maintaining the Authentication Infrastructure for the High Performance Computing Infrastructure (HPCI)

HPCI connects supercomputers and storage systems installed at universities and research institutes across Japan, with the supercomputer Fugaku installed in Kobe at its core. This creates a revolutionary shared computing infrastructure that meets the diverse needs of a wide range of users, including the industrial sector. The third phase of the project began in FY2022. HPCI has an authentication system that allows users to gain access to any computing resource by using a unified login account, and offers users a platform that is easy to use. In collaboration with universities and research institutes nationwide, NII continues its work started in the first phase of the project, operating and maintaining the authentication system that forms the core of the unified account authentication, which includes a certification authority and certificate issuance system. NII plays a central role in researching rapidly advancing authentication infrastructure technologies and international trends in usage. From FY2024, we are offering a single sign-on environment allowing users to access HPCI supercomputers and storage resources using Access Tokens (OAuth 2.0) instead of X.509 and proxy certificates (GSI). The Science Information NETwork (SINET) takes over the responsibility of providing the essential high-speed network infrastructure for linking supercomputers in remote areas and sharing massive amounts of experimental data and calculation results.



NII Library: Contributing to Informatics Research and Education

As a facility for informatics research and education, the NII Library provides online journals, as well as books, journals, and other resources, in the field of informatics. Moreover, the Library is under a mutual library use agreement with the neighboring Meiji University Library, in order to provide access to references for graduate students of SOKENDAI.

Number of books and journal titles

(as of the end of March 2024)

Reference type	Books	Print journals	Journals (number of titles)
Japanese	15,635	10,044	57
Foreign	9,542	267	5
Total	25,177	10,311	62

Major online journals and databases

Service	Publisher
ACM Digital Library	Association for Computing Machinery
APS-ALL Package	American Physical Society
IEEE/IET Electronic Library	IEEE/IET
IOP	IOP Publishing
OUP	Oxford University Press
Nature	Springer Nature
Science	American Association for the Advancement of Science
ScienceDirect	Elsevier B.V.
Scopus	Elsevier B.V.
Springer eBook	Springer Nature
SpringerLink	Springer Nature
Web of Science	Clarivate Analytics
Wiley Online Library	John Wiley & Sons, Inc.
IEICE	Institute of Electronics, Information and Communication Engineers
IPSJ Digital Library	Information Processing Society of Japan

Facilities and equipment

Available service	Reading room	Stack room
Area	140 m²	151 m²
Seats	10	—
Others	Automated book lending/returning machine	
	Copier	

Reading room

Public Communications

Promoting public awareness of NII's research and projects

To share the latest research findings in informatics with society at large and to help people understand its projects and services more deeply, NII opens its laboratories to the public, offers public lectures, runs on-site classes for high school and technical college students, participates in exhibitions, and publishes public relations materials.
To disseminate information in a timely manner, NII also makes use of digital online media such as the NII website, email newsletters, and social media platforms (Twitter and Facebook).

NII Open House

NII holds an annual "Open House" to offer presentations of its wide-ranging research activities and findings to the general public, as well as to interested researchers and prospective graduate school students.
In FY2023, our Open House was held as an in-person event for the first time in four years. Research results were shared through live-streamed lectures and seminars, as well as the highly rated tours of poster sessions. The event also featured the Computer Science Park, allowing children to experience programming in a fun way using mathematics, dance, and robots.

Poster session by researchers at NII Open House 2023 (top row)
Computer Science Park for children to learn about programming thinking (bottom row)

Public Lectures

NII holds free lectures for the general public.

■Public lectures: "Frontiers of Informatics"

https://www.nii.ac.jp/event/shimin/

Free public lectures are given by NII researchers on various topics related to informatics, in order to explain the frontiers of informatics to the general public. A total of six lectures were held in FY2023: four hybrid lectures (in-person and on-demand) and two on-demand lectures aimed at high-school students. Videos, materials, and Q&As from past lectures are available on the NII website.

→ In this program, researchers explain their specialized topics of study for the public in an easy-to-understand way.

■Karuizawa Saturday Salon

https://www.nii.ac.jp/event/karuizawa/

Lectures on informatics and many other fields are held at the International Seminar House for Advanced Studies in Karuizawa, Nagano Prefecture several times a year for local residents.
Three lectures were held in FY2023. A portion of the contents of past lectures has been published in six volumes of the "Collection of Lectures from the Karuizawa Saturday Salon: Harmony of Intelligence and Beauty" and the archives of the Karuizawa Saturday Salon are available to the public.

