SOKENDAI

Graduate Institute for Advanced Studies, SOKENDAI

Informatics Program

**Five-year doctoral program /
Three-year doctoral program**

2024–2025

ACHIEVING
EXCELLENCE
IN INFORMATICS

Earn a Ph.D. at the National Institute of Informatics

The National Institute of Informatics (NII) offers Three-year and Five-year doctoral program within The Graduate University for Advanced Studies, SOKENDAI, in which it constitutes Informatics Program.
Informatics Program provides a unique educational and research system where the National Institute of Informatics allows students access to advanced IT facilities and leading researchers in an international atmosphere.

Director General,
National Institute of
Informatics
**KUROHASHI,
Sadao**

Cultivating creativity talents with an interdisciplinary perspective.

Informatics plays a crucial role in realizing a smart society, where innovative information technology continuously generates new values and services. As society undergoes rapid digitization, the significance of information technology and the need for real human interactions are being reevaluated. Informatics is a comprehensive academic discipline encompassing traditional information science and engineering, along with AI, data science, and digital humanities and social informatics.

The National Institute of Informatics (NII) conducts extensive research in informatics and maintains cutting-edge infrastructure for academic information dissemination. Collaborative research with domestic and international universities and research institutions contributes to the development of the information society. By linking research and education with business, NII fosters innovative research and education.

The Graduate University for Advanced Studies (SOKENDAI) is an independent graduate university supported by 20 inter-university research institutes. NII is responsible to administrate the Informatics Program at SOKENDAI for nurturing creative individuals with a broad perspective in informatics. Esteemed professors from the NII engage students in solving individual problems and developing high-level insight. The program focuses on project planning, completion, discovering and addressing new challenges, information gathering, and research presentation skills.

We welcome motivated students to join the Informatics Program. Enrolling in the program will enable you to become well-rounded professionals capable of making a variable impact. Let's go on a journey to contribute to the advanced information society.

Chair, Informatics
Program
**TAKEDA,
Hideaki**

Ultimating Informatics.

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

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

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

Program outline

What is SOKENDAI?

The Graduate University for Advanced Studies, SOKENDAI is a graduate university with no undergraduate programs that consists of programs housed in affiliated Inter-University Research Institutes and Integrative Evolutionary Science Program attached directly to SOKENDAI. The Inter-University Research Institutes are research centers for joint use by universities throughout Japan in their various research fields. As such, these institutes serve as centers of advanced research in their respective research fields and as nodes of scholarly communication that support international joint research.

SOKENDAI was founded in October 1988 on the internationally unprecedented idea of educating graduate students at outstanding centers of research to cultivate future generations of scholars.

What is the National Institute of Informatics?

The National Institute of Informatics (NII) is an inter-university research institute corporation and a research organization of information and systems. The mission of this unique national academic research institute is to "create future value" in the new academic field of informatics. From the basic methodology of informatics to cutting-edge themes such as artificial intelligence, Big Data, the Internet of Things (IoT), and information security, NII features in a wide range of research activities. We push forward with fundamental research valued from the long-term view as well as practical studies aimed at resolving current social problems.

As an inter-university research institute corporation, NII has taken on the task of building and running essential research and education information infrastructures for Japan's academic community.

Relation between the Informatics Program and the National Institute of Informatics

ROIS: Research Organization of Information and Systems

NII | Faculty: 36 Profs, 23 Assoc. Profs, 15 Asst. Profs

•Principles of Informatics Research Division
•Information Systems Architecture Research Division
•Digital Content and Media Sciences Research Division
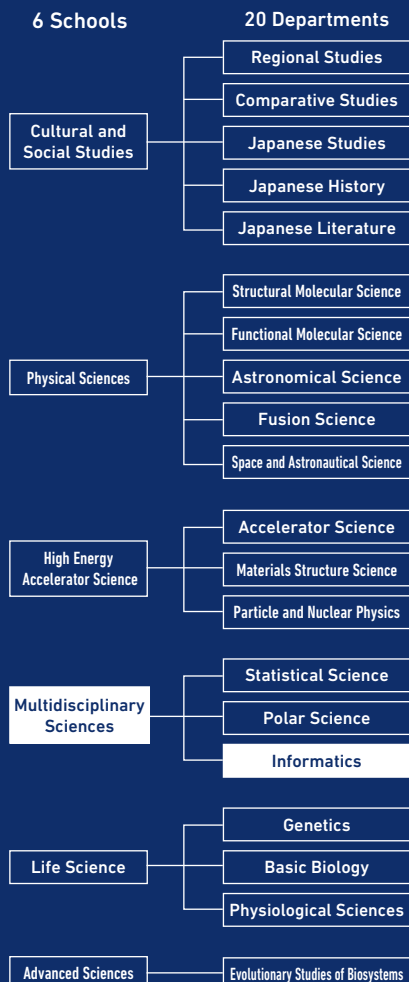•Information and Society Research Division

Founding Institution →

The Graduate University for Advanced Studies, SOKENDAI

Informatics Program | Faculty: 33 Profs, 15 Assoc. Profs, 11 Asst. Profs

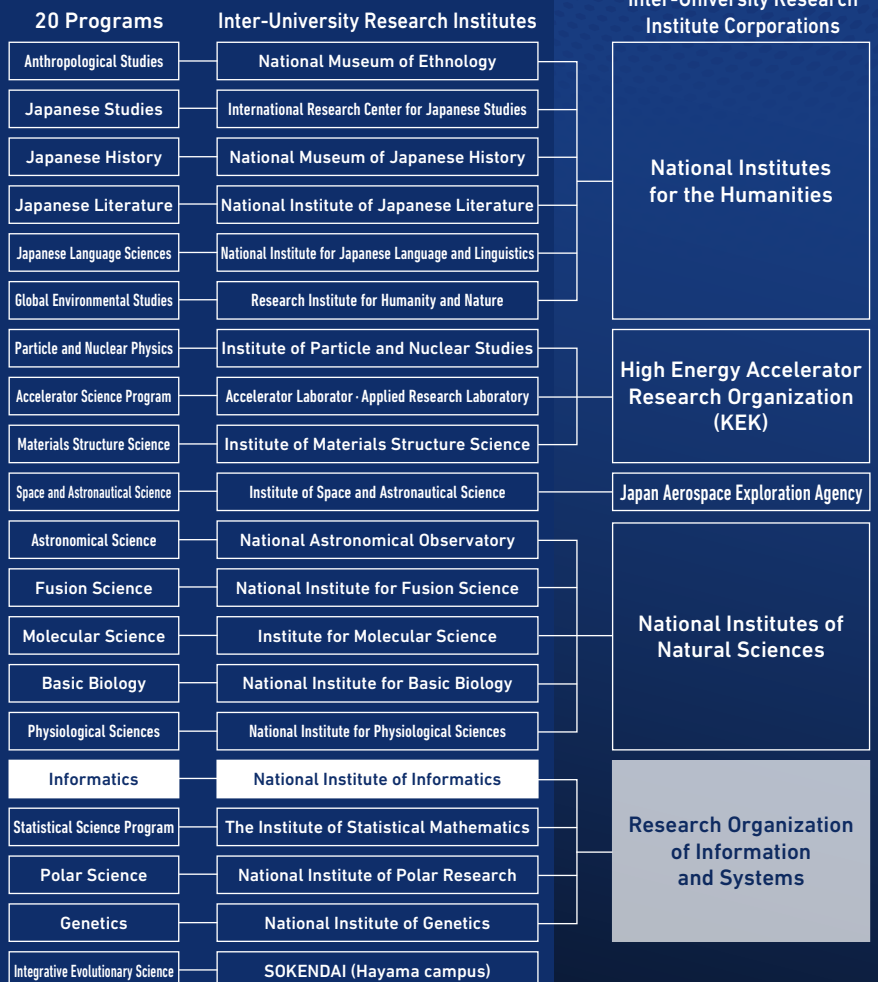•Foundations of Informatics
•Information Infrastructure Science
•Software Science
•Multimedia Information Science
•Intelligent Systems Science
•Information Environment Science

Relation Between Each Program at SOKENDAI and Each Inter-University Research Institute

Previous Educational Structure Until AY2022

6 Schools — **20 Departments**

Cultural and Social Studies
- Regional Studies
- Comparative Studies
- Japanese Studies
- Japanese History
- Japanese Literature

