## Contact List

<table>
<thead>
<tr>
<th>Catalog Content</th>
<th>Contact</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kakenhi (p.22)</td>
<td>Planning Division, Office for Social-Collaboration Support Team</td>
<td><a href="mailto:kaken@nii.ac.jp">kaken@nii.ac.jp</a></td>
</tr>
<tr>
<td>Collaborative Research Promotion (p.25)</td>
<td>Planning Division, Office for Social-Collaboration Support Team</td>
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</tr>
<tr>
<td>Academic Consultation by Researchers (p.27)</td>
<td>Planning Division, Office for Social-Collaboration Support Team</td>
<td><a href="mailto:kaken@nii.ac.jp">kaken@nii.ac.jp</a></td>
</tr>
<tr>
<td>Intellectual Property (p.26)</td>
<td>Planning Division, Office for Social-Collaboration</td>
<td><a href="mailto:chizai@nii.ac.jp">chizai@nii.ac.jp</a></td>
</tr>
<tr>
<td>Top SE (p.24)</td>
<td>GRACE Center</td>
<td><a href="mailto:gracet@nii.ac.jp">gracet@nii.ac.jp</a></td>
</tr>
<tr>
<td>International Exchange (MOU) (p.29)</td>
<td>Planning Division, International Affairs and Education Support Team</td>
<td><a href="mailto:international@mou.nii.ac.jp">international@mou.nii.ac.jp</a></td>
</tr>
<tr>
<td>3rd International Internship Program (p.31)</td>
<td>Office of NI-Shonan Meetings</td>
<td><a href="mailto:shonan-meetings@nii.ac.jp">shonan-meetings@nii.ac.jp</a></td>
</tr>
<tr>
<td>International Exchange (IAAM, JFLP) (p.31)</td>
<td>Planning Division, International Affairs and Education Support Team</td>
<td><a href="mailto:international@iaam.nii.ac.jp">international@iaam.nii.ac.jp</a></td>
</tr>
<tr>
<td>Graduates Program (p.33)</td>
<td>Planning Division, International Affairs and Education Support Team</td>
<td><a href="mailto:international@iaam.nii.ac.jp">international@iaam.nii.ac.jp</a></td>
</tr>
<tr>
<td>Science Information NETwork (p.37)</td>
<td>Academic Infrastructures Division, SNET Promotion Office</td>
<td><a href="mailto:support@snnet.ac.jp">support@snnet.ac.jp</a></td>
</tr>
<tr>
<td>Sakali Cloud (p.43)</td>
<td>Academic Infrastructures Division, Cloud Promotion Team</td>
<td><a href="mailto:cloud-office-support@nii.ac.jp">cloud-office-support@nii.ac.jp</a></td>
</tr>
<tr>
<td>Authentication Framework (p.41)</td>
<td>Academic Infrastructures Division, Academic Authorization Systems Office</td>
<td><a href="mailto:gakuin-office@nii.ac.jp">gakuin-office@nii.ac.jp</a></td>
</tr>
<tr>
<td>Supporting Information Security Framework via Inter-University Collaboration (p.45)</td>
<td>Academic Infrastructures Division, NI-SOCS Team</td>
<td><a href="mailto:soc-office@nii.ac.jp">soc-office@nii.ac.jp</a></td>
</tr>
<tr>
<td>Open Science (p.43)</td>
<td>Research Center for Open Science and Data Platform</td>
<td><a href="mailto:rosc-office@nii.ac.jp">rosc-office@nii.ac.jp</a></td>
</tr>
<tr>
<td>Institutional Repositories (p.44)</td>
<td>Scholarly and Academic Information Division, Institutional Repository Desk</td>
<td><a href="mailto:ir@nii.ac.jp">ir@nii.ac.jp</a></td>
</tr>
<tr>
<td>ONI (p.45)</td>
<td>Scholarly and Academic Information Division, ONI</td>
<td><a href="mailto:oni@nii.ac.jp">oni@nii.ac.jp</a></td>
</tr>
<tr>
<td>Catalog Information Services (NII-CATIL) (p.48)</td>
<td>Scholarly and Academic Information Division, CATIL</td>
<td><a href="mailto:catil@nii.ac.jp">catil@nii.ac.jp</a></td>
</tr>
<tr>
<td>SPARC Japan (p.47)</td>
<td>Scholarly and Academic Information Division, SPARC</td>
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</tr>
<tr>
<td>Education and Training Services (p.47)</td>
<td>Scholarly and Academic Information Division, Education and Training Desk</td>
<td><a href="mailto:etd@nii.ac.jp">etd@nii.ac.jp</a></td>
</tr>
<tr>
<td>NII Library (p.50)</td>
<td>Scholarly and Academic Information Division, Library</td>
<td><a href="mailto:library@nii.ac.jp">library@nii.ac.jp</a></td>
</tr>
<tr>
<td>Public Communications (p.51)</td>
<td>Planning Division, Publicity Team</td>
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</tr>
<tr>
<td>News Releases (0.57)</td>
<td>Planning Division, Publicity Team/News Releases</td>
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</tr>
<tr>
<td>Facilities and Locations (p.57)</td>
<td>General Affairs Division, General Affairs Team</td>
<td><a href="mailto:sources@nii.ac.jp">sources@nii.ac.jp</a></td>
</tr>
</tbody>
</table>
There are three basic kinds of hardship that afflict humanity. The first is natural disasters. Japan has been subjected to major earthquakes and floods quite frequently in recent years. The second hardship is epidemics. Many people have even started to feel that things will never go back to how they were. That is precisely why we need to move forward with a positive focus on the future, rather than just waiting to see what happens. The National Institute of Informatics (NII), Japan’s only academic research institute dedicated to informatics, is now proactively pushing ahead with important measures for the future, without any defensiveness at all.

An initiative that symbolizes this approach is NII’s “Next-generation Academic Research Platform,” which was rolled out for universities and research institutions in April 2022. This platform was developed by advancing and fusing the high-speed networking system and research infrastructure that NII has long operated.

Our academic research platform combines SINET6, which serves as the “lower body,” with the advanced functionality of NII-RDC, which serves as the “upper body.” As a supporting foundation for the whole of Japan’s academic community, the platform will not only contribute to world-leading research, including Nobel Prize-level investigations, but also powerfully promote interdisciplinary research and international joint research through the promotion of open science.

Furthermore, the platform will facilitate digital transformation (DX) at universities and other institutions. On top of this, it is expected to make a significant positive contribution to society through industrial applications and utilization in lifelong education and elementary and secondary schooling.

In May 2022, another important NII initiative, the “DX Symposium for Educational Institutions,” held online regularly since March 2020, was held for the 50th time. Originally, the meetings focused on sharing the lessons learned from trying to hold online classes, mainly between the seven prestigious national universities, but they soon became valuable webinars for exchanging a wide variety of knowledge about digital transformation in education, including clinical practice (hospital rounds) at medical schools and the online implementation of physical education skills. At the 45th symposium in January 2022, held as a New Year planning event, FUJII, Teruo, president of The University of Tokyo, gave a lecture in the Motsverse, an online virtual space platform. The lecture was watched live in various formats by an audience of approximately 1,700 people. Ironically, it has been the COVID-19 crisis, which has tended to weaken the connections between people, that has inspired this organic gathering to continue online for two whole years. It has turned out to be a very valuable journey.

NII has also pursued research on “security,” as system defense measures, to keep up with the latest changes in computing environments. In July 2021, NII launched the Global Research Center for Synthetic Media, which pursues research on detecting fake media and ensuring media reliability. In September 2021, NII developed “SYNTHETIC: Synthetic video detector,” a program for automatically detecting fake AI-generated facial videos. For a long time, NII has engaged in research on the generation of audio, images, and video for practical public infrastructure. Now our research findings are also being used for security measures like these.

To counter the threat of cyberattacks on SINET, the Center for Strategic Cyber Resilience Research and Development operates Security Operation Collaboration Services (SINET-SOCS), to facilitate inter-university cooperation. Since the launch of SINET6, the security functions at data centers have also become more robust. Despite the frequency of cyberattacks in recent years, NII’s network and research data infrastructure has not experienced any major disruptions.