Exhibitions

NII participates in various exhibitions to offer presentations of its research, projects, and services. In FY2023, NII held three online forums over three days at the Library Fair and Forum, which was held as a hybrid event.

Special Classes at High Schools and Technical Colleges

NII researchers visit high schools and technical colleges to present the latest research findings in simple terms. The aim is to bring informatics closer to the students, who will be responsible for our future, and foster their interest in informatics. (The events were canceled in FY2022.)

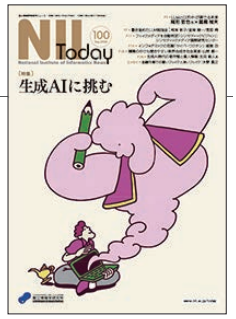
Publications

■NII Series (Japanese)

A new commercially available publication (Maruzen Library) that introduces and explains the contents of NII's research to the general public in an accessible way using familiar topics. The latest issue is "Facing the New Landscape of Software Crafting" published in January 2024. (Also available as an e-book)

■Public Information Magazines

- NII Today (Japanese/English)
  https://www.nii.ac.jp/en/about/publications/today/
- Overview of National Institute of Informatics (Japanese/English)
- Summary of National Institute of Informatics (Japanese/English)



The public information magazine, NII Today, is issued four times a year.

- Annual Report of the National Institute of Informatics
- NII SEEDs
- Getting to Know NII (Info Dog "Bit-kun")

Digital Media (Japanese except Website)

■Website (English) https://www.nii.ac.jp/en/
Visit the website for details of events and publications.

■YouTube channel https://www.youtube.com/user/jyouhougaku
Watch videos of lectures and research presentations.

■Email newsletter https://www.nii.ac.jp/mail/

■Twitter
Official NII account (@jouhouken) https://twitter.com/jouhouken
Johoken Bit-kun https://twitter.com/NII_Bit

■Facebook https://www.facebook.com/jouhouken

Fiscal 2023 News Releases

(April 1, 2023 to April 1, 2024)

Release date	Title
April 7 2023	Mechanisms for cross-disciplinary discovery and use of data Field demonstration of CADDE with release of external specifications and other documents
May 2	NII Weeks 2023 to showcase a broad range of NII's activities! NII Open Forum (May 29–31), NII Open House (June 2 & 3), and Japan Open Science Summit (June 19–23) to be held in quick succession
May 15	Learning programmatic thinking at NII on Saturday June 3 Computer Science Park to be held in-person in Chiyoda-ku, Tokyo
May 23	Three keynote speeches on generative AI at NII Open House on June 2 The latest in fake media detection technology, along with a wide range of other recent research
May 24	NII offers licenses for SYNTHETIQ VISION, its software tool for automatically detecting the authenticity of facial images NII seeks partners to spread the benefits of its latest AI research findings
June 12	NII leads effort to offer open access to database of teaching materials on quantum technology NII collaborates on human resource development in quantum technology with Kyushu University, Keio University, Nagoya University, and The University of Tokyo
Oct. 18	Large open database of administrative division changes (of historical place names) created Enhanced machine-readable Encyclopedia of Japanese Historical Place Names developed with publisher Heibonsha Cartographic Publishing
Oct. 20	Large language model "LLM-jp-13B" with 13 billion parameters developed NII-hosted LLM Study Group (LLM-jp) releases initial results to contribute to academic and industrial R&D
Oct. 23	LINE stickers and LINE emojis of Bit-kun, the mascot character of NII, go on sale
Oct. 30	World record data transmission of 1.2 Tbps per optical wavelength over a distance of 336 km in a field trial
Nov. 27	Foujita used three different types of white that fluoresce into red, green, and blue with UV light Fluorescence spectroscopy uncovers the secrets of the skin textures painted by artist Leonard (Tsuguharu) Foujita
Dec. 7	AI that infers biological sex from fundus images publicly released Potential for better understanding sex differences in ocular diseases
Dec. 18	Quantum Academy of Science and Technology upgrades online lecture delivery NII promotes human resource development in quantum technology with Kyushu University, Keio University, Nagoya University, and The University of Tokyo
Jan. 19 2024	Estimating the material and appearance inside inspection objects based on silhouettes captured by carbon nanotube eyes Nanoscience and IT combine to break barriers in nondestructive inspection technology
Jan. 30	Latest edition of NII series, "How to Deal with Software Creation Today" published
Feb. 29	Enhanced database of teaching materials on quantum technology – Collaboration with Kyushu University, Keio University, Nagoya University, and the University of Tokyo to promote training in quantum technology
Mar. 1	PtM: System to create video teaching materials with synthesized voices – Start of demonstration testing
Mar. 4	New features added to GakuNin RDM data analysis function – MATLAB enables more advanced numerical analysis
Mar. 18	Project Selected by JST & ANR for Japan-France SICORP "Edge AI" – Accelerating R&D of AI-based autonomous wireless access control technology
Mar. 27	Collaboration agreement between NII and OpenAIRE – Working together to advance research and development of research infrastructures and helping to promote Open Science
Mar. 28	At the cutting edge of academic search infrastructure research and development – Launch of CiNii Labs site
Apr. 1	Research and Development Center for Large Language Models established at NII – Accelerating R&D to develop domestic LLMs and ensure transparency and reliability of generative AI models
Apr. 1	Center for Trust & Digital Identity Infrastructure Research and Development established at NII