Physical Sciences
- Structural Molecular Science
- Functional Molecular Science
- Astronomical Science
- Fusion Science
- Space and Astronautical Science

High Energy Accelerator Science
- Accelerator Science
- Materials Structure Science
- Particle and Nuclear Physics

Multidisciplinary Sciences
- Statistical Science
- Polar Science
- Informatics

Life Science
- Genetics
- Basic Biology
- Physiological Sciences

Advanced Sciences
- Evolutionary Studies of Biosystems

Graduate Institute for Advanced Studies From AY2023

20 Programs — **Inter-University Research Institutes** — **Inter-University Research Institute Corporations**

20 Programs	Inter-University Research Institutes	Inter-University Research Institute Corporations
Anthropological Studies	National Museum of Ethnology	National Institutes for the Humanities
Japanese Studies	International Research Center for Japanese Studies	National Institutes for the Humanities
Japanese History	National Museum of Japanese History	National Institutes for the Humanities
Japanese Literature	National Institute of Japanese Literature	National Institutes for the Humanities
Japanese Language Sciences	National Institute for Japanese Language and Linguistics	National Institutes for the Humanities
Global Environmental Studies	Research Institute for Humanity and Nature	National Institutes for the Humanities
Particle and Nuclear Physics	Institute of Particle and Nuclear Studies	High Energy Accelerator Research Organization (KEK)
Accelerator Science Program	Accelerator Laborator · Applied Research Laboratory	High Energy Accelerator Research Organization (KEK)
Materials Structure Science	Institute of Materials Structure Science	High Energy Accelerator Research Organization (KEK)
Space and Astronautical Science	Institute of Space and Astronautical Science	Japan Aerospace Exploration Agency
Astronomical Science	National Astronomical Observatory	National Institutes of Natural Sciences
Fusion Science	National Institute for Fusion Science	National Institutes of Natural Sciences
Molecular Science	Institute for Molecular Science	National Institutes of Natural Sciences
Basic Biology	National Institute for Basic Biology	National Institutes of Natural Sciences
Physiological Sciences	National Institute for Physiological Sciences	National Institutes of Natural Sciences
Informatics	National Institute of Informatics	Research Organization of Information and Systems
Statistical Science Program	The Institute of Statistical Mathematics	Research Organization of Information and Systems
Polar Science	National Institute of Polar Research	Research Organization of Information and Systems
Genetics	National Institute of Genetics	Research Organization of Information and Systems
Integrative Evolutionary Science	SOKENDAI (Hayama campus)	

Features of the Informatics Program

1 | **Top-Level Research Environment**

Students of the Informatics Program are taught and guided by top-level, world class researchers of the National Institute of Informatics. They also have the opportunity to use advanced research facilities not found at any other university. The high ratio of professors to students means close personal attention. A full-scale, thorough guidance system is in place: for their research, students are assigned one advisor, and two sub-advisors, meaning they can receive guidance and instruction from three professors.

2 | **Every student can work as a Research Assistant**

Accepted students can apply to work as a Research Assistant (RA) at the National Institute of Informatics, and are eligible to receive financial assistance (except for working students, government scholarship recipients and SOKENDAI Special Researcher). Additional hourly wages are paid to students who show outstanding research abilities. The Graduate University for Advanced Studies, SOKENDAI also has a system for course-fee waiver applications.

3 | **Many graduates find work as researchers both in Japan and abroad**

Many degree recipients of the Informatics Program are engaged in research, both in Japan and abroad. Not only does NII feature cutting-edge research facilities for students but, with a large contingent of foreign students, it also has an international atmosphere. Many students attend the numerous lectures and seminars given in English. For students looking to become researchers on the international stage, there is no better atmosphere to prepare them for this than the atmosphere provided at NII.

Vice Chair MESSAGE

Graduate school for world-class researchers

Vice chair,
Informatics Program
(In charge of Research and Education)
GOSHIMA, Masahiro

The Informatics Program is established in the National Institute of Informatics (NII), and NII research staff, i.e., professors and associate professors, supervise SOKENDAI students. NII is an internationally well-known research institute in informatics, and researchers from all over the world come and work there. The students enrolled in the Informatics Program also become members of NII, conduct their academic and research activities under the supervision of the research staff in such an international research environment, present their findings in international conferences and journals, and finally receive their PhD degrees. It is the mission of the Informatics Program to foster world-class researchers by the world-class research staff. Also, NII employs many of the students as research assistants to provide financial support.

Global Education Environment in the Informatics Program

Vice chair,
Informatics Program
(In charge of International Affairs)
BONO, Mayumi

The Informatics Program is based on the National Institute of Informatics, which has international exchange programs with about 100 universities and institutions around the world, and conducts collaborative research activities in a full spectrum of informatics. In our program, more than half of the students are from foreign countries, and the lectures and research supervision are mostly provided in English. We also have various kinds of scholarship programs as well as support for internships abroad, and the students are encouraged to present their research results at high-level international conferences. We aim to have our students acquire extensive knowledge and high expertise in the field of informatics with global perspectives in our cross-cultural environment.

Requirements for Ph.D. Degree

The following schedule for the Five-year and Three-year doctoral program have been set by the Program.

Spring Admission	1st Year												2nd Year															
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
Five-year doctoral program Number of program credits for completion: 42 or more	Admission																		Intermediate Evaluation			Progress Report		**Second term**				
					18 months											4 months												
Three-year doctoral program Number of program credits for completion: 16 or more																									Admission			

Fall Admission	1st Year												2nd Year													
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1
Five-year doctoral program Number of program credits for completion: 42 or more	Admission																	Intermediate Evaluation				Progress Report		**Second term**				
					17 months											5 months												
Three-year doctoral program Number of program credits for completion: 16 or more																									Admission			

Curriculum

The Informatics Program provides a unique educational and research system where the National Institute of Informatics allows students access to advanced IT facilities and leading researchers in an international atmosphere.
In order to pass the Ph.D. program in the Informatics Program, students are expected to complete a number of credits from taught courses, to receive the necessary level of research guidance, and to pass a thesis examination.

Dissertation Work in Advanced Studies etc.

Dissertation Work in Advanced Studies ⅠA〜ⅤB

The number of program credits

42 for Five-year doctoral program   **16** for Three-year doctoral program

Informatics Program

Subjects Under Research Guidance

Experiment and Seminar on Basic Knowledge in Informatics ⅠA〜ⅡB	All professors

Foundations of Informatics

Introduction to Mathematical Logic	TATSUTA Makoto
Introduction to Algorithms	UNO Takeaki
Logic in Computer Science	TATSUTA Makoto
Discrete Mathematics	KAWARABAYASHI Ken-ichi
Computational Complexity Theory	HIRAHARA Shuichi
Computational Game Theory	Professors in Foundations of Informatics
Sublinear Algorithms	YOSHIDA Yuichi
Algorithmic Market Design	Professors in Foundations of Informatics
Combinatorial Optimization for Machine Learning	FUJII Kaito
Quantum Algorithms	SOEDA Akihito

Information Infrastructure Science

High-Performance Computing	AIDA, Kento
	TAKEFUSA, Atsuko
	KOIBUCHI, Michihiro
	ISHIKAWA, Yutaka
Information Sharing System Architecture	KURIMOTO, Takashi
	TAKAKURA, Hiroki
	SATO Hiroyuki
Computer System Design	GOSHIMA, Masahiro
	ISHIKAWA, Yutaka
Information and Communication Systems	FUKUDA, Kensuke
	KANEKO, Megumi
	JI, Yusheng

Software Science

Introduction to Software Science 1	All professors in Software Science
Introduction to Software Science 2	
Distributed Systems	SATOH, Ichiro
Software Engineering	ISHIKAWA, Fuyuki

Database Theory	KATO, Hiroyuki
Programming Languages and Theory	Professors in Software Science
Mathematical Structures in Formal Methods	HASUO, Ichiro
Software Verification	SEKIYAMA, Taro
Probabilistic Models in Informatics	KITAMOTO, Asanobu
Embedded Real-Time Systems	AOKI, Shunsuke