NII is committed to making even more dynamic contributions to the public good over the coming years by applying the findings of its various kinds of informatics research to improving academic research infrastructure, all the while accelerating synergies using the feedback obtained from studies to drive further research.

One of the models for this approach is our medical big data cloud platform. This was developed by NII in response to the COVID-19 crisis, based on earlier research into medical big data infrastructure. The project began by collecting a large volume of medical images from medical institutions all over Japan, through academic societies in multiple fields of medical diagnosis and treatment. With around 300 million images, this medical big data cloud platform is internationally unrivalled. The database has powered a substantial advance in AI analysis of medical images and remote medical care. In April 2022, the work of the responsible NII research group was recognized by the Ministry of Education, Culture, Sports, Science and Technology with an Award for Science and Technology. A paper on “nature-machine intelligence” in the MIT Technology Review, the world’s oldest science and technology magazine, stated, “As of 2022, there was no practicable COVID-19 pneumonitis AI anywhere in the world.” Yet, in fact, NII had developed such an AI tool; one that was even endorsed by the Japan Radiological Society.

The key factor in successfully making such concrete contributions to a data-driven society, with a strong presence, is collecting massive amounts of data. And the essential requirements for this are an “eye” for data design and the spirit to keep on tackling new challenges. We look forward to seeing more NII breakthroughs in the years ahead.

May 2022
**Weaving Information into Knowledge**

**Informatics to Create Future Value on the Wheels of “Research” and “Service”**

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 East (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 these 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.

**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 13 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 SOKENDAI (the Graduate University for Advanced Studies), (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 and pioneering advanced fields of study. The Graduate Program at NII is carried out 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. The graduate program at NII is also actively accepting research students through the German Academic Exchange Service (DAAD) and the Japanese-French Laboratory for Informatics (JFLI). 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).

**Supporting academic research and education**

In collaboration with universities and research institutes as well as research communities, NII builds and operates the Science Information Network East (SINET). Leveraging the SINET network’s ultra-high speed, high reliability, and multifunctionality, NII works to expand and provide an authentication federation platform, cloud adoption and utilization supports, and an academic content platform, as well as to promote open science and develop a next-generation scientific research digital platform. Furthermore, NII Security Operation Collaboration Services (NII-SOCS) contribute to building the framework enabling national universities and other academic institutions to respond quickly to cyber security incidents and other issues.

**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

Aims to develop 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 information, neuroscience, quantum information, and leading-edge research that creates possibilities for discovering new principles and theories and new applications at the forefronts of these fields.

Information Systems Architecture Science Research Division

Aims 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 development of 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

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 social media platforms.

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 climate generation and recognition, machine learning and deep learning applications, among others.

Information and Society Research Division

Conducts cross-disciplinary research based on emerging information and system technologies such as big data analysis to achieve the required levels of usefulness in a cyber-physical society where the cyber-space and real-world phenomena interact more closely than before.

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

Research Centers

Established 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.

Research Center for Knowledge Media and Content Science

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

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

Research Center for Community Knowledge

Collects and analyzes the processes of forming shared knowledge among 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

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

Director: WADA, Koichi (Professor, Information Systems Architecture Science Research Division)

Research Center for Open Science and Data Platform

Contacts joint international R&D on platforms for managing, publishing, and searching research data, which will pave the way for paradigms shift in the way research is carried out towards open science, and develops these platforms jointly with universities and research institutions in Japan to encourage their use.

Director: MORI, Katsuya (Abiyoshi Professor, Information Systems Architecture Science Research Division)

Research Centers for Robust Intelligence and Social Technology

Conducts research on the development of methods and technologies for understanding, modeling, and controlling interactions in complex social systems.

Director: KITANESAKA, Misao (Director-General, PhD)
List of Researchers

Digital Content and Media Sciences Research Division

As of August 1, 2022

Associate Professor KOHACHIRO, Tetsuo
Ph.D. (Engineering)
Specialist in Information Access Technology, Bibliographic and Personal Information Retrieval Learning by Data Processing Research Themes: The technical activities of movement structures, automatic "natural language", which includes keyword internal information retrieval model, and information integration to clarify internal information that makes the interests of users in the process of acquiring and utilizing the development of data and utilization environment that contributes to the multiresearch-epochal analysis.

Assistant Professor YAMAGIHI, Junichi
Ph.D. (Engineering)
Research Center for Synthetic Media
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor ASANO, Yuta
Ph.D. (Engineering)
Research Themes: Computer vision and machine learning
Researcher: Advanced 3D computer vision using digital media, distances sensors, and other technologies.

Assistant Professor KITAMOTO, Asoh
Ph.D. (Engineering)
Specialists in 3D simulation, visualization, and digital media
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor KODAMA, Kazuya
Ph.D. (Engineering)
Research Themes: Software and data, network, and virtual reality
Researcher: Advanced 3D computer vision using digital media, distances sensors, and other technologies.

Professor SATO, Shin'ichi
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Professor ANDRES, Frederic
Ph.D. (Business & Strategic planning for the future)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Professor VENABLES, Jurgen
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor SHIMADA, Masahiro
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor MO, Hiroshi
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor WANG, Xin
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor PHANG, Yee
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor SUGIMOTO, Akhiro
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor KOHACHIRO, Tetsuo
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor WANG, Xin
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor KOHACHIRO, Tetsuo
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor ANDRES, Frederic
Ph.D. (Business & Strategic planning for the future)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor WANG, Xin
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor SUGIMOTO, Akhiro
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.

Assistant Professor KOHACHIRO, Tetsuo
Ph.D. (Engineering)
Research Themes: Specializing in the talk and characteristics of information to be described, seen, and utilizing the machine learning digital media and for new applications such as entertainment, while at the same time considering frameworks that achieve both search and analysis as to be automated by utilizing sensor technologies.
List of Researchers

Information and Society Research Division

Professor ARAI, Noriko
Director, Research Center for Community Knowledge
Ph.D., (1989)
Specialties: Information society, cooperative systems; NIAS, Artificial Intelligence; Mathematics
Research Themes: Information technology; existing information and knowledge to be shared smoothly. Research on the public and decisions of artificial intelligence starting with the question "What is a robot one to be submitted to the University of Tokyo?" (1990), issuing skills needed for the 21st century from an education-oriented science research laboratory.

Assistant Professor UEKI, Koichiro
M.D.,
Specialties: Development of next-generation information systems. Research Theme: Methods for human information processing, speech, and visual searching and retrieval algorithms. The research project for research is to create an experimental database at the University of Tokyo, and graduate school.

Professor KANDO, Noriko
Ph.D., Library and Information Science
Specialties: Evaluation of information access technologies; Information retrieval and computer systems; Cognitive research for exploratory search. Combining attitude and preferences from external factors. Research Themes: Information search systems for cases where the user cannot be accommodated. It is possible for users to know where to start. The objective is to be in a position to gather and analyze the underlying needs of a user.

Associate Professor GOTODA, Hiroshi
Ph.D., (1996)
Specialties: Development of new-generation information systems. Research Theme: Modeling, in recognition of the need to develop models using computer simulation techniques and machine learning techniques that can find what is important in any user data. For example, accounting costs for each event in the process.

Assistant Professor BONO, Mayumi
M.D.,
Specialties: Understanding and modeling intentions. Understanding computational models in multi-agent interactions. Research Theme: Creating a method for understanding intentions, and researching the diverse stages of natural language. Research on communication languages that have been created to understand natural language by focusing on the interactive behaviors of sign language, which has strong non-verbal and meaning-rich properties by providing an image of the person within the context.

Professor SATOH, Jieho
Ph.D., (2000)
Specialties: OS and networking for distributed systems including cloud computing and IoT. Research Theme: Research on multi-agent-based techniques for distributed systems, e.g., constraint-based negotiation mechanisms for distributed systems and other applications involving negotiation between computers.

Associate Professor FURUKAWA, Masako
Ph.D., Information Science
Research Theme: Building a system platform for collecting and analyzing large-scale learning data, which contains learning behavior history data from university and other online platforms. Development of learning data analysis, and educational institutions, and evaluation of learning data, and educational institutions, and evaluation of learning data.