Titles, affiliations, etc., listed above are current at the time of publication of the news release.

Organization

- Director-General
  - Assistant Director-General
  - Administrative Council
  - Advisory Board
- Vice Director-General
- Research Strategy Office (incl. URA)
  - Global Liaison Office
- Support Office for Women Researchers
- Silicon Valley Office (JETRO Joint Project)
- Research Divisions
  - Principles of Informatics Research Division
  - Information Systems Architecture Science Research Division
  - Digital Content and Media Sciences Research Division
  - Information and Society Research Division
- Research Centers
  - Services and Operations
    - Research and Development Center for Academic Networks
    - Research Center for Knowledge Media and Content Science
    - GRACE Center: Center for Global Research in Advanced Software Science and Engineering
    - Research Center for Community Knowledge
    - Center for Cloud Research and Development
    - Center for Dataset Sharing and Collaborative Research
    - Center for Strategic Cyber Resilience Research and Development
    - Research Center for Open Science and Data Platform
    - Center for Research Data Ecosystem Development
    - Center for Trust & Digital Identity Research and Development
  - Major Research Projects
    - Global Research Center for Quantum Information Science
    - Global Research Center for Big Data Mathematics
    - Research Center for Mathematical Trust in Software and Systems
    - Research Center for Medical Bigdata
    - Global Research Center for Synthetic Media
    - Research and Development Center for Large Language Models
  - Collaboration with Industry, Government, and Academia
    - Center for Advanced Mobile Driven Research
- Office for Inter-Organizational Collaboration on R&D
  - Board for Scientific Research Digital Platform
- Cyber Science Infrastructure Development Department
  - Academic Infrastructure Division
    - Administration Team; SINET Team; Authentication Infrastructure and Cloud Promotion Team; NII-SOCS Team; LAN and CSIRT Team
    - SINET Promotion Office; Academic Authentication Systems Office; Cloud Promotion Office
  - Scholarly and Academic Information Division
    - Library Support Team; Academic Content Team; Research Data Cloud Team
    - Content System Development Office
  - Library Liaison Cooperation Office
  - Advanced ICT Center
- General Affairs Department
  - Planning Division
    - Planning Team; International Affairs and Education Support Team; Publicity Team
    - Office for Social Collaboration
      - Collaboration Support Team; Big Project and Intellectual Property Team
  - General Affairs Division
    - General Affairs Team; Personnel Affairs Team
  - Budget and Accounts Division
    - Finance and Accounting Team; Procurement Team
- NII Library

Silicon Valley Office (JETRO Joint Project)

In May 2017, NII and the Japan External Trade Organization (JETRO) jointly established an office in Silicon Valley. This new office carries out studies and identifies international needs that will lead to the use and commercialization of NII's research findings in North America, particularly the West Coast. Using the resulting information gathered, it is also expected to conduct initiatives that will bring and develop NII's research achievements overseas. The office also manages joint research contracts between NII and overseas corporations, universities, research groups, and other organizations, as well as providing administrative support to international conferences and exhibitions held in neighboring areas.