Multimedia Information Science

Introduction to Multimedia Information Science	All professors in Multimedia Information Science	
Fundamentals of Media Processing	YAMAGISHI, Junichi	KODAMA, Kazuya
	IKEHATA, Satoshi	MO, Hiroshi
	SATOH, Shin'ichi	KATAYAMA, Norio
	SUGIMOTO, Akihiro	AIZAWA, Akiko
	KOYAMA, Shoichi	
Applications of Multimedia Processing	YAMAGISHI, Junichi	SUGIMOTO, Akihiro
	SATO, Imari	IKEHATA, Satoshi
	MO, Hiroshi	KODAMA, Kazuya
Interactive Media	ARAI, Noriko	KATAYAMA, Norio
	KOYAMA, Shoichi	ASANO, Yuta

Intelligent Systems Science

Introduction to Intelligent Systems Science 1	AIZAWA, Akiko	YAMADA, Seiji
	INOUE, Katsumi	KOBAYASHI, Taisuke
	SHIGAKI, Shunsuke	KURITA Shuhei
	SATO Ryoma	
Introduction to Intelligent Systems Science 2	BONO, Mayumi	TAKEDA, Hideaki
	PRENDINGER, Helmut	
	MIZUNO, Takayuki	SUGIYAMA, Mahito
	SUGAWARA, Saku	

Robot Informatics	SHIGAKI, Shunsuke
	KOBAYASHI Taisuke
Natural Language Processing	AIZAWA, Akiko
	SUGAWARA, Saku
Deep Learning	PRENDINGER, Helmut
Communication Environments	BONO, Mayumi
Data Mining	SUGIYAMA, Mahito
Knowledge Sharing System	TAKEDA, Hideaki
Computational Social Science	MIZUNO, Takayuki

Information Environment Science

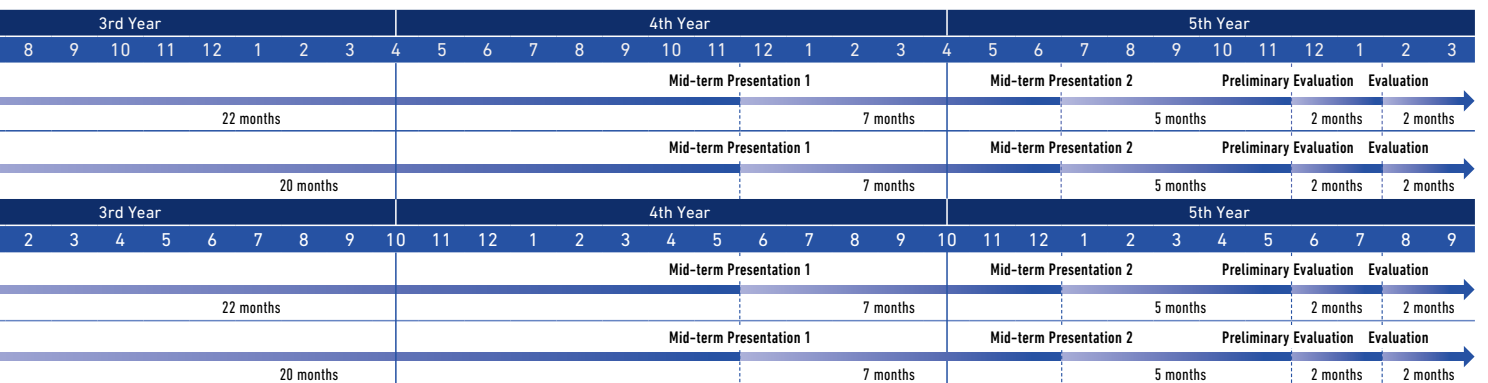|	
Introduction to Information Environment Science	All professors in Information Environment Science
Practical Data Science	YAMAJI, Kazutsuna
ICT-enabled Business	OKADA, Hitoshi
Introduction to Statistical Methods in Bibliometrics	SUN, Yuan
Methodology of Scientometrics	NISHIZAWA, Masaki

Others

Applied Linear Algebra	KISHIDA, Masako
	SUGIMOTO, Akihiro
	SATOH, Shin'ichi
Scientific Presentation	KANEKO, Megumi
	WU, Stephen (Statistical Science Program)
Scientific Writing	JONES, Caryn (Visiting Lecturer)
Introduction to Information Security Infrastructure	ECHIZEN, Isao
	TAKAKURA Hiroki
	OKADA, Hitoshi
Introduction to Big Data Science	Professors related to Big Data

*Scheduled subjects. In some cases there may be changes.

Timetable of the lectures and syllabus information is available at following website

Website of the Program ——————— https://www.nii.ac.jp/graduate/en/curriculum/timetable/
SOKENDAI website (curriculum) —— https://www.soken.ac.jp/en/education/curriculum/

3rd Year								4th Year												5th Year										
8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

Mid-term Presentation 1   Mid-term Presentation 2   Preliminary Evaluation   Evaluation

22 months   7 months   5 months   2 months   2 months

Mid-term Presentation 1   Mid-term Presentation 2   Preliminary Evaluation   Evaluation

20 months   7 months   5 months   2 months   2 months

3rd Year								4th Year												5th Year										
2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9

Mid-term Presentation 1   Mid-term Presentation 2   Preliminary Evaluation   Evaluation

22 months   7 months   5 months   2 months   2 months

Mid-term Presentation 1   Mid-term Presentation 2   Preliminary Evaluation   Evaluation

20 months   7 months   5 months   2 months   2 months

Image

Research Field and Advisors at the Program
Research Keywords and Major Research Papers Titles

Foundations of Informatics
Developing Mathematical Theories Underpinning All of Informatics

Foundations of Informatics studies theoretical underpinnings of informatics. In addition to their intrinsic importance, basic theories in informatics serve as foundations for wide application areas, including networks, software, and artificial intelligence. Special emphasis is placed on algorithm theory, mathematical optimization, and mathematics about computer programs.

KAWARABAYASHI, Ken-ichi Professor

[Keywords]
Discrete Math, Graph Theory, Algorithm, Theoretical Computer Science
[Papers]
• Maximizing Time-Decaying Influence in Social Networks
• Coloring 3-Colorable Graphs with Less than $n^{1/5}$ Colors

TATSUTA, Makoto Professor

[Keywords]
Programming Logic, Lambda Calculus, Type Theory, Constructive Logic, Software Verification
[Papers]
• Equivalence of Inductive Definitions and Cyclic Proofs under Arithmetic
• Decision Procedure for Entailment of Symbolic Heaps with Arrays

UNO, Takeaki Professor

[Keywords]
Algorithms, Computation, Optimization, Data Mining, Data Engineering
[Papers]
• Micro-Clustering by Data Polishing
• Listing Maximal Independent Sets with Minimal Space and Bounded Delay

YOSHIDA, Yuichi Professor

[Keywords]
Algorithms, Theoretical Computer Science, (Combinatorial) Optimizations
[Papers]
• Lipschitz Continuous Algorithms for Graph Problems
• Spectral Hypergraph Sparsifiers of Nearly Linear Size

HIRAHARA, Shuichi Associate Professor

[Keywords]
Computational Complexity Theory, P versus NP Problem, Minimum Circuit Size Problem, Kolmogorov Complexity, Pseudorandomness
[Papers]
• Non-Black-Box Worst-Case to Average-Case Reductions within NP
• NP-Hardness of Learning Programs and Partial MCSP

KISHIDA, Masako Associate Professor

[Keywords]
Control Theory, Optimization, Uncertain Systems, Networked Systems
[Papers]
• Event-triggered control with self-triggered sampling for discrete-time uncertain systems
• Deep learning-based average consensus

MATSUMOTO, Keiji Associate Professor

[Keywords]
Quantum Information, Quantum Computation, Statistics, Information Theory, Entanglement
[Papers]
• Entanglement and Quantum Information Processing
• Hypothesis testing for an entangled state produced by spontaneous parametric down conversion

SOEDA, Akihito Associate Professor

[Keywords]
Quantum algorithms, Quantum information theory
[Papers]
• Reversing unknown quantum transformations: A universal quantum circuit for inverting general unitary operations
• Robust controllability of two-qubit Hamiltonian dynamics

FUJII, Kaito Assistant Professor

[Keywords]
Combinatorial Optimization, Algorithms, Machine Learning
[Papers]
• Beyond adaptive submodularity: Approximation guarantees of greedy policy with adaptive submodularity ratio
• Fast greedy algorithms for dictionary selection with generalized sparsity constraints

WELLNITZ, Philip Assistant Professor

[Keywords]
Algorithms, Fine-grained Complexity Theory, Algorithms on Strings, Counting Problems
[Papers]
• Faster Approximate Pattern Matching: A Unified Approach
• Counting Small Induced Subgraphs with Edge-monotone Properties

Information Infrastructure Science

The Construction and Enhancement of Information Infrastructure

Computer systems and information-communication networks form the foundation of information systems. In Information Infrastructure Science field, lectures and research instructions are provided to address the theoretical and practical issues in the topics of computer architecture, parallel and distributed processing, high-performance and dependable computing, network architecture, protocol, security, resource management, and performance evaluation methodology.