Executive (related to research)

See p.54 for the list of Executives.
List of Researchers

Research Division

Service Division

Research Center for Open Science and Research Data Platform

- Project Assistant Professor ASAKA, Makoto
  - Specialization: Basic Knowledge Library and Data Science
  - Research Area: Open Science

Research Development Center for Academic Networks

- Project Associate Professor AKASHI, Osamu
  - Specialization: Distributed Computing Network Management/Network Architecture

Research Center for Community Knowledge

- Project Associate Professor MASUKAWA, Ryuki
  - Specialization: Information Security

Research Center of Network Science and Engineering

- Project Associate Professor KAMIO, Kenta
  - Specialization: Information Security

Research Center for Open Science and Research Data Platform

- Project Assistant Professor SHIMOYAMA, Takeshi
  - Specialization: Research Data Management Platform

Research Center for Medical Big Data

- Project Associate Professor MURAO, Kajie
  - Specialization: Medical Image Processing

Research Center for Strategic Cyber Resilience Research and Development

- Project Assistant Professor HASEGAWA, Hirokazu
  - Specialization: Cybersecurity

Service Division

Organizational Chart

National Institute of Informatics

As of August 1, 2022

Research

Graduate Program

Service

National Institute of Informatics
Major Project Involvement

Japan Science and Technology Agency (JST) PRESTO: Future Led by IoT

Security and Privacy for Cooperative Autonomous Vehicles

Principal Investigator: AOYAMA, Shunsuke, Assistant Professor, Information Systems Architecture Science Research Division

With the development of technologies for autonomous vehicles that means are of various IoT sensors and communication devices has advanced rapidly. AIoT systems have long been made by utilizing the real-time data and stored data from IoT sensors in each system. The main reason is that in the autonomous vehicle systems, the sensors are equipped with cameras, GPS receivers, and many other types of sensors. However, the data collected by these sensors may include personal privacy and personal information, such as vehicle location, vehicle speed, and vehicle identity. Accordingly, one of the important things to consider when developing an autonomous vehicle system is the privacy and security of the data. This project proposes a unified framework for analyzing the data collected from various sensors and determining the appropriate action to protect the privacy and security of the data.

JST CREST: Society 5.0 System Software Creation of System Software for Society 5.0 by Integrating Fundamental Theories and System Platform Technologies

Zero Trust IoT by Formal Verification and System Software

Principal Investigator: TAKEFUSA, Atsuhiko, Professor, Information Systems Architecture Science Research Division

In Society 5.0, sensor data from security cameras, meter and natural environment sensors, industrial sensors, and a wide range of other IoT sensors will be collected and stored in mass. The data will be processed by machine learning to create new value, e.g., increasing the quality of life, monitoring cardiac condition, and detecting urban environments in real-time. However, such IoT systems are facing a variety of cyber-security threats. Therefore, data leakage or data misuse cannot be tolerated. This project aims to develop a zero-trust system that ensures data integrity and confidentiality. The system will be designed to ensure that data is not shared with unauthorized parties and that access to data is restricted to authorized users only.

Research proposal: "Development of a cooperative autonomous vehicle with safe data sharing"

Fig. Developing a cooperative autonomous vehicle with data sharing for the creation of new urban applications

JST CREST: Team-type research to produce excellent achievements leading to scientific and technological innovation

Trust Interaction Design for Convincing Human-AI Cooperative Decision Making and its Social Penetration

Principal Investigator: YAMADA, Seiji, Professor, Digital Content and Media Science Research Division

This project aims to develop an AI system that interacts with human users to provide a persuasive argument. The AI system will be designed to understand the user's perspective and provide a compelling argument to convince the user to change their mind. The system will be tested in a simulated environment to evaluate its effectiveness.

Fig. Trust interaction design and its application

Social Information Technologies to Counter Infodemics

Principal Investigator: ECHIYOSHI, Ippei (President, Information and Society Research Division; Director, Global Research Center for Synthetic Media)

This research aims to establish global social information technologies that can help people distinguish between reliable and unreliable information. The project will develop an AI system that can analyze data from various sources, including social media, news articles, and expert opinions, to identify the reliability of information. The system will be tested in a real-world setting to evaluate its effectiveness.

Fig. Social information technologies to counter infodemics

[Reliable AI Systems] Core Technologies for Trusted Quality AI Systems

Research Director: ISHII, Akira (Professor, Information and Society Research Division; President, Global Research Center for Synthetic Media)

This research aims to develop core AI technologies that can provide reliable and trustworthy decision-making. The project will focus on developing techniques for detecting and correcting bias in AI systems, ensuring that they provide accurate and fair results. The system will be tested in various applications, including healthcare, finance, and education, to evaluate its effectiveness.

Fig. Core technologies for trusted quality AI systems
Data server

BONO Lab

RDM Platform

Managed using NII-RDC

Language annotation

Core motion extraction

Motion approximation extraction

Collection of online dialogues in Japanese and English deaf and sign language communities

Online communication

[Objective 1] Establish a technique for generating and detecting master biometric data for diverse modalities

[Objective 2] Establish a technique for "neutralizing" biometric data sets

[Objective 3] Develop a biometric data protection and utilization platform to enable biometric data utilization and prevent spoofing

Public biometric data set

Search results and generation method

Master biometric data

Master biometric data generation

No need to obtain biometric data of target

Threat of spoofing

Master biometric data detection

Manipulation of biometric data without requiring biometric data sets

Biometric data evaluation

Biometric feature measurement

Diverse applications

Biometric data "neutralization" generated from master biometric data

Preventing the spread of fake information

Automatic fact verification

Fig. 1. Framework for automated fact-checking based on deep learning

Explainable next-generation media forensics technologies based on fake media detection and automatic fact verification

Principal Investigator: YASUGUI, Junji (JST, Japan)

Principal Investigator: NOGUTA, Noriyuki (JSPS, Japan)

Project Leader (Principal Investigator): 69

Co-Investigator (Additional Institution): 59

No. of applications accepted

Amount in thousands of yen

Grants-in-Aid for Scientific Research (Kakenhi)

Grants-in-Aid for Scientific Research (A)

Research on master biometric information protection and utilization platform

With the proliferation of high-performance computers and smartphones, biometric data's ability to characterize human faces, voices, palmprints, retinas, eyes, and other characteristics can now be captured and recorded remotely and shared in cyberspace. This poses the threat of "spoofing," i.e., manipulation of biometric authentification to gain access to identity data. For this reason, spoofing was previously necessary to produce the biometric data of a person from the captured image or recorded audio, and now new advances in machine learning, it is possible to generate biometric data of a different person. This study aims to establish a multi-modal biometric data protection and utilization platform that prevents spoofing by extracting master biometric data while at the same time maintaining the usefulness of the multi-modal biometric data sets.

Grants-in-Aid for Scientific Research (Kakenhi)

Venturing into a wider range of basic science research

<table>
<thead>
<tr>
<th>Applications Accepted</th>
<th>Project Leader (Principal Investigator)</th>
<th>Co-Investigator (Additional Institution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>59</td>
<td>84,988</td>
</tr>
</tbody>
</table>

JST-Mirai Program "Super Smart Society (Society 5.0)" mission area

Prioritized Theme: Modeling and AI that Connects the Cyber and Physical Worlds

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

Principal Investigator: HIRAKAWA, Toshiyuki (Associate Professor, Information Systems Architecture Research Division)

High expectations are placed on the application of Artificial Intelligence (AI) in various fields because it can replace human decision-making if a large amount of data, which can then be used for machine learning, prediction, and anomaly detection. However, since conventional AI requires a large amount of data for training, it is difficult to apply it in cases where only a small amount of data can be obtained or where modifications are required, for example, when used in healthcare fields. A problem with AI is that it lacks the ability to analyze unstructured data, for which it is difficult to obtain a large amount of data. In addition, when errors have occurred in real sign recognition in automatic dialogues, AI takes an enormous amount of time to correct mistakes. In order to apply AI to real-world fields where healthcare and autonomous driving are the leading areas for AI research, this research area aims to establish a new AI system grounded in fundamental technology called "Engineerable AI." It is designed to build up the feasibility and reliability of AI contracts, control, and decision-making through unstructured and large amounts of data, while maintaining safety, quality, and correctness together. The AI system is designed to extract and analyze not only the content of the intelligence in the content of the input data, but also the factors that influence the results. This research and development project is expected to bring real-time support to diagnosticians, which will enable online dialogues, even with a limited amount of data, and contribute to the development of an AI system that can make decisions based on input data and analyze not only the content of the input data, but also the factors that influence the results.