Executives

Director-General KUROHASHI, Sadao

Acting Director-General/ Vice Director-General KATAOKA, Hiroshi

Vice Director-General URUSHIDANI, Shigeo

Vice Director-General TAKASU, Atsuhiro

Vice Director-General SUGIMOTO, Akihiro

Vice Director-General AIZAWA, Akiko

ViceDirector-General/ (Chief Cyber Science Infrastructure Director) YASUURA, Hiroto

Director, Principles of Informatics Research Division TAKEDA, Hideaki

Director, Information Systems Architecture Science Research Division JI, Yusheng

Director, Digital Content and Media Sciences Research Division SATOH, Shin'ichi

Director, Information and Society Research Division ECHIZEN, Isao

GLO Deputy Director PLANAS, Emmanuel

■Cyber Science Infrastructure Development Department

General Manager AIDA, Kento

Deputy General Manager HOSOKAWA, Seiji

◇Academic Infrastructure Division
Manager TAKANO, Shinji

◇Scholarly and Academic Information Division
Manager YOSHIDA, Yukinae

◇Library Liaison Cooperation Office
Head NARISAWA, Megumi

◇Advanced ICT Center
Director FUKUDA, Kensuke

■General Affairs Department

General Manager HIRATSUKA, Shoji

◇Planning Division
Manager YANAGI, Shinsuke

◇General Affairs Division
Manager DOI, Mitsuhiro

◇Budget and Accounts Division
Manager TAHARA, Yuji

■NII Library

Head SUN, Yuan

Staff Numbers

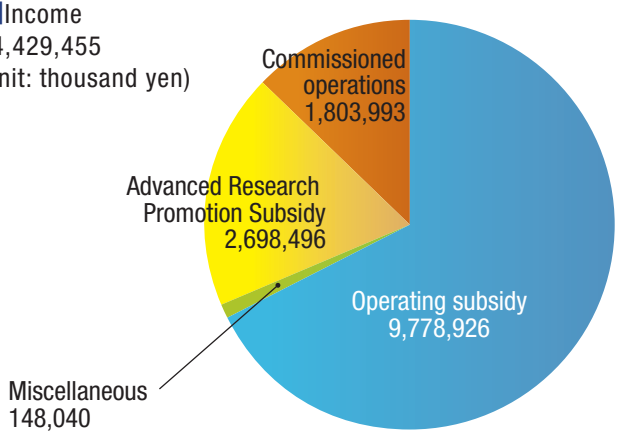
(as of April 2024)

Category	Director-General	Vice Director-General	Assistant Director-General	Professor	Associate Professor	Lecturer	Assistant Professor	Subtotal	Administrative Staff	Total
Full-time staff	1	5	0	31	23		14	74	71	145
Project professor, etc.		1		10	10		11	32		32
Special term/fixed-term/short-term staff										353

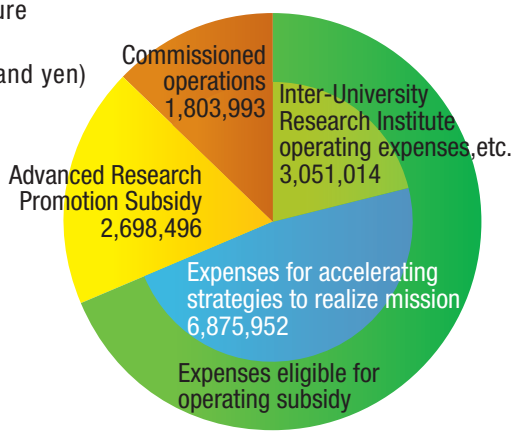
Budget

(FY2024)

■Income
14,429,455
(unit: thousand yen)



■Expenditure
14,429,455
(unit: thousand yen)



Administrative Council

Conducts deliberations on important matters concerning the management and operation of NII, such as the selection of candidates for the post of Director-General and for research and academic staff, and joint research planning, as well as matters concerning NII in the medium-term targets and plans of the Research Organization of Information and Systems (ROIS).

Advisory Board

Composed of Japanese and overseas experts external to NII who possess deep and extensive knowledge of academic information. The Board responds to inquiries from the Director-General regarding issues involving research on informatics, as well as development and maintenance o f infrastructure for communicating scholarly information.