AIDA, Kento Professor

[Keywords]
Cloud Computing, IoT, Parallel and Distributed Computing
[Papers]
- A Portable Load Balancer for Kubernetes Cluster
- Virtual Cloud Service System for Building Effective Inter-Cloud Applications

FUKUDA, Kensuke Professor

[Keywords]
Internet Protocol, Traffic Measurement, Analysis and Modeling, Scale-Free Network, Small-World Network
[Papers]
- Mining causality of network events in log data
- An Evaluation of Darknet Traffic Taxonomy

GOSHIMA, Masahiro Professor

[Keywords]
Computer Architecture, Microarchitecture, Digital Circuit
[Papers]
- Out-of-Step Pipeline for Gather/Scatter Instructions
- Application of Clocking Scheme That Enables Dynamic Time Borrowing

ISHIKAWA, Yutaka Professor

[Keywords]
System Software, Operating System, Communication and File IO middleware, Parallel and Distributed Processing
[Papers]
- Performance and Scalability of Lightweight Multi-Kernel based Operating Systems
- Casper: An Asynchronous Progress Model for MPI RMA on Many-Core Architectures

JI, Yusheng Professor

[Keywords]
Network Resource Management, Mobile Computing
[Papers]
- Joint Client Selection and Receive Beamforming for Over-the-Air Federated Learning with Energy Harvesting
- Achieving Multi-time-step Segment Routing via Traffic Prediction and Compressive Sensing Techniques

KOIBUCHI, Michihiro Professor

[Keywords]
Parallel Computers, Interconnection Networks, Network-on-Chip, System Area Networks, High Performance Computing
[Papers]
- A Case for Random Shortcut Topologies for HPC Interconnects
- High-Bandwidth Low-Latency Approximate Interconnection Networks

KURIMOTO, Takashi Professor

[Keywords]
Network Protocol, Network Node Architecture
[Papers]
- SINET5: A Low-Latency and High-Bandwidth Backbone Network for SDN/NFV Era
- Multi-campus ICT equipment virtualization architecture for cloud and NFV integrated service

KANEKO, Megumi Professor

[Keywords]
Wireless Communications, Mobile Networks, Internet-of-Things (IoT) wireless systems
[Papers]
- Energy Efficient Resource Allocation Optimization in Fog Radio Access Networks with Outdated Channel Knowledge
- Deep Reinforcement Learning-based User Association in Sub6GHz/mmWave Integrated Networks

SATO, Hiroyuki Professor

[Keywords]
Internet Trust, Decentralized Autonomous Network
[Papers]
- Elastic Trust Model for Dynamically Evolving Trust Frameworks
- Enabling Fine-Grained Access Control Based on Blockchain

TAKAKURA, Hiroki Professor

[Keywords]
Cyber Security, High Performance Network, Secure Networking, Data Mining
[Papers]
- Security Operation Support by Estimating Cyber Attacks Without Traffic Decryption
- Cyber Attack Stage Tracing System based on Attack Scenario Comparison

TAKEFUSA, Atsuko Professor

[Keywords]
Parallel and Distributed Computing, Resource Management Technologies, Cloud Computing, Inter-Cloud, Edge Computing, IoT
[Papers]
- SINETStream: Enabling Research IoT Applications with Portability, Security and Performance Requirements
- Virtual Cloud Service System for Building Effective Inter-Cloud Applications

URUSHIDANI, Shigeo Professor

[Keywords]
Network Architecture, Network Service Systems
[Papers]
- Optimization model for designing multiple virtualized campus area networks coordinating with a wide area network
- Robust optimization model for backup resource allocation in cloud provider

Research Field and Advisors at the Program
Research Keywords and Major Research Papers Titles

Software Science
Software: Enabling Technologies for IT

Software technology is the foundation of all industries and daily activities. In the era of widespread use of AI, software with high quality, functionality, and reliability is critical to building next-generation information systems. This field addresses relevant research questions in software science, including fundamental software technologies such as programming languages, software engineering, distributed systems, and advanced software technologies such as data engineering, machine learning, real-world data analysis.

HASUO, Ichiro Professor

[Keywords]
Logic, Automaton, Category Theory, Formal Methods, Cyber-Physical System, Optimization, Machine Learning
[Papers]
- Goal-Aware RSS for Complex Scenarios via Program Logic
- Expressivity of Quantitative Modal Logics: Categorical Foundations via Codensity and Approximation

KITAMOTO, Asanobu Professor

[Keywords]
Data-driven Science, Digital Humanities, Earth Environmental Informatics, Image Processing, Digital Archives, Open Science
[Papers]
- Differential Reading by Image-based Change Detection and Prospect for Human-Machine Collaboration for Differential Transcription
- Situational Awareness from Social Media Photographs Using Automated Image Captioning

SATOH, Ichiro Professor

[Keywords]
Cloud Computing, Ubiquitous Computing, Middleware, OS, Distributed Computing
[Papers]
- A Component Framework for Adapting to Elastic Resources in Clouds
- Toward Access Control Model for Context-Aware Services Offloaded to Cloud Computing.

TAKASU, Atsuhiro Professor

[Keywords]
Data Engineering, Sensor Data Analysis, Text Mining
[Papers]
- Kernel Clustering with Sigmoid Regularization for Efficient Segmentation of Sequential Data
- Considering similarity and the rating conversion of neighbors on neural collaborative filtering

ISHIKAWA, Fuyuki Associate Professor

[Keywords]
Software Engineering, Testing, Formal Methods, Software Engineering for Machine Learning-based Systems
[Papers]
- Targeting Requirements Violations of Autonomous Driving Systems by Dynamic Evolutionary Search
- NeuRecover: Regression-Controlled Repair of Deep Neural Networks with Training History

SEKIYAMA, Taro Associate Professor

[Keywords]
Programming Languages, Type Systems, Formal Verification, Machine Learning
[Papers]
- Signature Restriction for Polymorphic Algebraic Effects
- Toward Neural-Network-Guided Program Synthesis and Verification

AOKI, Shunsuke Assistant Professor

[Keywords]
Autonomous Driving, Cyber-Physical Systems, Real-Time Systems, Embedded Systems, Mobile Robots, Internet of Things
[Papers]
- Dynamic intersections and self-driving vehicles
- Cooperative perception with deep reinforcement learning for connected vehicles

KATO, Hiroyuki Assistant Professor

[Keywords]
XML, Databases, Functional Programming, XQuery
[Papers]
- DDO-Free XQuery
- Cell-based Provenance for Scientific Data
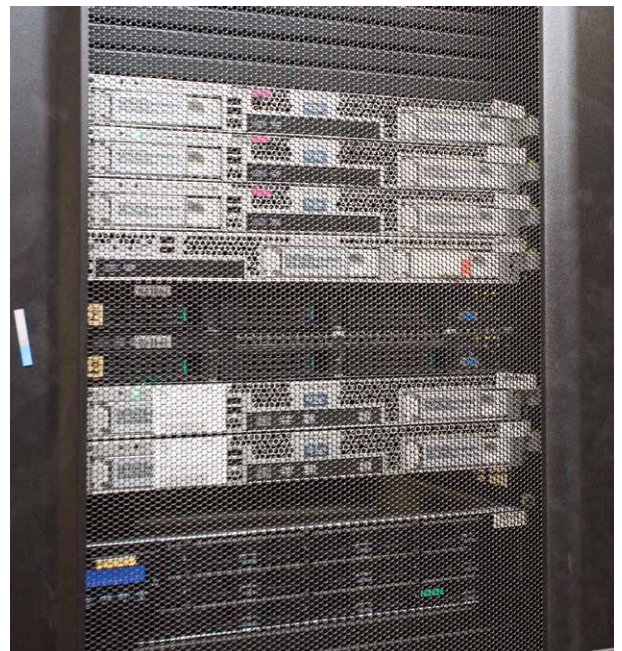
Multimedia Information Science

Information Systems, as "media" that appropriately offers relevant information

This field studies a variety of different problems from "media": theories and technologies that are necessary for processing target information consisting of different media; theories and technologies as the foundation for efficiently handling large amounts of media information; basic technologies for media processing in general, such as pattern recognition and signal processing; and media utility for interactions between people and information systems or among people.