Japan Society for the Promotion of Science (JSPS) International Joint Research Program with the UK, JSP-LEAD with UKRI

Understanding cross-signing phenomena in video conferencing situations during and post-COVID-19

Principal Investigator: HONGO, Masayuki (Associate Professor, Information and Society Research Division)

This study analyzes the impression and change of sign language communication styles in the context of videoconferencing systems, focusing on how deaf people living in different regions and countries interact and simplify their language (e.g., Minnganian signing) when they engage in cross-signing communication between deaf people who do not share the same sign language, achieved through a simple unimodal sign language communication system. The scientific value of this study is in understanding how native sign language speakers have been affected by the dramatic changes in communication environment arising from the COVID-19 pandemic. This situation is an unusual case of the rapid generation of information into communities that use a specific language (e.g., sign language) and is significant from the viewpoint of cultural and linguistic anthropology, particular in view of the multitude of human communities encountering a similar situation in the future. The originality of this project lies not only in the pioneering nature of the Linguistic research aimed at understanding changes in linguistic practices in online teleconferencing, but also in the development of new techniques for generating sign language corpora. The 3D information and body movement information obtained using deep learning will be distributed to the sign language research community to promote further interdisciplinary research on sign languages and linguistics. Specifically, this study will involve interviews, online questionnaires, online discussion sessions, linguistic analysis, and interaction analysis, both in Japan and the UK. This online sign language dialogue corpus will be created and movements will be detected and annotated using all these techniques. The data collected in this study will be managed in the JSPS Research Data Cloud (JRD) (with), with the aim of making parts of the data available for academic use.
**Research**

**Kakenhi**

**Grant-in-Aid for Scientific Research (B)**

Robust AI by Integration of knowledge representation and machine learning
Principal Investigator: KOSUGI, Katsuhiko
Professor, Institute of Mathematics Research Division

To support advanced applications and intellectual invention in the Information-Society, it is necessary to further enhance the uniformity, reliability, and robustness of the implementation and communication service infrastructure. By employing conventional knowledge modeling approaches, the research aims to enrich more and more difficult to solve the combination of distributed control problems in multidimensional usage of distributed control configurations, thus improving the robustness of the system.

**Grant-in-Aid for Scientific Research (A)**

Researches on Model-maid Learning Approaches for Reliable Realtime Control in Future Wireless Systems
Principal Investigator: K. Yoshida
Professor, Information Systems Architecture Science Research Division

In wireless communication systems, the need for new techniques to maintain the quality of wireless communication systems is increasingly becoming important. The research plans to employ advanced and novel techniques to solve the problems related to the implementation of wireless communication systems.

**Grant-in-Aid for Challenging Research (Exploratory)**

Exploration of super multi-view construction techniques for creating light fields in a real space in which visual obstacles are cancelled out
Principal Investigator: KOSUGA, Kazunori
Associate Professor, Digital Media and Media Science Research Division

This research aims to develop a new super multi-view construction technique that can create light fields in real space without visual obstacles.

**Grant-in-Aid for Early-Career Researcher**

Prevention from Automated Analysis Services with Object-Level Adversarial Examples
Principal Investigator: K. Itaya
Assistant Professor, Information and Society Research Division

The research aims to develop a new approach to prevent automated analysis services from being used for adversarial examples.

**Grant-in-Aid for Scientific Research (B)**

Study on Distributed Consensus by Using Synchronizing Vibration
Principal Investigator: SATO, Hitoshi
Professor, Information and Society Research Division

The research aims to develop a new method of distributed consensus by using synchronizing vibration in vibrations systems.

**Human Resource Development**

**Top SE**

**Educational Services for Developing a Top-Level IT Workforce**

GRACE Center provides a scientific educational program on intelligent manufacturing, so that they can master cutting-edge softwares for data science. The program aims to cultivate great manufacturing professionals in the IT field who have the foresight capable of creating IT innovations that are a turning point in the change of this technology.

**Advanced Top SE Course**

Leveraging the latest technologies to solve difficult cutting-edge challenges

**Practical Software Development**

Training to solve problems using techniques learned at software development. Students work in groups to learn from the instructor, making actual software and developing a practice for their next job or a social cause. Students will be exposed to software development methodologies and will practice in teams.

**Top SE Course**

**Leading the latest technologies to solve difficult cutting-edge challenges**

**Data Science**

* Description of business analytics and data science*
* Based on actual business analytics*
* Data analysis and business analytics*
* Presentation and analysis of image data*
* Hands-on experience with a variety of data*

**Collaboration with Overseas Universities: UCL Training**

**Experts in Information Science; Public-Private Collaborative Training Program**

**Discovering and Nurturing Young Talent in the Field of Informatics**

The program aims to discover and nurture talented individuals in the field of informatics. The program will conduct training under the guidance of mentors, including professionals who are leaders in their fields. The program also provides opportunities for students to conduct research for a certain period of time at overseas research institutions.

**Active on the world stage**

<table>
<thead>
<tr>
<th>ACT-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute of Informatics</td>
</tr>
<tr>
<td>The global &quot;ICT&quot; research center</td>
</tr>
<tr>
<td>Future of the Experts in Information Science program and framework for building an exceptional talent pool</td>
</tr>
</tbody>
</table>

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**National Institute of Informatics**

2021-24
Collaborative Research Promotion

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

[Various Collaborative Research Projects with Private-sector Institutions]

Collaborative Research with the Private Sector

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 multiyear contracts are also possible.

(1) Receiving researcher
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
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.

Research to Build Broad Collaboration with Researchers and Create Value

NII Open Collaborative Research

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 collaborative project meetings with the aim of paving the way for new collaborations and advancements in research subjects, mainly through meetings at the International Seminar for Advanced Studies in Japan.
- 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 college, 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.

List of Strategic Research Themes (13 themes)

1. Propose a study to overcome the crisis caused by the COVID-19 pandemic
2. Propose an innovative platform function and application services utilizing the Science Information Research System (SIRS)
3. Proposal on cybersecurity analysis technology utilizing ML/SSDS data
4. Propose a method to introduce research data platform at universities to move to the age of open science
5. Propose building a database to act as a research resource and the platform for collaboration
6. Propose ODF/DF services for greater efficiency in social activities and public infrastructure design
7. Propose an innovative model and algorithm that approximates human-like decision-making
8. Proposal for a technology for quality assurance of a mobile learning application system
9. Proposal for technologies regarding the artificial intelligences and explainable AI
10. Proposal for an innovative model and algorithm toward deeper utilization of cultural properties
11. Proposal for technologies related to education and AI, and utilization of learning data
12. Proposal for core technologies for the next-generation Internet
13. Proposal for technologies and methods to promote digital innovation in educational research

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

- **Research**
  - **Innovation Produced by Knowledge**
    - **Model Case of Collaboration with Industry, Government, and Academia**
      - **Discussion**
        - Conduct interviews with experts, peer groups, and stakeholders, ELA
      - **Coordination**
        - Submit reports and proposals
      - **Research Contract**
        - Be reviewed by the scientific committee and the review committee
      - **Research**
        - Be reviewed by the scientific committee and the review committee
      - **Delivery of Findings**
        - Be reviewed by the scientific committee and the review committee
      - **Licensing**
        - Be reviewed by the scientific committee and the review committee
      - **Using the Findings**
        - Be reviewed by the scientific committee and the review committee

- **Example Case of Collaboration with Industry, Government, and Academia: NII - Hitachi High-Tech Science Corporation**
  - **EEM View: CMOS Camera Imaging System for Fluorescence Spectrophotometer**
    - **A new technology capable of simultaneously capturing both spectrophotographs and spectral data.**
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- **Academic Consultation by Researchers**
  - **Research Seeds Collection: NII SEEDS**
    - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**
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- **Need for Collaboration**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**

- **Human resource development for research**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**

- **Human resource development for business**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**

- **Knowledge Gained as Researchers**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**

- **NII Offerings**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**

- **NII Academic Consultation**
  - **Academic Consultation by Researchers**
    - **Research Seeds Collection: NII SEEDS**
      - **Since FY2014, NII has been publishing NII SEEDS every year to present our cutting-edge research initiatives that are likely to become new technologies.**
Research

International Exchange

MOU agreement numbers

List of International Exchange Agreements (MOU)

MOU for research cooperation: 107 institutes

Research,
Graduate Program
Service
Organization/Other

National Institute of Informatics
National Institute of Informatics
**International Exchange**

**NII Shonan Meeting**

NII Shonan Meeting was held in February 2011. The NII Shonan Meeting is a biennial conference that brings together 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 readily accessible from Haneda Airport and Narita International Airport, and is located in an environment blessed by nature where participants can focus on their research work. More than 150 seminars have been held so far. In August 2016, we also launched NII Shonan School, which is intended primarily for students and young researchers.