Professors Emeriti

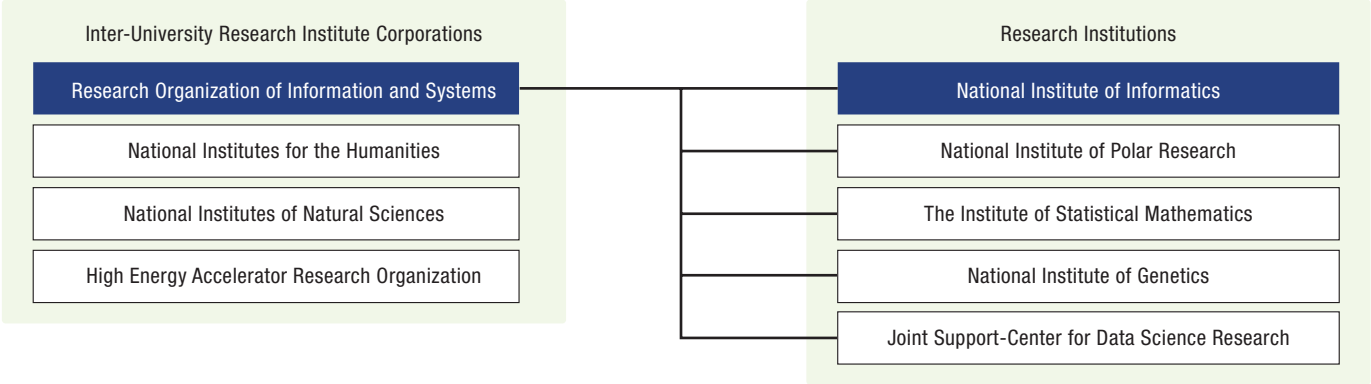
National Institute of Informatics (NII)

Name	Award date
SAWA, Takamitsu	April 1, 2002
NAITO, Eisuke	July 2, 2002
YAMAMOTO, Takeo	April 1, 2005
SUEMATSU, Yasuharu	April 1, 2005
UENO, Haruki	April 1, 2007
MARUYAMA, Katsumi	April 1, 2010
NEGISHI, Masamitsu	April 1, 2010
MIURA, Kenichi	April 1, 2011
ASANO, Shoichiro	April 1, 2013
KOYAMA, Teruo	April 1, 2015
MIYAZAWA, Akira	April 1, 2015
YAMADA, Shigeki	April 1, 2015

Name	Award date
YAMAMOTO, Yoshihisa	April 1, 2015
SONEHARA, Noboru	April 1, 2017
ADACHI, Jun	April 1, 2018
HONIDEN, Shinichi	April 1, 2018
NAKAJIMA, Shin	April 1, 2021
HAYAMI, Ken	April 1, 2021
TAKANO, Akihiko	April 1, 2022
HASHIZUME, Hiromichi	April 1, 2022
KITSUREGAWA, Masaru	April 1, 2023
YONEDA, Tomohiro	April 1, 2023
OYAMA, Keizo	April 1, 2023
SATOH, Ken	April 1, 2024

Inter-University Research Institute Corporations

NII is one of the institutions operating under the auspices of the Research Organization of Information and Systems (ROIS).
Inter-university research institute corporations are “research institutes for shared use among all universities” in different research fields. Unique to Japan, these research institutes offer state-of-the-art large-scale equipment that is difficult to install and maintain individually at the university level, as well as access to vast quantities of academic data, other valuable resources, and analytical techniques for the use of researchers across Japan, free of charge, in order to promote original collaborative research that exceeds the purview of individual universities.
ROIS aims to carry out holistic studies across different disciplines by framing important issues of the 21st century related to complex phenomena, such as life, the Earth, the natural environment, and human society, from the perspective of information and systems.