ARAI, Noriko — Professor

[Keywords]
Knowledge Sharing, Knowledge Base, Reading
[Papers]
- Misconception about Zero: How Difficult it is to Overcome
- Item Response Theory in Action: Developing a Diagnostic Test for Mathematical Definition Reading Skills

SATO, Imari — Professor

[Keywords]
Image-based Modeling and Rendering, Computational Photography
[Papers]
- Reliability-Aware Restoration Framework for 4D Spectral Photoacoustic Data
- Wetness and Color from a Single Multispectral Image

SUGIMOTO, Akihiro — Professor

[Keywords]
Computer Vision, Digital Geometry, Human-Computer Interaction
[Papers]
- A-CAP: Anticipation Captioning with Commonsense Knowledge
- Temporal Feature Enhancement Network with External Memory for Live-Stream Video Object Detection

YAMAGISHI, Junichi — Professor

[Keywords]
Speech Information Processing, Machine Learning, Speech-Based Human Machine Interaction, Speech Database, Biometrics, Media Forensics
[Papers]
- Wasserstein GAN and Waveform Loss-based Acoustic Model Training for Multi-speaker Text-to-Speech Synthesis Systems Using a WaveNet Neural Vocoder
- ASVspoof: the Automatic Speaker Verification Spoofing and Countermeasures Challenge

IKEHATA, Satoshi — Associate Professor

[Keywords]
Computer Vision, 3D Reconstruction, Multi-View Stereo, Photometric Stereo, Deep Learning
[Papers]
- From Bayesian Sparsity to Gated Recurrent Nets
- Panoramic Structure from Motion via Geometric Relationship Detection

KATAYAMA, Norio — Associate Professor

[Keywords]
Multimedia Information Processing, Multimedia Information Retrieval
[Papers]
- The SR-tree: An Index Structure for High-Dimensional Nearest Neighbor Queries
- Unsupervised Estimation of Video Continuity Model from Large-Scale Video Archives and Its Application to Shot Boundary Detection

KODAMA, Kazuya — Associate Professor

[Keywords]
Image Sensing, Image Restoration/Reconstruction, Image/Video Coding, Visual Communications
[Papers]
- Efficient Reconstruction of All-in-Focus Images Through Shifted Pinholes from Multi-Focus Images for Dense Light Field Synthesis and Rendering
- Robust extension of light fields with probable 3D distribution based on iterative scene estimation from multi-focus images

KOYAMA, Shoichi — Associate Professor

[Keywords]
Acoustic Signal Processing, Physics-informed Machine Learning, Inverse Problem, Spatial Audio, Active Control
[Papers]
- Sparse Representation of a Spatial Sound Field in a Reverberant Environment
- Spatial Active Noise Control Based on Kernel Interpolation of Sound Field

ASANO, Yuta — Assistant Professor

[Keywords]
Computer Vision, Image processing, Physics-based vision, 3D reconstruction
[Papers]
- Shape from Water: Bispectral Light Absorption for Depth Recovery
- Coded Illumination and Imaging for Fluorescence Based Classification

MO, Hiroshi — Assistant Professor

[Keywords]
Pattern Recognition, Video Content Analysis
[Papers]
- Unsupervised Estimation of Video Continuity Model from Large-Scale Video Archives and Its Application to Shot Boundary Detection
- Enhanced Visualization of News Shot Cloud with Employing Circular Layout

Research Field and Advisors at the Program
Research Keywords and Major Research Papers Titles

Intelligent Systems Science
AI Technology Enhancing Human Intelligent Activities

AI is an emerging technologies that facilitates human intelligence activities using intelligent systems. The Intelligent Systems Science course provides students with a comprehensive understanding of various advanced research topics in intelligent systems and aims to cultivate skilled human resources capable of creating core technologies in intelligent systems.

AIZAWA, Akiko Professor

[Keywords]
Natural Language Interface, QA, Knowledge Acquisition, Document Analysis, Semantic Parsing, Dialogue Systems
[Papers]
• Language-Conditioned Feature Pyramids for Visual Selection Tasks
• Constructing A Multi-hop QA Dataset for Comprehensive Evaluation of Reasoning Steps

INOUE, Katsumi Professor

[Keywords]
Artificial Intelligence, Knowledge Representation and Reasoning, Machine Learning, Logic Programming
[Papers]
• Learning from interpretation transition
• Logic programming in tensor spaces

PRENDINGER, Helmut Professor

[Keywords]
Artificial Intelligence, Deep Learning, Unmanned Aircraft Systems Traffic Management
[Papers]
• Decentralized multi-agent path finding for UAV traffic management
• UAV-based situational awareness system using Deep Learning

TAKEDA, Hideaki Professor

[Keywords]
Semantic Web, Knowledge Sharing, Community-Support System, Design Theory
[Papers]
• Presenting and preserving the change in taxonomic knowledge for linked data
• Understanding massive artistic cooperation: the case of Nico Nico Douga

YAMADA, Seiji Professor

[Keywords]
Human-Agent Interaction, Human-Robot Interaction
[Papers]
• Response Times when Interpreting Artificial Subtle Expressions are Shorter than with Human-like Speech Sounds
• Expressing Emotions through Color, Sound, and Vibration with an Appearance-Constrained Social Robot

BONO, Mayumi Associate Professor

[Keywords]
Sociolinguistics, Conversational Informatics, Utterance, Embodied Action, Sign Language, Conversation Analysis, Social Interaction
[Papers]
• Challenges for Robots Acting on a Stage: Creating Sequential Structures for Interaction and the Interaction Process with the Audience
• The Practice of Showing 'Who I am': A Multimodal Analysis of Encounters between Science Communicator and Visitors at Science Museum

MIZUNO, Takayuki Associate Professor

[Keywords]
Computational Social Science, Econophysics, Complex Networks, Big Data, Human Behavior
[Papers]
• The flow of corporate control in the global ownership network
• Generation of individual daily trajectories by GPT-2

SUGIYAMA, Mahito Associate Professor

[Keywords]
Machine Learning, Data Mining, Statistics, Knowledge Discovery, Bioinformatics
[Papers]
• Tensor Balancing on Statistical Manifold
• Legendre Decomposition for Tensors

KOBAYASHI, Taisuke Assistant Professor

[Keywords]
Intelligent Robots, Machine Learning, Data-driven Control, Human-Robot Interaction
[Papers]
• Whole-Body Multicontact Haptic Human-Humanoid Interaction Based on Leader-Follower Switching: A Robot Dance of the "Box Step"
• Optimistic Reinforcement Learning by Forward Kullback-Leibler Divergence Optimization

KURITA, Shuhei Assistant Professor

[Keywords]
Vision and Language Models, Language Understandings in the Real-World, Natural Language Understandings and Computer Vision, Large Language Models, Natural Language Processing
[Papers]
• Generative Language-Grounded Policy in Vision-and-Language Navigation with Bayes' Rule
• RefEgo: Referring Expression Comprehension Dataset from First-Person Perception of Ego4D

SATO, Ryoma Assistant Professor

[Keywords]
Machine Learning, Data Mining, Graph Theory, Optimal Transport, Information Retrieval, User-side Realization
[Papers]
• Random Features Strengthen Graph Neural Networks
• Fast Unbalanced Optimal Transport on a Tree

SHIGAKI, Shunsuke Assistant Professor

[Keywords]
Intelligent Robots, Neuroethology, Data-driven Control, System Identification, Mechatronics
[Papers]
• Multisensory-motor integration in olfactory navigation of silkmoth, Bombyx mori, using virtual reality system
• Modeling of the adaptive chemical plume tracing algorithm of an insect using fuzzy inference

SUGAWARA, Saku Assistant Professor

[Keywords]
Natural language processing, Computational linguistics, Natural language understanding, Machine reading comprehension, Task design, Machine learning
[Papers]
• Assessing the Benchmarking Capacity of Machine Reading Comprehension Datasets
• Evaluation Metrics for Machine Reading Comprehension: Prerequisite Skills and Readability

Information Environment Science

An Indisposable Academic System for Achieving the Information Society

The information environment is a new concept for viewing the following as a whole: information, information-communication infrastructures, information management, circulation and retrieval systems, people, and social foundations. It has been regarded as an indispensable academic system for achieving the information society. This field sets digital documents and academic information environments as the core subjects and studies the basics to application.

