

National Institute of Informatics

Weaving Information into Knowledge

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The National Institute of Informatics (NII) is the only academic research institute in Japan focused on the field of informatics, with a comprehensive range of research activities that covers everything from long-term basic research to real-world studies that attempt to address current social issues. As an inter-university research institute, NII also deploys various services, such as building and operating the Science Information NETwork (SINET), providing academic content and service platforms, and developing research data infrastructures. It promotes the further growth of these services by offering its research-based expertise and interactive feedback. NII works on both research and service to create future value through informatics.



A Future Created by AI and Humans —— Demanding a Shift from Competition to Collaboration

As of 2025, we find ourselves truly at the forefront of technological innovation. In particular, artificial intelligence (AI) is evolving rapidly, and its technological advancements are impacting every aspect of our lives. AI technology is unlocking new possibilities across all fields, from industry to medicine, education, and everyday decision-making. However, the effects of such innovation are not always predictable. As AI becomes increasingly widespread and integrated into society, we must tackle the underlying ethical and social issues, not simply enjoy the convenience of the technology.

At a recent committee meeting on intellectual property, a researcher studying globally competitive foods and seeds remarked that, "(While intellectual property strategy is important,) in the end, we aspire toward a world where everyone all over the world has delicious food to eat. "This comment once again brought to mind the idea of contributing to society, which is our starting point as researchers. We need to remind ourselves that the goal of researchers is not merely the pursuit of profit, but also the making of a better society. This calls on us to envision our ideal future and work toward this ideal as one, just like the song by John Lennon, "IMAGINE."

Rapid advancements in AI technology are leading to a society where AI and humans increasingly coexist together. This is exactly why we need to shift from our current "competition" focused society to a society centered on "collaboration," transitioning from a society that exclusively pursues profit to one that aims for the sharing of knowledge. This shift must be a cultural and ethical choice for society as a whole.

We should dedicate ourselves to building a better future by leveraging the wisdom and experience gained in our respective areas of expertise to supplement each other's fields. This perspective is also shared by advocates of open science. There is frequent discussion about how to incentivize researchers to promote open science. However, researchers should have a stronger awareness of contributing to society from the very beginning. By fostering a culture of sharing knowledge across all humanity and advancing together, we can make the future that AI and humans build together a brilliant one. Perhaps this is too idealistic. To borrow the words of John Lennon's "IMAGINE.": "You may say I'm a dreamer" but "I hope someday you'll join us and the world will be as one" The future is still far ahead, but I am convinced that if we work together as one, then we are sure to usher in a wonderful age.

KUROHASHI, Sadao

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

*This text was created by inputting 400 or so characters as notes into a 172-billion parameter LLM developed by the NII Research and Development Center for Large Language Models and making minor edits to the results (translation from Japanese to English was done by a human).

Reference

LENNON, John, and Yoko ONO. "IMAGINE." JOHN LENNON [Official Web Site], www.johnlennon.com/news/imagine-all-the-peopleliving-life-in-peace/. Accessed 12 Mar. 2025.

Working on Both Research and Service to

Research

Comprehensive research from basic theory to cutting-edge technology

Merging computer science and information engineering with the humanities, social sciences, life sciences, and many other disciplines, informatics is a domain of study that is involved in all aspects of society. Having established four Research Divisions and 16 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, the Internet of things, and information security. NII is also focusing its efforts to promote international exchange and collaboration with overseas universities and research institutes, as well as collaboration between industry, government, and academia to help implement its research achievements in the real world.





Principles of Informatics

Seeks new principles and theories of

computational complexity, as well as artificial

new technologies that will sustain societies of

the future and break new ground in the field

computing. Conducts research to develop

informatics using algorithms and

intelligence, robotics, and quantum

Research Division

of informatics

Research

Centers

Research Divisions



Information Systems Architecture Science Research Division

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



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 humans and knowledge.