Month/year	Event
October 1973	Ministry of Education, Science, Sports and Culture proposes an "Improved Circulation System for Academic Information" in the Third Report (Basic Policies for the Promotion of Scholarship) of the Science Council.
May 1976	Research Center for Library and Information Science (RCLIS) is established at the University of Tokyo.
November 1978	"A New Plan for Academic Information Systems" is presented to the Science Council by the Minister of Education, Science, Sports and Culture. The Science Council issues a response in January 1980.
April 1983	Center for Bibliographic Information is established at the University of Tokyo, with the reorganization of the Research Center for Information and Library Science.
December 1984	The NACSIS-CAT catalog information service is launched.
April 1986	National Center for Science Information Systems (NACSIS) is established, with the reorganization of the Center for Bibliographic Information, the University of Tokyo.
	Launch of education and training program (catalog system seminars, etc.)
April 1987	The Science Information NETwork (SINET) is launched.
April	The NACSIS-IR information search service is launched.
April 1988	Email service is launched.
January 1989	International connection between SINET and US (National Science Foundation: NSF)
January 1990	International connection between SINET and the UK (British Library: BL)
April 1992	The Inter-Library Loan (ILL) System is launched.
April	The Internet backbone (SINET) is launched.
November 1993	Start of mutual access to databases through gateways with the Japan Information Center of Science and Technology (JICST)
April 1994	Start of ILL service with the British Library Document Supply Centre (BLDSC)
November	Chiba Annex (Inage-ku, Chiba City) is built.
October 1995	International connection between SINET and Thailand
April 1996	Start of ILL service with the National Diet Library
March 1997	International Seminar House for Advanced Studies, Inose Lodge (Karuizawa, Nagano Prefecture) is established.
April	Electronic Library Service is launched.
December	An Advisory Panel on a Core Institution for Scientific Research in the Information Field is established by the Ministry of Education, Science, Sports and Culture.
January 1998	A proposal entitled "Promoting Computer Science Research" is published by the Science Council of Japan, calling for the establishment of a core institution for inter-university research in informatics.
March	Advisory Panel on a Core Institution for Scientific Research in the Information Field issues its report.
April	Coordination Office is established for the Core Institution for Scientific Research in the Information Field; committee is formed in May.
March 1999	Coordinating Committee of the Core Institution for Scientific Research in the Information Field issues its report.
April	Preparatory Office is established for the Core Institution for Scientific Research in the Information Field; committee is formed in May.
July	Preparatory Committee of the Core Institution for Scientific Research in the Information Field issues its interim report.
February 2000	Operations move to the National Center of Sciences (Hitotsubashi, Chiyoda-ku, Tokyo).
March	Preparatory Committee of the Core Institution for Scientific Research in the Information Field issues its final report.
April	National Institute of Informatics (NII) is established, with the reorganization of NACSIS and assumption of its functions.
January 2002	SuperSINET is launched.
April	Ph.D. Program in Informatics is established in the Department of Informatics, Graduate University for Advanced Studies.
April	GeNii (NII Academic Contents Portal) is released.
April	Japan–U.S. document delivery service is launched.
June	Intersystem linkage of catalogs with RLG in the U.S. is launched.
September	Research Planning and Promotion Strategy Office is founded.
October	International Course is established within Ph.D. Program in Informatics.
October	Start of joint construction of meta-databases
January 2003	Global Liaison Office is formed.
April	Initiation of Project to Improve Infrastructure for International Circulation of Scholarly Information
April 2004	NII begins a new chapter as a member of the new Inter-University Research Institute Corporation/Research Organization of Information and Systems.
April 2005	Official service of GeNii (the NII Scholarly and Academic Information Navigator) is launched.
June 2007	Science Information NETwork3 (SINET3) is launched.
April 2009	NII Scholarly and Academic Information Navigator (CiNii) and the KAKEN database of Grants-in-Aid for Scientific Research are revamped. Japanese Institutional Repositories Online (JAIRO) is officially launched.
October 2010	Agreement to promote collaboration and cooperation between the Japanese Coordinating Committee for University Libraries (JULIB) and the National Institute of Informatics (NII).
February 2011	First NII Shonan Meeting takes place.
April	Science Information NETwork4 (SINET4) is launched.
April	Library Liaison Office is established.
November	CiNii Books is launched.
April 2012	Japanese Institutional Repositories Online Cloud (JAIRO-Cloud) is launched.
October 2015	CiNii Dissertations is launched.
April 2016	Science Information NETwork4 (SINET5) is launched.
December 2018	Operation of Wide-area Data Collection Infrastructure (Mobile SINET) is launched.
March 2019	World's first round-the-globe ultra-high-speed 100 Gbps academic communications network is built.
December	NII begins operating 400 Gbps Tokyo-Osaka link of SINET5.
October 2020	Kashiwa Annex is established in Kashiwa City, Chiba Pref.
February 2021	GakuNin RDM is officially launched.
March	JAIRO Cloud (WEKO3) prior migration is completed.
April	CiNii Research is officially launched.
June	GakuNin LMS is officially launched.
November	Japan Data Catalog for the Humanities and Social Sciences (JDCat) is launched.
April 2022	Science Information NETwork (SINET6) is launched.
April	Scientific Research Digital Platform begins full-scale operation.
January 2023	New catalog information service (NACSIS-CAT/ILL) starts operating.
October	JAIRO Cloud (WEKO3) full migration is completed.