ECHIZEN, Isao `Professor`

[Keywords]
Multimedia Security, Multimedia Forensics, Biometrics, and Privacy
[Papers]
- Generating Sentiment-Preserving Fake Online Reviews Using Neural Language Models and Their Human- and Machine-based Detection
- MesoNet: a Compact Facial Video Forgery Detection Network

KANDO, Noriko `Professor`

[Keywords]
Information Retrieval, Information Access Technologies, Text Processing, Evaluation Methodology and Metrics
[Papers]
- Investigating Result Usefulness in Mobile Search
- A Two-Stage Model for User's Examination Behavior in Mobile Search

SUN, Yuan `Professor`

[Keywords]
Personalized Learning, Cognitive Diagnostic Modelling, Knowledge Tracing, Bibliometrics
[Papers]
- Modeling Learner's Dynamic Knowledge Construction Procedure and Cognitive Item Difficulty for Knowledge Tracing
- Research on the Development of Preprint Platform from the Perspective of Open Communication

YAMAJI, Kazutsuna `Professor`

[Keywords]
Scholarly Communication, Database, Open Science, Research Data Management
[Papers]
- Specifying a Trust Model for Academic Cloud Services
- Development and Deployment of the Open Access Repository and Its Application to the Open Educational Recourses

NISHIZAWA, Masaki `Associate Professor`

[Keywords]
Scientmetrics, Bibliometrics, Research Trends, Statistical Analysis
[Papers]
- A Study on the Academic and Research Impact of Shared Contents in Institutional Repositories in Related to Performance Indicators of University Rankings
- How is scientific research announced in a press release? —Focusing on its relationships with journal indicators—

OKADA, Hitoshi `Associate Professor`

[Keywords]
Electronic Commerce, IT-enabled Services, Electronic Money
[Papers]
- Impact of Nationality Information in Feedback on Trust in a Foreign Online Store
- Evaluating the influence of country-related pictures on the perception of a foreign online store

Visiting Professors

SATOH Shin'ichi
Multimedia Information Science
Visiting Professor

PLANAS, Emmanuel
International Relations
Visiting Professor

Annual Events at the Program

NII Open House

Every June, the National Institute of Informatics holds an open house where they present results from their latest research to the public. The event draws around 1,000 people annually. At this event, students from the Informatics Program have the opportunity to display posters detailing results of their own research and introduce their work to a large audience.

Ceremony to Present Commemorative Medals to Graduates/ Final presentation by Graduates

A special ceremony for students graduating with a Ph.D. degree in Informatics from SOKEN-DAI will be held at the National Institute of Informatics. Each graduate will be presented individually with a medal to commemorate their achievement.

Student's Research

HOUDAIGOUI, Sarah

Enrolled in 2023,
Three-year doctoral program
Main supervisor: Prof. KAWARABAYASHI, Ken-ichi

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

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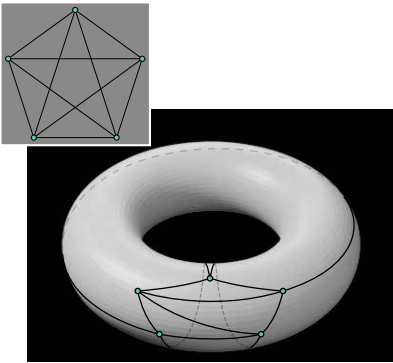
SHIIBA, Ryusei

Enrolled in 2021,
5-year Ph.D. course
Main supervisor: Prof. FUKUDA, Kensuke

Today's computer networks have become large and complex, which is difficult for their operators to manage in manual. The difficulty sometimes leads to severe network failures.

To realize reliable network management, I am trying to develop techniques to automatically verify whether the operator's policies are satisfied on the networks. Especially, I develop new algorithms and data structures leveraging the mathematical feature and structure of the networks and scalable verification techniques for large-scale networks such as mobile networks and data center networks using them.
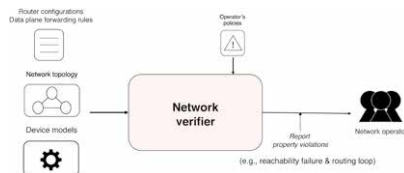
IKEGAMI, Takashi

Enrolled in 2023,
Five-year doctoral program
Main supervisor: Prof. SATOH, Ichiro

Distributed systems, which are composed of multiple devices, are useful for various reasons such as fault-tolerance and load-balancing. However, they are generally difficult to manage due to their complexity. Therefore, middleware should support application developers so that they can easily develop distributed systems without worrying about such complexity.

Our research aims to develop middleware for sensor networks to make sensors synchronize the timing of their measurement autonomously and orderly based on a mathematical model inspired by a synchronization phenomenon in nature. It can achieve synchronization without the existence of a universal clock.
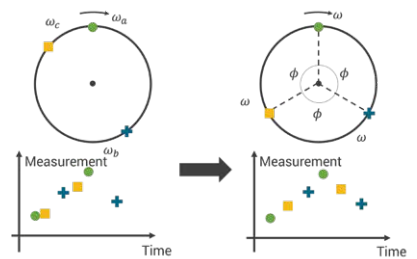
KORI, Mayuko

Enrolled in 2020,
5-year Ph.D. course
Main supervisor: Prof. HASUO, Ichiro

I primarily focus on the problem of verifying whether systems meet expected properties, such as no errors, to ensure their safety. In particular, my research leverages mathematical techniques such as category theory and fixed-point theory to abstract and reconstruct existing verification algorithms. This abstraction process not only makes it easier to interpret algorithms and prove their properties but also allows us to reapply the abstracted theories in a concrete form to new systems that were previously outside the scope of application. I primarily focus on the problem of verifying whether systems meet expected properties, such as no errors, to ensure their safety. In particular, my research leverages mathematical techniques such as category theory and fixed-point theory to abstract and reconstruct existing verification algorithms. This abstraction process not only makes it easier to interpret algorithms and prove their properties but also allows us to reapply the abstracted theories in a concrete form to new systems that were previously outside the scope of application.


YAN, Jingbo

Enrolled in 2020,
5-year Ph.D. course
Main supervisor: Prof. YAMADA, Seiji

Explainable artificial intelligence (XAI) is a critical area of research aimed at addressing the transparency problem in AI systems. By developing interpretability methods, this research seeks to enhance understanding and trust, thereby making AI decisions more transparent and understandable.

My research focuses on developing a human-in-the-loop system with a graphical interface to streamline the feedback gathering process.

Meanwhile, constructing an architecture that seamlessly integrates feedback into the neural network's prediction mechanism can further enhance its adaptability and performance. This human-centered approach guarantees the generation of user-friendly predictions.
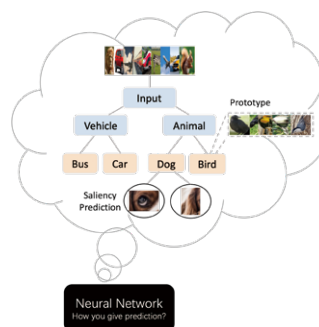
WANG, Jian

Enrolled in 2021,
3-year Ph.D. course
Main supervisor: Prof. ECHIZEN, Isao

With the development of Autonomous Driving (AD), the debates on AD security are also rising. The attack on sensors, such as cameras, poses a major threat to the autonomous vehicles and may cause serious traffic accidents. Therefore, I am trying to understand how vulnerable the camera sensor is to an attack, what kind of attack may be, how much damage would be caused, etc. Also I am working on the research of the methods to prevent these attacks.
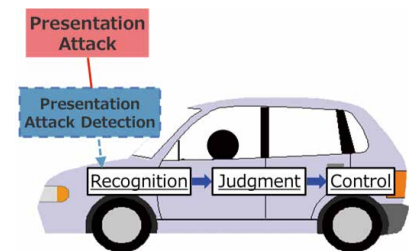
Message from an Alumnus

TSUMURA, Takahiro Ph.D.

2019—2024
5-year Ph.D. course,
Department of Informatics, SOKENDAI

Assistant Professor at Toyo University, Faculty of Information Networking for Innovation and Design, conducting research on building empathy and trust between people and anthropomorphic agents.

