SOKENDAI

The Graduate University for Advanced Studies, SOKENDAI
School of Multidisciplinary Sciences

Department of Informatics

5-year Ph.D. course / 3-year Ph.D. course

2022 – 2023

ACHIEVING
EXCELLENCE
IN INFORMATICS

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

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

The National Institute of Informatics (NII) offers 3-year and 5-year PhD within
The Graduate University for Advanced Studies, SOKENDAI,
in which it constitutes the Department of Informatics.
The Department of Informatics 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

**KITSUREGAWA,
Masaru**

Informatics Changing the World.

Toward realizing "super smart society (Society 5.0)" where information technology is expected to help the creation of new value and services, the field of informatics is becoming more and more important. The Coronavirus disease pandemic has forced an acceleration in digital transformation and revealed the importance of information technology. Rising from the traditional foundations of information science and engineering, informatics represents a comprehensive, interdisciplinary research field that examines information-related issues, including issues in the data, the humanities, and the social sciences.

The Department of informatics established at the National Institute of Informatics (NII), which is the only comprehensive academic informatics institute in Japan, offers a Ph.D. program in informatics to educate and cultivate researchers in order to develop a solid grounding in advanced informatics and expertise across a broad range of disciplines, as well as flexibility in perspective and sophisticated technical knowl-

edge. Candidates for the Ph.D. program are also expected enter the ranks of international and interdisciplinary professionals well-versed in informatics.

NII has a clear vision of the students we hope to cultivate: researchers with a keen interest in informatics – an interdisciplinary field encompassing the natural sciences, humanities, and social sciences – dedicated to realizing an advanced information-based society, and capable of serving as leaders in the field of informatics. We seek students with the aptitude to become sophisticated professionals devoted to the development of information technologies that will contribute to societal progress, as well as members of society with a strong interest in acquiring broader perspectives and deeper technical knowledge as they serve in the workforce.

In the Department of Informatics, we expect our future students to meet the challenges of the 21st century. We are confident that the progress and advancement of these students in informatics will change the world.

Chair, Department of
Informatics

**YAMADA,
Seiji**

Ultimating Informatics.

The department of Informatics 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 department 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 department has the five-year Ph.D. course and the three-year Ph.D. course: 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 department. Many lectures are available in English, many seminars at laboratories are held in English, and the students frequently have cross-cultural communication.

By offering an enriched 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.

Department outline

What is SOKENDAI?

The Graduate University for Advanced Studies, SOKENDAI is a graduate university with no undergraduate programs that consists of departments housed in affiliated Inter-University Research Institutes and the School of Advanced Sciences 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 Dept. on Informatics and the National Institute of Informatics

ROIS: Research Organization of Information and Systems

NII [Faculty: 33 Profs, 24 Assoc. Profs, 17 Asst. Profs]