Shonan Seminar, a renowned seminar series in the field of informatics held almost every week in Dagstuhl, Germany, is famous for its attempt to compile and summarize the latest research findings over a period of one week to hold intense discussions on specific topics.

**Support Setup**

The Office of NII Shonan Meeting and Shonan Village Center staff manages 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 traditional foods through seminars to cultivate personal exchange and friendships among participants.

**Administrative Structure**

**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 16 and December 16. Following the review of the proposals by the Academic Committee, NII seminar organizers will be notified of the result.

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

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**Agreement with the German Academic Exchange Service (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, periods can stay at NII for a minimum of three months per semester recommended. There is a maximum of 2 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 positions can also extend the help of Waseda University and students in constructing projects. NII is an internationally research institute; they can visit NII partner universities and research institute in Japan to build their network in Japan.

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**Japanese-French Laboratory for Informatics (JFLI)**

The Japanese-French Laboratory for Informatics (JFLI) was founded in 2008 as a hub for international research exchange between France and Japan by two institutions, namely the National Center for Scientific Research (CNRS) in France, Sophia-Antipolis University (Université Côte d’Azur), and the University of Tokyo Graduate School of Information Science and Technology, Keio University, and NII was formed as a Joint International Unit (UNIV) of CNRS in 2012, and has since been more active in conducting research exchange. JFLI organizes collaborative research projects in the fields of information theory, artificial intelligence, and multimedia. The institutions have pooling collaborative research projects such as NII researchers are invited to collaborate in the following projects.

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**NII Shonan Meeting Memorial Lectures**

The NII Shonan Meeting Memorial Lectures are held annually and co-hosted by NII and Kanagawa Prefecture. The lecture series opens before the latest research topics in the field of informatics.

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Contact: Office of NII Shonan Meeting, shonan@nii.ac.jp
Establishment of Graduate School

In April 2002, National Institute of Informatics joined up with The Graduate University for Advanced Studies, SOKENDAI to launch the Department of Informatics with a three-year Ph.D. course, and saw its first students graduate in March 2005. A five-year Ph.D. course was launched in FY2006. 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.

Content and Structure

The Department of Informatics aims to develop young IT researchers and engineers who will take the lead at the international level in the 21st century. Students will be able to earn a Doctor of Philosophy in informatics degree (or a Doctor of Philosophy in Science degree, depending on the course content). The Department offers education and research guidance in the following 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. Around 70 subjects are available as special subjects of the department and common specialized subjects of the school.

Features of the Department

The Department of Informatics actively welcomes students from overseas and is a place filled with lively cross-cultural communication between students. There are also many working students, accounting for around 20% of the student body.

Number of students in the Department of Informatics

<table>
<thead>
<tr>
<th>Year/Program</th>
<th>Five-year Ph.D. course</th>
<th>Three-year Ph.D. course</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>77 (38)</td>
<td>39 (3)</td>
<td>116 (41)</td>
</tr>
</tbody>
</table>

[Message from the Dean of the Department of Informatics]

YAMADA, Sei(i)

(Prof., Digital Context and Media Sciences Research Division, NII)

In the Department of Informatics, the study of informatics is divided into six fields of specialization: Foundations of Informatics, Information Infrastructure Science, Software Science, Multimedia Information Science, Intelligent Systems Science, and Information Environment Science. Thus, “informatics,” which integrates all these six fields, is not limited to A, data science, and information science, which have so much potential for enriching our society and environment in the coming years, or to conventional science and engineering. It is a comprehensive academic discipline focused on people and society, broadly spanning “humanities informatics” and “social informatics.” The department pursues research and education in various phases of basic, applied, and practical research, with the aim of cultivating researchers as well as high-level specialist professionals equipped to become active leaders in the field of informatics.

Through a system of very close specialist guidance by world-leading researchers at NII, as well as academic counseling, students are individually guided according to their specific interests, objectives, and research plans. The department has also set up an advisor system in which multiple instructors working in different fields, or perhaps in the same discipline from different angles, serve as sub-advisors to provide students with advice on the content and direction of research from a wide range of perspectives. A dual degree system also allows students to receive guidance on doctoral research at overseas research and educational institutions for a certain period. The guidance program is designed so that students with an undergraduate degree can spend plenty of time on their individual research themes in a full doctoral program (5-year PhD course), while students who already have a master’s degree can concentrate on expanding their previous research in a shorter program (3-year PhD course).

As well as being SOKENDAI students, Department of Informatics students get to study on a daily basis in the internationally collaborative environment of NII. They will participate in a variety of research projects, gaining experience as international researchers through personal exchange programs with overseas partner universities and research institutions. Around half of the Japanese students are active professionals who enter at NII to systematize work they have pursued for their companies from a research standpoint and to master the latest state-of-the-art technologies. Another feature of the program is the high proportion of international students, with many subjects taught in English. The opportunity for cross-cultural exchanges with other students offers a valuable environment for young people who aspire to international careers. Through collaborations with other institutions and departments at SOKENDAI, the program also allows students to expand their circles of exchange and build valuable personal networks.

Research by Current Students

TSUMURA, Takahiro

Commenced doctoral program in 2019 (5-year PhD course)
Main supervisor: Prof. YAMADA, Sei(i)

Human-agent interaction is a research subject that covers the interaction between humans and anthropomorphic agents and robots. In this context, my research focuses on the social advancement of agents through human-agent empathy. One way to relieve the anxiety and discomfort felt toward agents, which are becoming increasingly ubiquitous, is to focus on empathy to improve the impression of agents. We can use appearance, self-disclosure, tasks, and various other factors to do this. This research hopes to extend the factors that give rise to empathy between humans and human-agent relationships, to expand the human capacity for empathy, and to help agents to acquire the capacity for empathy.

Number of international students by country/region

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>53</td>
</tr>
<tr>
<td>International</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
</tr>
</tbody>
</table>

Career paths of students after course completion

<table>
<thead>
<tr>
<th>Year of graduation</th>
<th>Private sector</th>
<th>Foreign universities/research institute</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2021</td>
<td>8 (9)</td>
<td>5 (7)</td>
<td>16 (23)</td>
</tr>
<tr>
<td>FY2020</td>
<td>10 (1)</td>
<td>5 (2)</td>
<td>17 (17)</td>
</tr>
<tr>
<td>FY2019</td>
<td>5 (3)</td>
<td>7 (4)</td>
<td>14 (12)</td>
</tr>
</tbody>
</table>

Graduation and Outstanding Student Award Ceremony (September 2019)
Graduate Program

Curriculum

The Department of Information provides research and education conducted by world-class researchers within the state-of-the-art environment and international perspectives of NIL.

The Department covers a broad range of interdisciplinary fields, from fundamental disciplines such as mathematics to the basics of computer architecture and networks, and extending to software and media engineering, artificial intelligence, information societies, and research methodologies. We have nurtured educational systems since the Department was first established; through diverse and research-oriented education in small groups in order to teach each student's needs. Cutting-edge research and education are provided every day with the aim of producing professionals capable of working at the forefront of the information field. The academic year consists of two semesters: the first running from April to September and the second semester running from October to March.

To complete the course, students are required to earn the necessary credits, carry out their research under proper supervision, and pass a review of their doctoral dissertation summarizing their research findings. The minimum number of credits required is 10 units for the three-year doctoral courses and 40 units for the five-year doctoral courses. Program duration is flexible, and may be shortened for students who have shown societal or research achievements. A student who has completed the integrated program within the normal graduation period may be awarded a master's degree as long as they meet certain requirements.