It was when I was a third-year undergraduate student that I first met Professor Seiji Yamada and decided to become a Human-Agent Interaction (HAI) researcher. I had always wanted to become a university teacher in the future even before entering SOKENDAI, and I look back and think that it was the generosity of his support that made me decide so strongly to attend SOKENDAI. During my time at SOKENDAI, I have conducted empirical experiments on empathic relationships between people and agents, and have investigated the factors that influence changes in people's empathic characteristics toward agents.

As an effort outside of research, I served as a student editorial board member of the Japanese Society for Artificial Intelligence, and talking with many professors involved in AI research and creating articles was a valuable opportunity for me to broaden my research horizons. In addition, I also participated continuously for three years, in a SOKENDAI social collaboration project to give lectures and workshops at high schools in Iida City, Nagano Prefecture, where I learned the importance and know-how of outreach activities as a researcher.

Currently, I am an assistant professor at the Faculty of Information Networking for Innovation and Design, Toyo University, where I continue to work on research within the HAI field on improving emp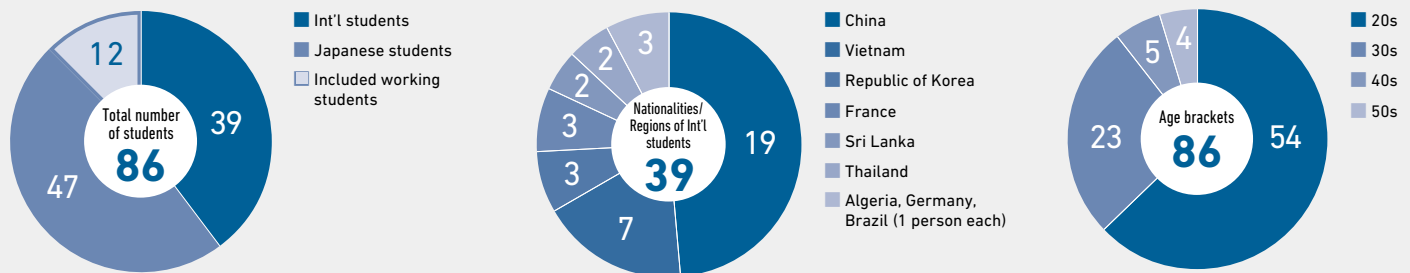athy and trust between the two parties. As a researcher and university faculty member, I will continue to guide students while engaging in research for the future I seek.

The Informatics course has a system whereby students enrolled in the course are hired as research assistants, allowing them to engage in research without having to work part-time beyond what is necessary. In addition, if employed as a SOKENDAI Special Researcher, which provides support equivalent to that of a JSPS Postdoctoral Fellowship, students can devote themselves to research without hardship through research and living support funds.
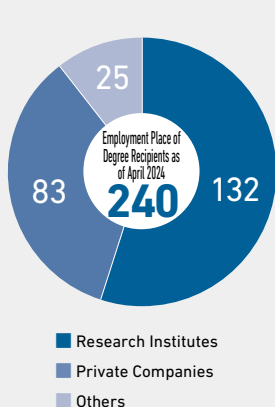
At the National Institute of Informatics (NII), a research institute, there are many opportunities to interact with researchers from other fields and companies at annual open houses, conferences, and other research meetings, providing abundant opportunities for the communication necessary for a researcher.

Many of my own experiences have been possible only because of SOKENDAI, and there are numerous opportunities to broaden my research horizons in addition to the generous support for students. And since many of the professors in the informatics course are supportive of students, the environment is probably even better for those who desire opportunities for activities outside of research.

Students Data

Total number of students: 86
- Int'l students — 39
- Japanese students — 47
- Included working students — 12

Nationalities/Regions of Int'l students: 39
- China — 19
- Vietnam — 7
- Republic of Korea — 3
- France — 3
- Sri Lanka — 3
- Thailand — 2
- Algeria, Germany, Brazil (1 person each) — 2, 3

Age brackets: 86
- 20s — 54
- 30s — 23
- 40s — 5
- 50s — 4

Degree Recipient Employment Organization Categories

Employment Place of Degree Recipients as of April 2024: 240
- Research Institutes — 132
- Private Companies — 83
- Others — 25

[Research Institutes]
Hosei Univ., Japan Advanced Institute of Science and Technology, Kwansei Gakuin Univ., Kyushu Univ., Kyoto Univ., Meiji Univ., Ministry of Defense, Ministry of Internal Affairs and Communications, Nara Institute of Science and Technology, National Institute of Informatics, National Institute of Advanced Industrial Science and Technology, National Institute of Information and Communications Technology, NHK Broadcasting Culture Research Institute, Tohoku Univ., Tokyo Institute of Technology, Toyo Univ., Tsukuba Univ., The Univ. of Tokyo, Yamanashi Univ., Okinawa Institute of Science and Technology Graduate Univ., Ritsumeikan Univ., RIKEN, Waseda Univ.,
Bangkok Univ., CITEC, Ecole Centrale, Hanoi Univ. of Science and Technology, National Electronics and Computer Technology Center (NECTEC), Royal Institute of Technology (KTH), Ulsan National Institute of Science and Technology, Univ. of Dhaka, Univ. of Oxford, Univ. of Quebec at Montreal (UQAM), Vietnam National Univ.

[Private Companies]
ACCESS CO.,LTD., Asilla, Inc., Cornea Technologies Ltd., Cyber Agent, Inc., FAST ACCOUNTING Co., FUJITSU, Fujitsu Laboratories Ltd., G.TASTE Co.,Ltd., Government Information Technology Services, HCL JAPAN LTD., Hitachi Ltd., HUAWEI, IBM Japan, Indeed Inc., Institute for Creative Integration, Intage, Japan Digital Design, Inc., KDDI Corp., KINTO Technologies Corporation, KPMG Consulting Co., Ltd., Metamedia Technology Co.,Ltd., Mitsubishi UFJ Research and Consulting Co.,Ltd., NEC Corporation, Nihon Unisys Ltd., Nintendo Co., Ltd., NTT Group, NTT East, Panasonic Corporation, Rakuten Inc., Rakuten Group, Inc., RevComm Inc., SBI BITS Co, Ltd., SECOM Co., Ltd., Toshiba Memory Corporation, SMBC Nikko Securities Inc., Sony Interactive Entertainment, Toshiba Infrastructure Systems & Solutions Corporation, Total Access Communication PCL, Works Applications Co.,Ltd., Yazaki Corporation

---

Conference Presentation Award

- DEIM 16th Forum on Data Engineering and Information Management, Student Presentation Award
- ROAD-R 2023 Challenge for NeurIPS2023, Task 2: 1st Prize, Task 1: 3rd Prize
- CAV 2023—35th International Conference on Computer Aided Verification, CAV Distinguished Paper Award
- The Institute of Electronics, Information and Communication Engineers, Best Paper Award (2022)
- The Japanese Society for Artificial Intelligence, The 35th JSAI Annual Conference Award
- Graduation Thesis OPEN AWARD 2021, Award of Excellence
- 29th International Conference on Artificial Neural Networks (ICANN20), Springer & ENNS Best Paper Award
- The Japanese Association of Sociolinguistic Sciences, the 20th (JASS 43) Research Conference Presentation Award
- The Acoustical Society of Japan, 2020 Autumn Meeting Best Student Award
- ILP 2019: 29th International Conference on Inductive Logic Programming, Best Student Paper Award
- Semantic Web Challenge on Tabular Data to Knowledge Graph Matching, First prize
- 17th International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS 2019), Oded Maler Award
- Information Processing Society of Japan, Doctoral Theses Recommended by IPSJ
- Information Processing Society of Japan, Best Paper Award of the 81st National Convention of IPSJ

etc.

Scholarship and other financial supports

Scholarship Programs

•Research Assistant (RA)

This program is a student employment system in which students work on a specific research topic under the guidance of an academic supervisor.

NII will basically employ all applicants (excluding working students, government scholarship recipients and SOKENDAI Special Researcher).
*Relevance to academic research is considered.

Approximate monthly income: Around ¥100,000

•SOKENDAI tuition exemption system

SOKENDAI has a tuition/admission fee exemption system for students who has financial difficulties but are proven to have outstanding academic performance.

•Other scholarship program

Scholarship by private foundation

[Amount of provision]
Approx.

70,000–100,000 yen/month

*Student can apply through SOKENDAI after enrollment.