Information and Society Research Division

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

Researchers with various expertises collaborating to work on special research domains

- Research and Development Center for Academic Networks
- Center for Cloud Research and Development
- Research Center for Open Science and Data Platform
- Global Research Center for Quantum Information Science
- Research Center for Medical Bigdata
 - Center for Advanced Mobile Driven Research

- Research Center for Knowledge Media and Content Science
- Center for Dataset Sharing and Collaborative Research
- Center for Research Data Ecosystem Development
- Global Research Center for Big Data Mathematics
- Global Research Center for Synthetic Media
- Research Center for Community Knowledge
- Center for Strategic Cyber Resilience Research and Development
- Center for Trust & Digital Identity Research and Development
- Research Center for Mathematical Trust in Software and Systems
- Research and Development Center for Large Language Models

Graduate Program

Fostering new leaders for an advanced information society

The graduate program at NII is carried out in three ways: (1) participating in the Graduate University for Advanced Studies, SOKENDAI, (2) collaborating with other graduate schools, and (3) accepting research students for special collaboration.

SOKENDAI is the first graduate university in Japan established to foster original world-class academic research that transcends traditional disciplines and to pioneer advanced fields of study that create new lines of scientific inquiry. NII has joined with SOKENDAI to establish an Informatics Program, offering graduate school education for Five-year and Three-year Doctoral Programs. There are six areas of education and research within the Informatics Program, so students can take lectures and receive research supervision according to the field in which they wish to specialize.



Create Future Value through Informatics



Service

Supporting academic research infrastructure and education

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

Science Information NETwork (SINET): An ultra-high-speed network supporting over 1000 universities and research institutions across Japan

Innovative connectivity

Uses leading-edge technology, such as advanced optical transmission technology, for ultra-high-speed full-mesh connectivity to all prefectures in Japan and network slicing for secure services

Ultra-high-speed

Delivers an ultra-high-speed high-performance network by minimizing transmission delay and using 400 Gbps on all lines between nodes (100 Gbps lines to Okinawa).

Multifunctionality

Authentication federation platform development and provision

Develops and provides an authentication federation platform for the Academic Access Management Federation in Japan (GakuNin), UPKI Digital Certificate Issuance Service, and eduroam JP (a global wireless LAN roaming platform for academia) so that universities and research institutions can have safe and secure access to web services, computing resources. and networks for education and research

Cloud adoption and utilization support

NII offers the GakuNin Cloud Adoption Support Service, to facilitate the introduction and use of cloud services, the GakuNin Cloud Gateway Service, for one-stop access to cloud services, the GakuNin Cloud On-demand Configuration Service, to support the construction of cloud environments, and the SINETStream, for wide-area data collection and analysis program development.

NII Security Operation Collaboration Services (NII-SOCS):

Creating an inter-university collaborative information security framework

NII helps national universities and other academic institutions create a framework for rapid response to security incidents, accidents, and other issues. In collaboration with national universities and other academic institutions, NII builds a system on SINET that monitors, detects, and analyzes cyberattacks. Furthermore, NII provides them with information to meet the level of risk and urgency of attacks based on data shared by related foreign and Japanese organizations, as well as training for cybersecurity officers to enhance their capacity to counter cyberattacks.

NII Research Data Cloud (Research data infrastructure): Service to manage, publish, and search research data to promote open science

GakuNin RDM (Research data management platform/Data analysis function) 🞯 GakuNin RDM

This service helps researchers to manage their data, share with collaborators, and analyze data in the research process. The data saved into the system are automatically traceable, ensuring research integrity. The data can be linked to cloud storage and other services in line with the institution's data management policies

JAIRO Cloud (Research data publishing platform/Shared repository service) 🍋 JAIRO Cloud

This service provides institutional repository functionality for academic institutions. Built on the repository software developed by NII, it enables researchers to easily self-publish their research results.Nearly 750 academic institutions in Japan use this service.

CiNii (Academic information search service)

This web service allows users to search for academic information in Japan.