Facilities and Locations

National Center of Sciences (Chiyoda-ku, Tokyo)

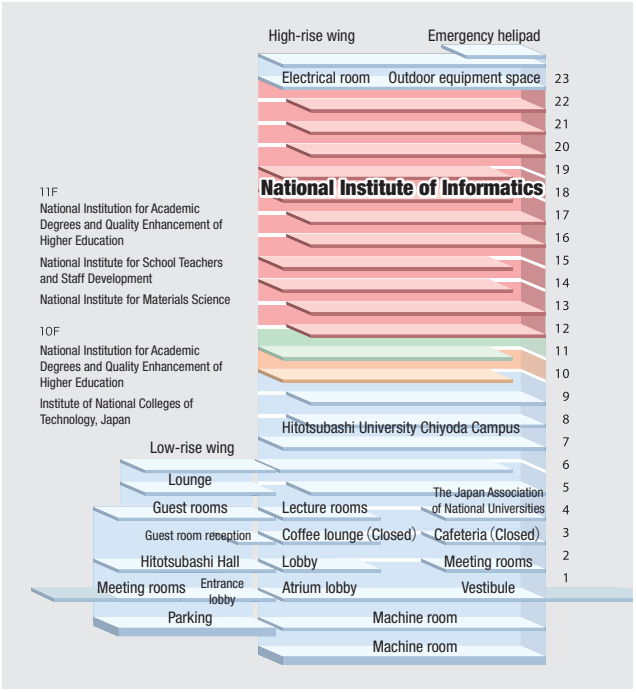
https://www.nii.ac.jp/en/

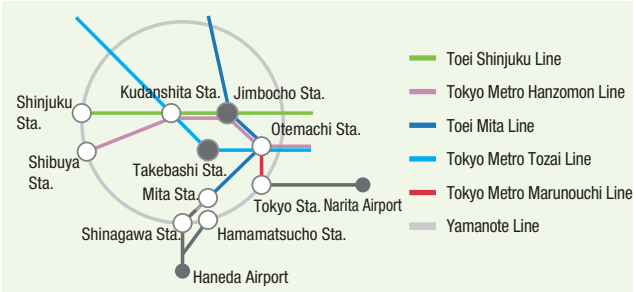
The National Center of Sciences was built as a center for research in informatics and other fields, academic exchange, dissemination of scientific information, and social collaboration, with the aim of expanding and strengthening Japan's academic research infrastructure. Construction was completed in December 1999.
The high-rise wing is primarily occupied by three institutions: NII, Hitotsubashi University Chiyoda Campus, and the National Institution for Academic Degrees and Quality Enhancement of Higher Education. The Center aims to provide an advanced base for intellectual creativity through the comprehensive interaction of the various academic capacities of each institution.
Conference facilities such as Hitotsubashi Hall are located in the low-rise wing. These facilities accommodate a wide variety of events such as international and academic conferences, lectures, and meetings organized by national universities and other institutions.

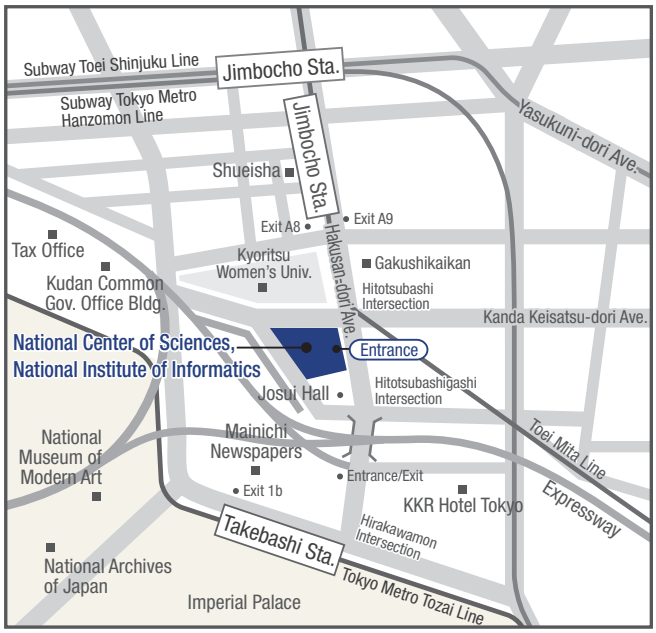
National Center of Sciences

National Institute of Informatics

National Center of Sciences Bldg.
2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo, 101-8430 Japan
Tel: +81-3-4212-2000 (exchange)
■Site area: 6,842 m² (occupied by NII: 3,036 m²)
■Floor space: 40,585 m² (occupied by NII: 18,145 m²)