## Support for internship and int'l conference

•SOKENDAI Student Dispatch Program

SOKENDAI provide financial support for a short-term research opportunity abroad and/or a long-term collaborative research project in and outside Japan.

•Financial aid program for SOKENDAI students to attend "Top Conference"

Informatics Program establishes a financial aid program to encourage students to participate in prominent international conferences (Top Conference).

INTERSPEECH 2023
IJCLR 2023
ICSR 2023
RO-MAN 2023
EMNLP 2023

Accepted cases in AY2023 8
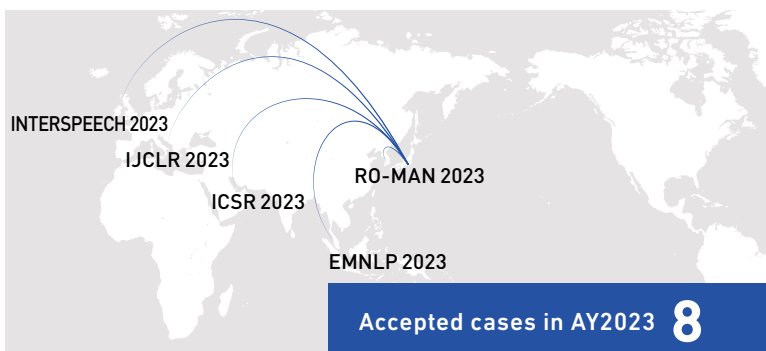
Applied int'l conferences
- **INTERSPEECH 2023** (Ireland, Dublin)
- **RO-MAN 2023** (Republic of Korea, Busan)
- **IJCLR 2023** (Italy, Bari)
- **EMNLP 2023** (Singapore, Sentosa)
- **ICSR 2023** (Qatar, Doha)



Accommodation information

Although the Program don't have dormitories, students can apply for public accommodation such as UR (Urban Renaissance) apartment or the Tokyo International Exchange Center, which is located in bay area of Tokyo.
SOKENDAI also has a "Comprehensive Renters' Insurance" for Int'l students who wish to rent an apartment through an agency.

https://www.soken.ac.jp/en/campuslife/international/supports/

Research / Campus Environment

A Research Environment with Cutting-edge Facilities, Located in the Heart of the City

Research Environment
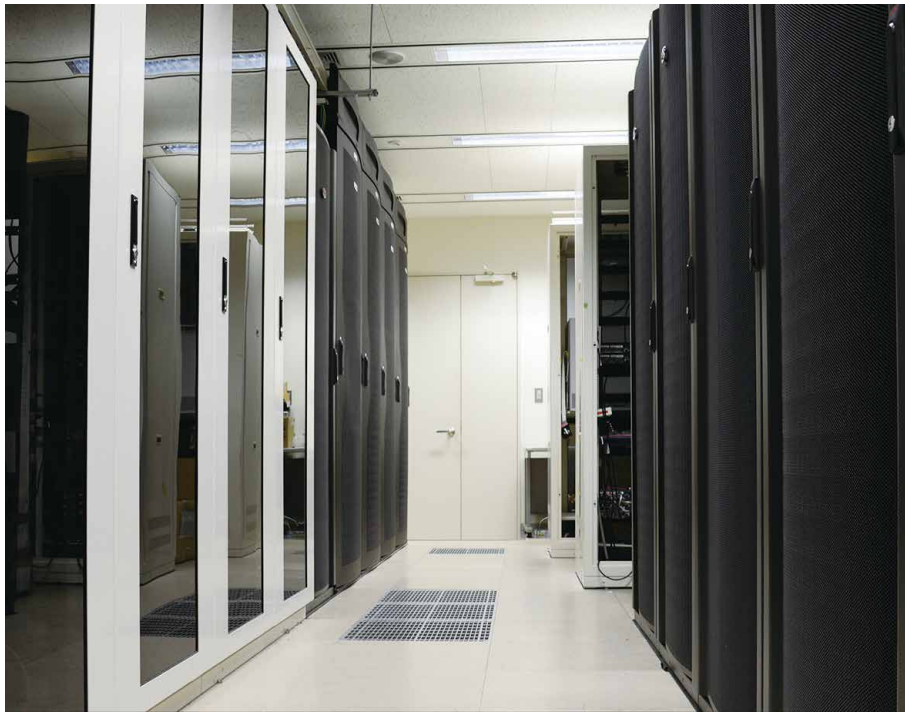
Network

- Wireless/Wired networks are available at each floor.
- Research resources are accesibble from outside of NII by using Virtual Private Network (VPN)
- Wireless network (Eduroam) at other university/institutes in Japan or abroad are available by using NII account

Research Cloud

A high performance cloud system set up by NII for internal research uses.

Library

The library located on the 18th floor is open 24 hours a day. Books can be checked in and out at any time.

Available main online journals

ACM Digital Library (Association for Computing Machinery), APS online (American Physical Society), IEL (IEEE, IEE), MathSciNet (American Mathematical Society), Springer Link (Springer Nature), Science Direct (Elsevier B.V.), Wiley Online Library (John Wiley & Sons.)

Campus Environment

Lecture Room

The lecture room at NII is designed so that lectures at the Program have an intimate, one-to-one feel. Students can also attend lectures remotely.

Student Room

Student room with private desk is available for students. It is open for 24 hours a day.

Lounge

Located on the 14th and 18th floor, Tokyo Skytree can be seen from the lounge. Mixer events for students and researchers are held in this area.

International Seminar House for Advanced Studies

Students can use the International Seminar House for Advanced Studies in Karuizawa for study retreats.

Overview of Admissions

Informatics Program, SOKENDAI offers several enrollment options for international students who are seeking to obtain a Ph.D. degree.

General Admission

This program is for applicants residing in Japan. The entrance examination is composed of an on-site interview.
https://www.soken.ac.jp/en/admission/general_admission/

Special Admission for Applicants Residing Abroad

This program is for applicants residing abroad. The interview is administered via internet, thus applicants need not to come to Japan for the application and the exam.
https://www.soken.ac.jp/en/admission/pvscholarship/scholarship/

Admission with Japanese Government Scholarship (MEXT scholarship)

- **Embassy Recommendation**

  Scholarship recipients are recruited and initially screened by a Japanese embassy. The students who passed the initial screen first enroll in a non-degree-seeking course of Informatics Program, SOKENDAI, and then apply to our graduate program through the General Admissions System.
  https://www.soken.ac.jp/en/admission/mextscholarship/scholarship_jpn/

- **University Recommendation –PGP (Priority Graduate Program)–**
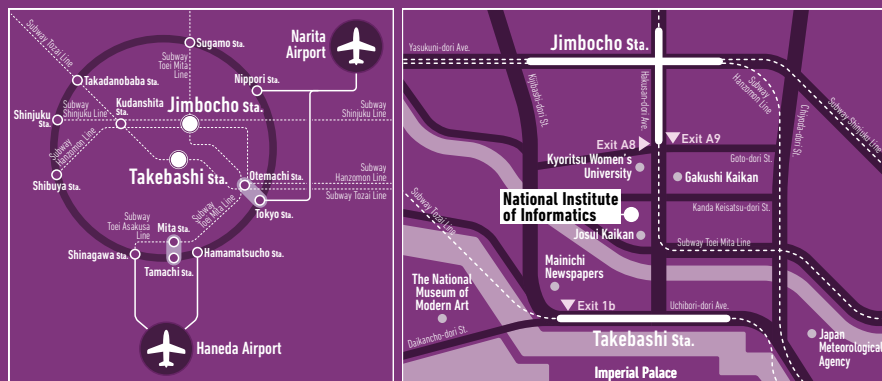
  This MEXT scholarship is offered for the special program "Interdisciplinary PhD Program in Information Science and Life Science for Leading Researchers on Data Science", which has been granted to SOKENDAI by MEXT.
  This program aims at developing next-generation global researchers and highly skilled professionals who are capable of leading researches on data science as well as other scientific fields to which data science approaches can be applied.
  https://www.soken.ac.jp/en/admission/mextscholarship/university_recommendation_pgp/

Access

Our campus is conveniently situated in the center of Tokyo, near the Imperial Palace and within 2km distance from Tokyo station.

3 min. walk from Jimbocho Sta. or Takebashi Sta.

NII Inter-University Research Institute Corporation /
Research Organization of Information and Systems
National Institute of Informatics