- Principles of Informatics Research Division
- Information Systems Architecture Research Division
- Digital Content and Media Sciences Research Division
- Information and Society Research Division
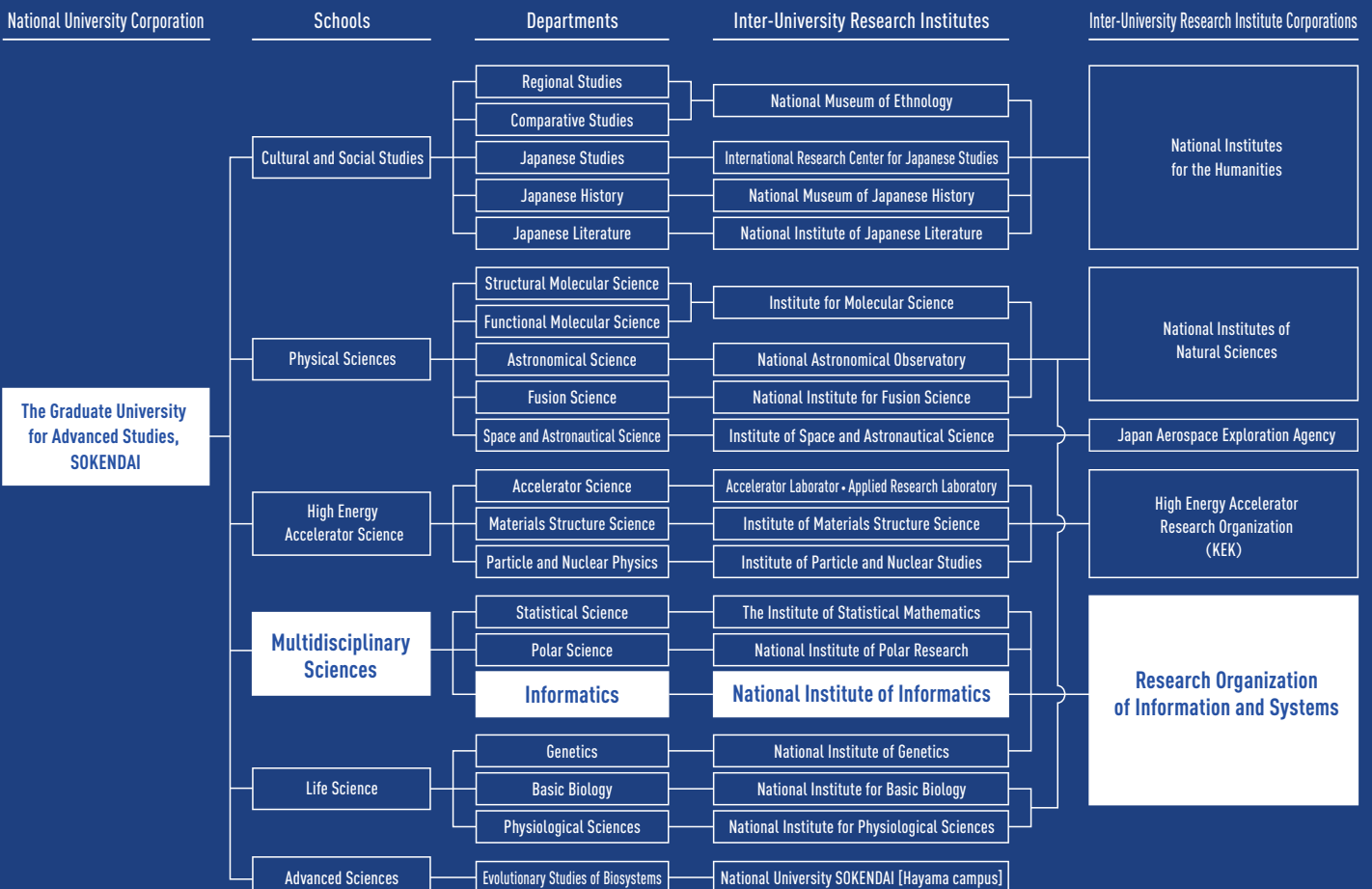
Founding Institution

The Graduate University for Advanced Studies, SOKENDAI

Department of Informatics
[Faculty: 31 Profs, 20 Assoc. Profs, 13 Asst. Profs]

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

## ▼ Relation Between Each Dept. at SOKENDAI and Each Inter-University Research Institute

National University Corporation	Schools	Departments	Inter-University Research Institutes	Inter-University Research Institute Corporations
The Graduate University for Advanced Studies, SOKENDAI	Cultural and Social Studies	Regional Studies	National Museum of Ethnology	National Institutes for the Humanities
		Comparative Studies		
		Japanese Studies	International Research Center for Japanese Studies	
		Japanese History	National Museum of Japanese History	
		Japanese Literature	National Institute of Japanese Literature	
	Physical Sciences	Structural Molecular Science	Institute for Molecular Science	National Institutes of Natural Sciences
		Functional Molecular Science		
		Astronomical Science	National Astronomical Observatory	
		Fusion Science	National Institute for Fusion Science	
		Space and Astronautical Science	Institute of Space and Astronautical Science	Japan Aerospace Exploration Agency
	High Energy Accelerator Science	Accelerator Science	Accelerator Laborator • Applied Research Laboratory	High Energy Accelerator Research Organization (KEK)
		Materials Structure Science	Institute of Materials Structure Science	
		Particle and Nuclear Physics	Institute of Particle and Nuclear Studies	
	Multidisciplinary Sciences	Statistical Science	The Institute of Statistical Mathematics	Research Organization of Information and Systems
		Polar Science	National Institute of Polar Research	
		Informatics	National Institute of Informatics	
	Life Science	Genetics	National Institute of Genetics	
		Basic Biology	National Institute for Basic Biology	
		Physiological Sciences	National Institute for Physiological Sciences	
	Advanced Sciences	Evolutionary Studies of Biosystems	National University SOKENDAI [Hayama campus]	

Features of the Dept.