Kashiwa Annex (Kashiwa City, Chiba Prefecture)

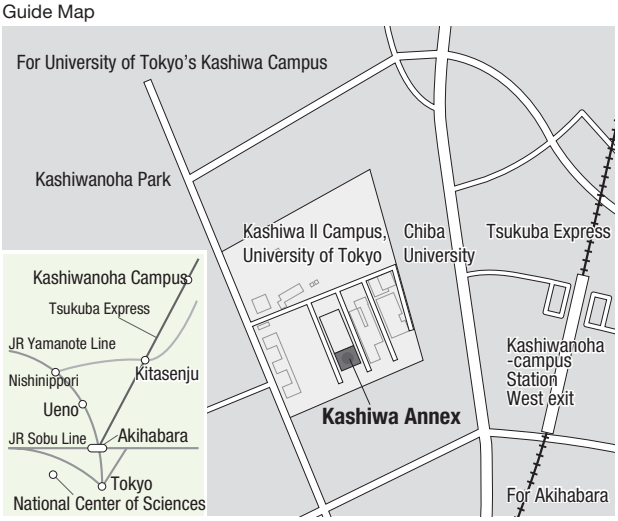
The Annex was completed in October 2020 on the University of Tokyo's Kashiwa II Campus as a facility to house equipment for various academic information services provided by NII, including the Science Information NETwork (SINET), and to serve as a center for NII's research and development.
The facility is to be used for seeking further improvement in research results by establishing it as part of the University of Tokyo's research complex for joint studies and collaborations.

Exterior of Kashiwa Annex

Kashiwa Annex

6-2-3 Kashiwanoha, Kashiwa City, Chiba, 277-0882 Japan
Tel: +81-4-7135-1640 (switchboard)
Of the building's total floor space of 10,672 ㎡, NII occupies 3,886 ㎡ for its exclusive use

Guide Map



International Seminar House for Advanced Studies (Karuizawa, Nagano Prefecture)

https://www.nii.ac.jp/access/karuizawa/

Inose Lodge

The International Seminar House for Advanced Studies (Inose Lodge) was completed in May 1997 on land donated by Dr. INOSE, Hiroshi, the first Director-General of NII. His wish was to create an ideal place for interdisciplinary and international studies and discussions.

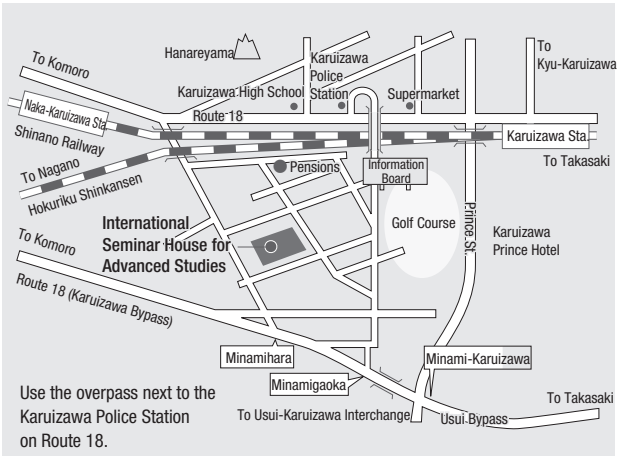
Uses
1. Domestic and international academic conferences, seminars, etc.
2. Public lectures, social gatherings, etc.
3. Research and training of NII researchers and staff

Exterior of Seminar House

International Seminar House for Advanced Studies Inose Lodge

1052-471 Okan Minamihara, Nagakura,
Karuizawa-machi, Kitasaku-gun, Nagano, 389-0111 Japan
Tel. +81-267-41-1083; Fax +81-267-41-1075
■Site area: 3,339 m² ■Floor space: 667 m²

Guide Map



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August, 2024

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