1. Special Subjects of the Department of Information

   Foundations of Information
   - Logic in Computer Science (CS7202, Makino)
   - Theory of Numerical Methods (Tabuchi, Inagaki, Kita)
   - Information Theory and Coding (Ohta, Nakamura, Kanazawa)

   Quantum Information Systems (IS7201, Quantum Computing (Seki, TS021), Quantum Communication (Seki, TS021))
   - Quantum Information Processing (Seki, Tamaki, Tsuda, Tsukamoto)

   Information Engineering
   - Computer Networks (IS7202, Kato, Miyahara, Seki, Tsuda, Nakamura, Kanazawa)
   - Information Security (IS7203, Kato, Miyahara, Seki, Tsuda, Nakamura, Kanazawa)

   Multimedia Information
   - Fundamentals of Media Processing (IC7201, Inagaki, Nakamura, Kato, Nakamura, Kanazawa, Goel, Merfeld, Nakamura, Kanazawa)
   - Digital Media Engineering (IC7202, Kato, Nakamura, Kato, Nakamura, Kanazawa, Goel, Merfeld, Nakamura, Kanazawa)

   Software Science
   - Software Engineering (IS7204, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)
   - Knowledge Sharing Systems (IS7205, Nakamura, Kanazawa)

   Networking Systems
   - Network Security (IS7207, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)

   Artificial Intelligence
   - Machine Learning (IC7203, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)
   - Deep Learning (IC7204, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)

   Information Security
   - Computer Security (IC7205, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)
   - Cryptography (IC7206, Inagaki, Nakamura, Kato, Nakamura, Kanazawa)

2. Common Specialized Subjects of the School of Multidisciplinary Sciences

   Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)
   - Introduction to Mathematics (IS7202, Makino): Introduction to Algebra (Inagaki, Nakamura), Quantitative Information and Computing (IS7202)

Partnership with Graduate Schools

As an inter-university research institute, NIL 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 NIL faculty members of the National Institute of Informatics according to their research topics.

Research Students for Special Collaboration

As an inter-university research institute, NIL 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 NIL faculty members of the National Institute of Informatics according to their research topics.

University Affiliations of Research Students for Special Collaboration

(2021)

University of Tsukuba

Shinshu University

Tokyo University

University of Tokyo

Waseda University

Tokyo Institute of Technology

University of Tokyo

National Institute of Informatics

Number of Students Accepted through Both Schemes

Partnership with Graduate Schools and Research Students for Special Collaboration (2021)

<table>
<thead>
<tr>
<th>Master course</th>
<th>Doctoral course</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>35</td>
<td>72</td>
</tr>
</tbody>
</table>
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 communication network built and operated as a scientific information infrastructure for universities and research institutions throughout Japan. With nodes networked via 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 Infnet in Italy and GEANT 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. SINET6 is the first in Japan to feature a full mesh network, connecting 300 universities, public research institutions, and private companies across Japan on a single backbone. In addition, the advanced network is provided to research institutions, as well as 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. From the previous SINET, the new network was upgraded to a 100-Gbps backbone, allowing for the circulation of research information between countries that is vital for advanced international research projects.

In Japan, SINET6 is the first in Japan to feature a full mesh network, connecting 300 universities, public research institutions, and private companies across Japan. The backbone of the advanced network is provided to research institutions, as well as universities and research institutes.

SINET6 Services

We provide new services through joint consideration and development, based on requests from universities and institutions. SINET6 offers reliable, high-speed network services, to create a secure and efficient research environment at universities and research institutions. The backbone of the advanced network is provided to research institutions, as well as universities and research institutes.

Interconnection with Overseas Research Networks

Connecting Japan, the U.S., and Europe is a key feature of this national research and education network. Moreover, it is the world's first international network circuit operated by a single institution that connects these three global regions.

Mobile SINET

In April 2022, we started the operation of a mobile network, offering a new service that is highly accessible and extremely useful. The mobile network offers a mobile and mobile research and education network, allowing for communication and research in remote areas.
Five Major Concepts of SINET6

(1) Innovative Connectivity
Uses leading-edge technologies that minimize communication lags.

(2) High-Speed and Reliable Network
SINET6 provides a stable, high-speed backbone network.

(3) Robust and Reliable
A robust, fail-safe network ensures service continuity.

(4) Internationalization
Facilitates efficient and high-speed international access.

Features of SINET6

- Large-scale experimental lab, exercise, and observation
- International collaboration
- Scientific Information
- Cloud services for scientific information
- SINET International Data Center
- International collaboration
- Hosting information sharing applications
- Resource sharing

GakuNin Cloud: Support for Cloud Adoption and Use

GakuNin Cloud

ALL provides three services under the GakuNin Cloud brand to support the adoption and use of cloud services in universities and research institutes. We do this with the aim of developing advanced scientific information platforms using clouds.

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 notified by email to universities and research institutes considering using these services.

When developing specifications for cloud procurement, the verified checklist makes it possible to compare various cloud services with the same criteria and thereby select cloud services that meet the needs of the institution.

In addition, ALL provides documents such as cloud startup guides and cloud use cases.

GakuNin Cloud Gateway Service

The GakuNin Cloud Gateway Service provides a portal for easy access to various cloud services required for computing research and education, as well as an electronic journal and other online services. Examining and studying students at universities and research institutes can use these services for collaboration and data sharing.

Moreover, the service is provided by universities and research institutes, which means that the service is available in areas where there is no central cloud service provider.

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 in cloud resources including usually using a command line. The service is also available in the SINET Cloud Connection Service, which makes it possible to set up a secure on-demand cloud environment consisting of computers at universities and research institutes in multiple cloud environments connected to SINET, for use in research, education, and IT system operations.
Building an Authentication Infrastructure

GakuNin: Academic Access Management Federation in Japan

The Academic Access Management Federation (GakuNin) is an infrastructure for enabling the authentication platform of universities not only for on-campus services but also for off-campus services and enterprise services. GakuNin ensures secure and seamless access to services for students, faculty, and staff. The platform uses Single Sign-On (SSO), which allows users to log in once and access multiple services without the need to enter their credentials multiple times. This reduces the load on the administration and improves security measures.

<table>
<thead>
<tr>
<th>Data on Participants (as of the end of March 2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of organizations (BP/University Provider)</td>
</tr>
<tr>
<td>Number of service providers (SP/Service Provider)</td>
</tr>
</tbody>
</table>

[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 direct certificate authentication and/or multi-factor authentication (centralized security management)

GakuNin strives to maintain its trustworthiness by conducting regular annual assessments of its operations. It also offers the LAMA (Level of Assurance 1) accreditation services in accordance with the Federal Identity, Credential and Access Management (ICAM) Trust Framework. The Standing Committee for Academic Authentication is also discussing the provision of higher assurance levels and the provision of services that can enhance higher assurance levels.

Issuing Digital Certificates: UPKI Digital Certificate Issuance Service

NII launched the UPKI Digital Certificate Issuance Service in January 2015 as a service for issuing digital certificates to universities and research institutes. In addition to the service certificates issued in 2016, NII also issues client certificates and root signing certificates.

We continue to issue high-security server certificates that conform to the latest international standards of the Web of Trust for Certificate Authorities (WOTCA).

The use of these server certificates enhances web security by ensuring that the identity of the web server provider is validated by multiple sources. These web servers are then verified by NII’s certification committee, which is used for authentication of signing elements, as well as for multi-factor authentication and preventing identity theft.

Additionally, by signing software, code signing certificates verify the identity of the developer and ensure that the code has not been tampered with. This helps users determine whether to trust an application.

The UPKI Digital Certificate Service aims to improve the security of universities and research institutes as a whole by providing these certificates for their use.