1 **Top-Level Research Environment**

Students of the Department of Informatics 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.
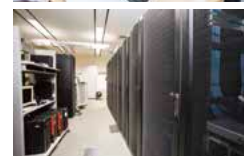
2 **Every student can work as a Research Assistant**

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 Department of Informatics 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

The graduate school for world-class researchers

Vice chair, Department of Informatics (In charge of Research and Education)
Takeda, Hideaki

The Department of Informatics is installed in the National Institute of Informatics (NII), and research staff (professors and associate professors) of NII supervise Sokendai students. Since NII is an internationally well-known research institute in Informatics, researchers from all over the world come and work there. As a member of the institute, students will be able to learn and conduct research while experiencing international research daily. Students conduct their research under the supervision of their professors and advisors, present their findings at international conferences and in journal papers, and receive their PhD degree. It is the mission of the Department of Informatics: to foster world-class, top-level researchers by the world-class research staff and the environment. To assist the research activities of the students, the institute employs students (excluding working students and government-sponsored students) as research assistants to provide financial support for them.

Global Education Environment in the Department of Informatics

Vice chair, Department of Informatics (In charge of International Affairs)
GOSHIMA, Masahiro

The Department of Informatics 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 researches in a full spectrum of informatics. In our department, more than half of the students are from foreign countries, and the lectures and research supervisions 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 Ph.D. course have been set by the Department.

	1st Year												2nd Year															
Spring Admission	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 Ph.D. Course Number of course credits for completion: 40 or more	Admission																	Intermediate Evaluation			Dissertation Progress Report				Second term			
								18 months											4 months								
Three-year Ph.D. Course Number of course credits for completion: 10 or more																									Admission			

	1st Year												2nd Year															
Fall Admission	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 Ph.D. Course Number of course credits for completion: 40 or more	Admission															Intermediate Evaluation			Dissertation Progress Report				Second term					
								17 months										5 months									
Three-year Ph.D. Course Number of course credits for completion: 10 or more																									Admission			

Curriculum

The Department of Informatics 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 Department of Informatics, 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.

The number of course credits ▷ **40** for **the five-year course** | **10** for **the three-year course**

Special Subjects of the Department

Foundations of Informatics

Algorithm	UNO, Takeaki
Algorithmic Market Design	YOKOI, Yu
Combinatorial Optimization for Machine Learning	FUJII, Kaito
Computational Complexity Theory	HIRAHARA, Shuichi
Computational Game Theory	IGARASHI, Ayumi
Computational Neuroscience	(TBD)
Control Theory and Optimization	KISHIDA, Masako
Discrete Mathematics	KAWARABAYASHI, Ken-ichi
Graph Algorithms	(TBD)
Logic in Computer Science	TATSUTA, Makoto
Mathematical Logic	TATSUTA, Makoto
Numerical Analysis	(TBD)
Quantum Computation	MATSUMOTO, Keiji
Quantum Information Systems	(TBD)
Sublinear Algorithms	YOSHIDA, Yuichi
Theory of Numerical Methods	(TBD)

Information Infrastructure Science

Computer System Design	GOSHIMA, Masahiro
	YONEDA, Tomohiro
	ISHIKAWA, Yutaka
Information and Communication Systems	JI, Yusheng
	ABE, Shunji
	FUKUDA, Kensuke
	KANEKO, Megumi

Software Science

Data Engineering	TAKASU, Atsuhiro
Database Theory	KATO, Hiroyuki
Distributed Systems	SATOH, Ichiro
Embedded Real-Time Systems	AOKI, Shunsuke
Formal Methods for Cyber-Physical Systems	HASUO, Ichiro
Mathematical Structures in Formal Methods	HASUO, Ichiro
Mathematical Structures in Programming	(TBD)
Probabilistic Models in Informatics	KITAMOTO, Asanobu
Programming Languages and Theory	TSUSHIMA, Kanae
Software Engineering	ISHIKAWA, Fuyuki
Software Verification	SEKIYAMA, Taro