It provides access to comprehensive academic information such as research papers/articles, books, research data, and project information (CiNii Research), and book collections at university libraries (CiNii Books).

Research Data Cloud Reuse Management CINI nteroperable NII RDC Trust Protection Safe Training

GakuNin LMS (Research data management training course)

The Learning Management System helps researchers and staff, who provide research support services such as at libraries, URAs, and infrastructure centers, develop skills in research data management. This system can provide academic institutions with the functionality to manage users' learning statuses and digital badges are issued to those who complete the courses as certification of completion.



Robust and reliable

Adopts a multilayered advanced network architecture with redundancies configured at each laver and both bottleneck avoidance and bypassing systems, which are all linked together to create and provide a highly robust and reliable network.

Strengthens Global Connectivity



Organization

Dire	ctor-General		Assistant Director-General	
Τ			Administrative Council	
H	Vice Director-General		Advisory Board	
H	Research Strategy Office		Global Liaison Office (GLO)	
H	Promotion Office of Diversity & Inclusion			
	Silicon Valley Office (JETRO Joint Project)			
	Research Divisions	Principles of Informatics Re	search Division	
		Information Systems Archite	ecture Science Research Division	
		Digital Content and Media	Sciences Research Division	
		Information and Society Re	search Division	
		Services and Operations	Research and Development Center for Academic Networks	
			Research Center for Knowledge Media and Content Science	
			Research Center for Community Knowledge	
			Center for Cloud Research and Development	
			Center for Dataset Sharing and Collaborative Research	
			Center for Strategic Cyber Resilience Research and Development	
			Research Center for Open Science and Data Platform	
	Desservels Constants		Center for Research Data Ecosystem Development	
\square	Research Centers		Center for Trust & Digital Identity Research and Development	
		Major Research Projects	Global Research Center for Quantum Information Science	
			Global Research Center for Big Data Mathematics	
			Research Center for Mathematical Trust in Software and Systems	
			Research Center for Medical Bigdata	
			Global Research Center for Synthetic Media	
			Research and Development Center for Large Language Models	
		Collaboration with Industry, Government, and Academia	Center for Advanced Mobile Driven Research	
	Office for Inter-Organizational Collaboration on R&D	Board for Scientific Research Digital Platform		
	Cyber Science Infrastructure Development Department	Academic Infrastructure	Administration Team; SINET Team; Authentication Infrastructure and Cloud Promotion Team; NII-SOCS Team; LAN and CSIRT Team	
		Division	SINET Promotion Office; Academic Authentication Systems Office; Cloud Promotion Office	
		Scholarly and Academic Information Division	Library Support Team; Academic Content Team; Research Data Cloud Team Content System Development Office	
		Library Liaison Cooperation	Office	
		Advanced ICT Center		
	General Affairs Department	General Affairs and Planning	Division — General Affairs Team/ Planning and Public Relations Team/ Human Resources Team/ Labor Management Team	
Н		Budget and Accounts Divis	ion — Finance Team/ Accounting Team/ Procurement Team/ Facilities Team	
		Research Promotion Divisic	Research Promotion Team/ Public and Private Fund/ Management Team/ Industry-Academia Collaboration and Intellectual Property Management Team International Affairs and Education Support Team	
Ľ		NII Library		

Collaboration with Industry, Government, and Academia

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

International Exchange

To promote organization-wide international research exchange with overseas universities and research institutes, NII set up the Global Liaison Office (GLO), which conducts various activities that include forming international exchange agreements through Memorandum of Understanding (MOU) and handling the NII International Internship Program and the MOU /non-MOU Grant for research exchange assistance. 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 eld of informatics. NII is also actively accepting researchers through the German Academic Exchange Service (DAAD) and the Japanese-French Laboratory for Informatics (JFLI).