<table>
<thead>
<tr>
<th>Data on Participants (as of the end of March 2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of institutions</td>
</tr>
<tr>
<td>Number of domains</td>
</tr>
</tbody>
</table>

Board for Scientific Research Digital Platform

The operation of the Scientific Research Digital Platform, combining Science Information Networks and Research Data Cloud, is handled by the Board for Scientific Research Digital Platform, a joint organization comprising research universities and research institutes and NII. In collaboration with the Information Infrastructure Centers of universities and research institutes and NII, the BSRF operates.

eduroam: World-wide Academic Wireless LAN Roaming Platform

eduroam is an academic wireless LAN roaming platform developed by SEANET (NICT Trust Research) in Europe. It enables shared access of wireless LAN across universities and other research and educational institutions. Introduced in Japan in 2006 as part of NII’s University-Neighboring Infrastructure/University Platform project under the name "eduroam JP", the platform provides support for and develops the technology of the platform, eduroam in Japan based on the IETF standard EAP-TLS, meaning that it is able to provide a safe and convenient wireless LAN environment.

<table>
<thead>
<tr>
<th>Data on Participants (as of the end of March 2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participating institutions in Japan</td>
</tr>
</tbody>
</table>

Supporting Information Security Framework through Inter-University Collaboration

NII established the Center for Openly Networked Research and Development in 2016 to support the creation of a framework that enables national universities and other institutions to share data and resources through the Inter-University Open Research Collaboration Platform (IUS-CORP) since 2017 for advancement. The Center for Openly Networked Research and Development was incorporated into the Center for Strategic Cyber Resilience Research and Development in 2022.

We develop openly networked research through inter-university collaboration and at the same time apply our research findings as appropriate to 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 and R&D to provide an environment that promotes openly networked research, as well as to ensure open, shared, and collaborative research environments for all academic and research fields.
Open Science

Open Science is emerging as a new way of conducting research that promotes open and sharing, not only of papers, but also of research data and software on the Internet. Together with universities and research institutes nationwide, JST contributes to the development of Open Science in Japan by providing three platforms for managing, publishing, and searching various types of data generated in the course of research:

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 life cycle with collaborating researchers and features a powerful function for linking to data analysis platforms. For research integrity, the RDM platform records research results 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 management platforms or a web service. The platform is equipped with flexibility and expandability to be used as a repository for efficient 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 and other related items, such as articles, book chapters, and other materials, as well as the researchers and research projects that produced these academic resources, are discoverable on this platform’s site in a reproducible scholarly knowledge graph that integrates various data from its linked databases. CiNii Research helps researchers navigate the landscape of intellectual resources and citations.

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

JAIRO Cloud 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, it promotes open access, with the aim of helping establish the next generation of academic platforms. JAIRO has provided support for content registration, system linkage and community building at academic institutions in Japan and has built and operated institutional repositories for over 810 institutions.

Integrate Search of Academic Information in Institutional Repositories in Japan

IRIBD: Institutional Repositories Database

Enable integrated search of education and research results, journal articles, those of dissertations, educational materials, and research projects, as well as other databases that are registered in institutional repositories in Japan. FullText is available to users through this system as an open access service. This service was launched in 2010, and the number of coastal research papers has been increased each year. As of the end of March 2020, there were 2,529,519 full-text articles.

JPCOA: Japan Consortium for Open Access Repository

JPCOA 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 access, as well as joint operations of the institutional repository service (JAIRO Cloud). JAIRO supports these activities as well as JPCOA by providing assistance such as physical support for collaboration with university libraries.

Number of Members

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>444</td>
</tr>
<tr>
<td>2014</td>
<td>823</td>
</tr>
<tr>
<td>2015</td>
<td>906</td>
</tr>
<tr>
<td>2016</td>
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<td>2017</td>
<td>692</td>
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<tr>
<td>2018</td>
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<tr>
<td>2019</td>
<td>662</td>
</tr>
<tr>
<td>2020</td>
<td>606</td>
</tr>
</tbody>
</table>

Number of JIRO Members

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>444</td>
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<tr>
<td>2014</td>
<td>823</td>
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<td>2016</td>
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<td>2017</td>
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<tr>
<td>2018</td>
<td>648</td>
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<tr>
<td>2019</td>
<td>662</td>
</tr>
<tr>
<td>2020</td>
<td>606</td>
</tr>
</tbody>
</table>
Publishing and Communicating Scientific Information

CiNii

CiNii is a service enabling users to search for scientific information from academic articles, books, journals, and doctoral dissertations, among others. It also supports the publication of data and articles by improving the visibility of content. CiNii offers a display for queries and supports for better appearance searching.

CiNii Research

CiNii Research makes it easy to perform cross-referencing of scientific articles and results. It also provides search results from external academic libraries, institutions, and more.

CiNii Books: Searching for Books in University Libraries

CiNii Books in University Libraries allows users to search for books held by universities in Japan. It provides detailed information about books and journal titles that are held by academic libraries.

CiNii Dissertations: Searching for Doctoral Dissertations in Japan

CiNii Dissertations allows users to search for doctoral dissertations. It provides detailed information about the dissertations, including title, author, and institution.

Database of Grants-in-Aid for Scientific Research (KAKEN)

KAKEN is a database of grants-in-aid for scientific research in Japan. It provides access to research projects funded by the Ministry of Education, Culture, Sports, Science and Technology. The database includes research project data from various sources, including the JST Project database.

Catalog Information Service

The Catalog Information Service consists of the Online Cataloging System (NACIS) and the Library Classification System (NACIS-ILL). NACIS-ILL is used for creating and maintaining a comprehensive cataloging database, while NACIS-CAT provides access to the cataloging system's cataloging data.

Database Sharing Service for Electronic Resources

ERDB-JP, the Electronic Resources Database-Japan, provides access to a variety of electronic resources, including databases, journals, and e-books, through a single interface. It also offers access to the Japan Alliance of University Library Consortia for electronic resources (JACO).
Digital Archives

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 e-journals, special data, and e-books, including those available on NII and those provided by universities in Japan, are stored on the NII and provided to users in Japan. Online resources registered in NII-REO are maintained in collaboration with the Japan Alliance of University Library Consortia for E-resources (JUSTICE).

Archived contents

Online Journal archives

<table>
<thead>
<tr>
<th>Journal titles</th>
<th>Number of records</th>
<th>Approx. 1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Springer Online Journal Archive</td>
<td>1932-1999</td>
<td>3,500</td>
</tr>
<tr>
<td>Springer Lecture Notes in Computer Science</td>
<td>1975-1999</td>
<td>700</td>
</tr>
<tr>
<td>Oxford Journal Archive Collection</td>
<td>1866-2002</td>
<td>33,000</td>
</tr>
<tr>
<td>Kluwer Online</td>
<td>1995-2001</td>
<td>980,000</td>
</tr>
<tr>
<td>MDRA Computer Society Digital Library (CSDL)</td>
<td>1996-2011</td>
<td>100,000</td>
</tr>
<tr>
<td>Taylor &amp; Francis Online Journal Archive Online Journal Collection (Science and Technology Collection)</td>
<td>1938-1999</td>
<td>3,000</td>
</tr>
<tr>
<td>Humanities and social sciences electronic collection</td>
<td>1951-2004</td>
<td>180,000</td>
</tr>
<tr>
<td>Eighteenth Century House of Commons Parliamentary Papers</td>
<td>1668-1750</td>
<td>10,000</td>
</tr>
<tr>
<td>The Making of the Modern World: Cultural History</td>
<td>1650-1900</td>
<td>10,000</td>
</tr>
<tr>
<td>The Making of the Modern World: Politics and Diplomacy</td>
<td>1851-1945</td>
<td>100,000</td>
</tr>
<tr>
<td>The Making of the Modern World: Economics and Business</td>
<td>1700-1980</td>
<td>100,000</td>
</tr>
<tr>
<td>Scholarly Books Online</td>
<td>1475-1900</td>
<td>10,000</td>
</tr>
<tr>
<td>America's Historical Newspapers and Periodicals</td>
<td>1690-1945</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Promoting Scholarly Communication

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 aggregation and internationalization of academic journal publications 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 seminar addresses the latest issues in scholarly communication and function as a forum for stakeholders in scholarly information. The coalition was founded under the Academic Information Distribution Promotion Committee from FY2008, and has been engaged in investigating the trends and actual conditions in scholarly communication in Japan and overseas, coordinating and coordinating strategies for publishing and use of academic information, including management and support work in collaboration with stakeholders from the academic community with the ultimate goal of promoting open access and open science.

Education and Training Services

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

- Training courses (NII-CARE), self-learning e-learning materials on research data management
- Specialized training in digital library systems (information processing technology seminars)
- Comprehensive training (NII-maam training, comprehensive IT training for university libraries, etc.)