Multimedia Information Science

Applications of Multimedia Processing	SATO, Imari	SUGIMOTO, Akihiro
	YAMAGISHI, Junichi	KODAMA, Kazuya
	IKEHATA, Satoshi	MO, Hiroshi
Fundamentals of Media Processing	AIZAWA, Akiko	SUGIMOTO, Akihiro
	YAMAGISHI, Junichi	GOTODA, Hironobu
	KATAYAMA, Norio	KODAMA, Kazuya
	IKEHATA, Satoshi	MO, Hiroshi
	SATOH, Shin'ichi	
Interactive Media	ARAI, Noriko	ECHIZEN, Isao
	GOTODA, Hironobu	YU, Yi

Intelligent Systems Science

Communication Environments	BONO, Mayumi
Computational Social Science	MIZUNO, Takayuki
Data Mining	SUGIYAMA, Mahito
Deep Learning	PRENDINGER, Helmut
Human-Agent Interaction	YAMADA, Seiji
Knowledge Sharing System	TAKEDA, Hideaki
Logical Foundations for Artificial Intelligence	INOUE, Katsumi
Machine Learning	(TBD)
Natural Language Processing	AIZAWA, Akiko
	SUGAWARA, Saku
Reasoning Science	SATOH, Ken
Robot Informatcis	INAMURA, Tetsunari

Information Environment Science

Digital Publications	OYAMA, Keizo
ICT-enabled Business	OKADA, Hitoshi
Information Retrieval	KANDO, Noriko
Introduction to Statistical Methods in Bibliometrics	SUN, Yuan
Methodology of Scientmetrics	NISHIZAWA, Masaki

Common Specialized Subjects of the School of Multidisciplinary Sciences

Applied Linear Algebra	KISHIDA, Masako SUGIMOTO, Akihiro
	SATOH, Shin'ichi
High-Performance Computing	AIDA, Kento ISHIKAWA, Yutaka
	KOIBUCHI, Michihiro TAKEFUSA, Atsuko
Information Sharing System Architecture	TAKAKURA, Hiroki URUSHIDANI, Shigeo
	KURIMOTO, Takashi
Introduction to Algorithms	UNO Takeaki
Introduction to Big Data Science	Professors related to Big Data
Introduction to Information Environment Science	All professors in Information Environment Science
Introduction to Information Security Infrastructure	ECHIZEN, Isao
	TAKAKURA, Hiroki
	OKADA, Hitoshi
Introduction to Intelligent Systems Science I	(TBD)
Introduction to Intelligent Systems Science II	PRENDINGER, Helmut
	SATOH, Ken TAKEDA, Hideaki
	BONO, Mayumi MIZUNO, Takayuki
	SUGIYAMA, Mahito SUGAWARA, Saku
Introduction to Mathematical Logic	TATSUTA, Makoto
Introduction to Multimedia Information Science	All professors in Multimedia Information Science
Introduction to Software Science I	All professors in Software Science
Introduction to Software Science II	All professors in Software Science
Practical Data Science	YAMAJI, Kazutsuna
Quantum information and Computing	(TBD)
Scientific Presentation / Scientific Writing	KANEKO, Megumi IGARASHI, Ayumi
	WU Stephen (Department of Statistical Science)
	JONES, Caryn (ThinkSCIENCE, Inc.)

Department's Common Subjects

Research in Informatics for PhD thesis IA,IB - VA,VB	All professors
Seminar on Basic Knowledge in Informatics IA,IB - IIA,II B	All professors
Research in Informatics for Master Thesis IA,IB - IIA,IIB	All professors

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

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

Website of the Dept. ——————— 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

Interim Presentation 1 | Interim Presentation 2 | Preliminary Evaluation | Final Evaluation

22 months | 7 months | 5 months | 2 months | 2 months

Interim Presentation 1 | Interim Presentation 2 | Preliminary Evaluation | Final 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

Interim Presentation 1 | Interim Presentation 2 | Preliminary Evaluation | Final Evaluation

22 months | 7 months | 5 months | 2 months | 2 months

Interim Presentation 1 | Interim Presentation 2 | Preliminary Evaluation | Final Evaluation

20 months | 7 months | 5 months | 2 months | 2 months

Degree Conferment

Image

Research Field and Advisors at the Dept.