Fiscal 2024 News Releases

(From April 1, 2024 to January 31, 2025)

Release date		Title
April 1	2024	Research and Development Center for Large Language Models established at National Institute of Informatics (NII) – Accelerating R&D to develop domestic LLMs and ensure transparency and reliability of generative AI models –
April 1		Center for Trust & Digital Identity Infrastructure Research and Development established at NII
April 9		 NII Associate Professor HIRAHARA, Shuichi won the Young Scientists' Award for "Meta-Computational Average-Case Complexity Research" The Commendation by the Minister of Education, Culture, Sports, Science and Technology in FY2024 –
April 10		Mathematical formulation of ISO 34502 hazardous scenarios for automated driving systems – Automation and streamlining of safety assurance tasks accelerate social acceptance of automated driving –
April 18		 NII and the Tokyo Institute of Technology signed a partnership agreement for the research and development of Japanese large language models Working to ensure the transparency and reliability of generative AI models and accelerate their social implementation –
April 22		Professor HASUO, Ichiro and Associate Professor ISHIKAWA, Fuyuki of NII, and Professor KATSUMATA, Shinya of Kyoto Sangyo University jointly won the Award for Science and Technology (Research Category) and the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology for research on mathematical software that will contribute to social trust of information technology in the coming future
April 30		Development of the large language model "LLM-jp-13B v2.0" – The NII-hosted LLM Research Group (LLM-jp) releases the successor model of "LLM-jp-13B," and makes all resources used for development open for the public –
May 22		Trial version of the OER Repository now available – Enables cross search of teaching materials developed by universi- ties –
May 23		A wide-ranging introduction to the activities of NII! "NII Weeks 2024" – Open House (June 7), Academic Information Infrastructure Open Forum (June 11–13), Japan Open Science Summit (June 17–21) hosted consecutively –
May 30		You can ask Socrates for life advice with generative Al? – Developing an interactive system that contributes to the dramatic development of western classical studies –
June 13		Positive solution to a 15-year-old unsolved problem in the field of combinatorial reconfiguration – Research paper by Associate Professor HIRAHARA, Shuichi of NII and others accepted by STOC 2024, a top confer- ence in the field of theoretical computer science –
July 17		Projection mapping exhibit shows Science Information NETwork (SINET6) data flow rates on a map of Japan
July 18		Computer Science Park 2024 held on July 31 (Wed.)! Research 100 Shots concurrently held!
Sep. 2		Join a chemistry treasure hunt using informatics technology! – Competition held involving using machine learning methods to discover catalysts for efficiently converting methane into ethane –
Sep. 17		Full-scratch learning for large language model with approximately 172 billion parameters (GPT-3 level) underway and preview version of "LLM-jp-3 172B beta1" released – The world's largest fully open model, Including training data –
Oct. 16		Fujitsu-led industry-academia consortium of nine organizations commences development of world's first disinforma- tion countermeasure platform
Oct. 21		CiNii Research automatic translation function trial version launched – Making it possible for users who do not under- stand Japanese to search for Japanese papers –
Nov. 28		CTC and NII promote joint research toward standardization of digital credentials at academic institutions – Aiming to establish governance and technical standards for the digitization of degrees, academic histories, and student IDs –
Dec. 24		A fully open large language model with approximately 172 billion parameters (GPT-3 level): "Ilm-jp-3-172b-instruct3" now publicly available – Achieving performance beyond GPT-3.5 –

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- NII Video Channel: Lectures for the general public, research presentations, and others. https://www.nii.ac.jp/event/videos/
- NII Today: NII PR Magazine, reports for NII news stories, technologies, achievements, and more. https://www.nii.ac.jp/en/about/publications/today/

This publication is printed on materials sourced from responsibly managed FSC[®]-certified forests, recycled resources, and other controlled sources. It was printed using waterless printing, which eliminates the generation of harmful wastewater, using ink free from VOC (volatile organic compound) petroleum-based solvents. 13.8% of the electricity used in printing this publication comes from biomass-generated green energy. The paper, ink, and binding materials are all made with materials ranked "A" for recyclability that do not hinder the process of recycling into paper and card stock.





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April, 2025

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