Collaboration with University Libraries

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

NII entered into an agreement with the Japan 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.

Japan Alliance of University Library Consortia for E-Resources

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 users unfettered access to scientific information from entire journals and other resources, NII established the JUSTICE Japan Library Cooperation Office to support the activities carried out by JUSTICE, with a fulltime staff on loan from university libraries.

Future Scholarly Information Systems Committee

The committee was established with the aim of further promoting activities related to the building of management, and development of platforms for scholarly information resources. The committee is comprised of university library staff recommended by national public and private university library associations and research, experts, and NII staff. In addition to investigating the actual issues that are relevant to the future of scholarly information systems, the committee also reviews future visions of systems and their operating conditions, as well as plans to achieve these visions.

Working Group for Examination System Models

This working group performs two tasks: (1) examination of new library system networks that enable integrated discovery environments, as well as sustainable operating systems; and (2) examination of issues in joint procurement and operations of systems.

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) ESDB-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 contains supercomputers and storage systems installed at universities and research institutions across Japan, with the supercomputer Fugaku installed in Kitakyushu. This creates a revolutionary new sharing 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 supercomputer Fugaku, as well as universities and research institutions nationwide, JII continues to work 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. The authentication system ensures communication and data security through a highly secure framework that uses digital certificates for HPCI users, and also provides a single sign-on system that enables users to seamlessly use the supercomputers and storage resources in the HPCI.

Organization/Others

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, 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

<table>
<thead>
<tr>
<th>Reference Type</th>
<th>Books</th>
<th>PhD Journals</th>
<th>Master’s Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>15,987</td>
<td>9,995</td>
<td>1,990</td>
</tr>
<tr>
<td>Foreign</td>
<td>9,405</td>
<td>703</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>25,392</td>
<td>10,698</td>
<td>1,997</td>
</tr>
</tbody>
</table>

Major online journals and databases

- ACM Digital Library
- Association for Computing Machinery
- IEEE (Institute of Electrical and Electronics Engineers)
- J-STAGE
- NII
- NII Library
- NII Digital Library
- NII E-Library
- OCLC
- PubMed
- Scopus
- Springer
- Wiley Online Library
- ZDB

Symposium on DX at Educational Institutions—Cyber-Symposium on Online Education and Digital Transformation at Universities and Other Institutions

Taking into consideration the situation with the COVID-19 pandemic, in June 2020, NII began holding a series of events titled "Symposium on DX at Educational Institutions—Cyber-Symposium on Online Education and Digital Transformation at Universities and Other Institutions" at a quick pace. The purpose of these events was to share as much information as possible about distance education at universities and other institutions. These events were named "Cyber-Symposium for Information Sharing on Remote Teaching Efforts at Universities since April".

The lectures given at these events covered a wide range of topics, including remote teaching at universities and other institutions, as well as digital transformation of education. The included discussions on precedents of distance education and exchange of information, interpretation of Copyright Law and recent amendments, and concrete cases at overseas universities. Included were methods of practice at medical and engineering schools, online support for students, and hybrid lessons that included face-to-face teaching. Most participants are connected to higher education.
Public Communications

Promoting public awareness of NII's research and projects

To share the latest research findings with the public, the NII promotes its research and activities to the public through various lecture series for high schools and technical colleges, special exhibitions, and public lectures with visiting researchers and public relations materials.

News Releases

(April 1, 2021 to July 1, 2022)

<table>
<thead>
<tr>
<th>Release date</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr. 12, 2021</td>
<td>Development of technology to automatically find simulation settings that are difficult to test.</td>
</tr>
<tr>
<td>Apr. 13, 2021</td>
<td>NII-RIKEN and T3 sign collaboration and cooperation agreement.</td>
</tr>
<tr>
<td>Apr. 27, 2021</td>
<td>New technology to make it easier to set up and use &quot;Genome&quot; computer to discover new cell lines for future supercomputers is revealed.</td>
</tr>
<tr>
<td>May 25, 2021</td>
<td>Learning &quot;programmatic thinking&quot; at the National Open House.</td>
</tr>
<tr>
<td>May 26, 2021</td>
<td>Measurement of memory and communication efficiency of the &quot;Giza G&quot; computer with the &quot;Giza G&quot; computer.</td>
</tr>
<tr>
<td>May 26, 2021</td>
<td>Evaluation of the research and development of the &quot;Deep Learning&quot; computer.</td>
</tr>
<tr>
<td>May 31, 2021</td>
<td>The first open source software for digital audio recorders was released.</td>
</tr>
<tr>
<td>June 16, 2021</td>
<td>A series of open houses on COVID-19 research with NII Open House.</td>
</tr>
<tr>
<td>June 17, 2021</td>
<td>A new research vehicle for urban transportation was unveiled in stages starting in 2022.</td>
</tr>
<tr>
<td>Jul. 13, 2021</td>
<td>New research vehicle for urban transportation was unveiled in stages starting in 2022.</td>
</tr>
<tr>
<td>Aug. 22, 2021</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
</tr>
<tr>
<td>Oct. 19, 2021</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
</tr>
<tr>
<td>Nov. 4, 2021</td>
<td>Using the research vehicle for urban transportation was unveiled in stages starting in 2022.</td>
</tr>
<tr>
<td>Nov. 15, 2021</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
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<tr>
<td>Nov. 17, 2021</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
</tr>
<tr>
<td>Dec. 17, 2021</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
</tr>
<tr>
<td>Apr. 14, 2022</td>
<td>NII-RIKEN and T3 sign collaboration and cooperation agreement.</td>
</tr>
<tr>
<td>Apr. 21, 2022</td>
<td>Developing an AI for the &quot;Giza G&quot; computer.</td>
</tr>
<tr>
<td>Apr. 28, 2022</td>
<td>Demonstration of the &quot;Deep Learning&quot; computer.</td>
</tr>
<tr>
<td>Mar. 15, 2022</td>
<td>Development of technology to automatically and efficiently discover a reliable gas-sensing system.</td>
</tr>
<tr>
<td>Apr. 1, 2023</td>
<td>NII-RIKEN and T3 sign collaboration and cooperation agreement.</td>
</tr>
</tbody>
</table>

Digital Media (Japanese except Website)

YouTube channel: https://www.youtube.com/user/puusagai
Twitter: https://twitter.com/NII_eng
Official account (Instagram): https://instagram.com/nii_eng
Official account (Twitter): https://twitter.com/NII_EN

75th Anniversary of the National Institute of Informatics (1947-2022)
Facilities and Locations

National Center of Sciences (Chiyoda-ku, Tokyo)
https://www.jsc.go.jp/

The National Center of Sciences was built as a center for research in information and other public academic exchange, a demonstration of scientific information, and social interaction, 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: National Institute of Informatics, Chiba University, and the National Institute for Academic Degrees and Quality Enhancement of Higher Education. The Center aims to provide an advanced base for intellectual creation through the comprehensive interaction of various academic capacities of such institutions.

Conference facilities such as National Hall are located in the lowest 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 Institute of Informatics
National Center of Sciences Bldg.
2-12 Hilibutsuchu, Chiyoda-ku, Tokyo, 101-8430 Japan
Tel: +81-3-4271-2000 (exchange)
Area: 6,842 m² (occupied by NIL, 3,094 m²)
Floor space: 40,096 m² (occupied by NIL, 19,145 m²)

Kashiwa Annex (Kashiwa City, Chiba Prefecture)

The Annex was completed in October 2020 on the University of Tokyo’s Kashiwa Campus as a facility to house equipment for various academic information services provided by NIL, including the Science Information NETwork (SINET), and to serve as a center for R&D 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 campus for joint studies and collaborations.

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

Inose Lodge
The International Seminar House for Advanced Studies (Inose Lodge) was completed in May 1997 on land donated by St. Jude’s, Hino. It is the first General Secretary of NIL, who wished 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 NIL researchers and staff

International Seminar House for Advanced Studies
Inose Lodge
1052-677 Okegawa, Minamimachi, Nagano-city, Nagano, 389-0011 Japan
Tel: +81-267-41-1071 Fax: +81-267-41-1075
Area: 3,959 m² Floor space: 667 m²
Guide Map:

Exterior of Inose Lodge