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**〕
・A Characterization of Locally Testable Affine-Invariant Properties via Decomposition Theorems
・Testing Assignments to Constraint Satisfaction Problems

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 Minimum Circuit Size Problem for OR-AND-MOD Circuits

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

IGARASHI, Ayumi Assistant Professor

〔**Keywords**〕
Algorithmic game theory, fair division, Multi-Agent System
〔**Papers**〕
・Almost Envy-free Allocations with Connected Bundles
・Fair Allocation of Indivisible Goods and Chores

YOKOI, Yu Assistant Professor

〔**Keywords**〕
Algorithms, Mechanism Design, Combinatorial Optimization
〔**Papers**〕
・Envy-free Matchings with Lower Quotas
・Finding a Stable Allocation in Polymatroid Intersection

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

GOSHIMA, Masahiro Professor

[Keywords]
Computer Architecture, Microarchitecture, Digital Circuit
[Papers]
・Skewed Multistaged Multibanked Register File for Area and Energy Efficiency
・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]
・AVE: Autonomous vehicular edge computing framework with ACO-based scheduling
・Accurate location tracking from CSI-based passive device-free probabilistic fingerprinting

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

TAKAKURA, Hiroki Professor

[Keywords]
Cyber Security, High Performance Network, Secure Networking, Data Mining
[Papers]
・SPINZ: A Speculating Incident Zone System for Incident Handling
・Construction of Secure Internal Networks with Communication Classifying System

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

YONEDA, Tomohiro Professor

[Keywords]
Asynchronous Systems, Dependable Systems, Cad Tool Development, Formal Verification, Real-Time Systems
[Papers]
・Coarse Grained versus Fine Grained Architectures for Asynchronous Reconfigurable Devices
・MTJ-Based Asynchronous Circuits for Re-initialization Free Computing against Power Failure

ABE, Shunji Associate Professor

[Keywords]
Information Networks, Network Performance Analysis, QoS Control
[Papers]
・Estimating Available Bandwidth in Mobile Networks by Correlation Coefficient
・New Directions for a Japanese Academic Backbone Network

FUKUDA, Kensuke Associate 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

KANEKO, Megumi Associate Professor

[Keywords]
Wireless Communications, Mobile Networks, Resource Allocation Optimization, Wireless Signal Processing
[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

KURIMOTO, Takashi Associate 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

Research Field and Advisors at the Dept.

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 wide-spread 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]
・Two-Layered Falsification of Hybrid Systems Guided by Monte Carlo Tree Search
・Lattice-theoretic progress measures and coalgebraic model checking

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]
・NPE: Neural Personalized Embedding for Collaborative Filtering
・Deep Multiview Learning from sequentially Unaligned Data

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

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

SEKIYAMA, Taro — Assistant Professor

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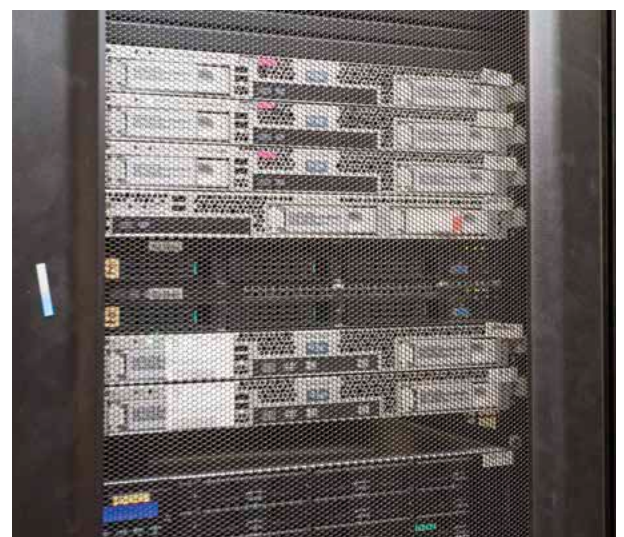・Toward Neural-Network-Guided Program Synthesis and Verification

TSUSHIMA, Kanae — Assistant Professor

[Keywords]
Programming Languages, Types, Type Inference, Type Debugging
[Papers]
・A Common Framework Using Expected Types for Several Type Debugging Approaches
・A semi-embedded incremental parsing

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]
・Cognitive diagnosis models for estimation of misconceptions analyzing multiple-choice data
・Can an A.I. win a medal in the mathematical olympiad? - Benchmarking mechanized mathematics on pre-university problems.

SATO, Imari Professor

[Keywords]
Image-based Modeling and Rendering, Computational Photography
[Papers]
・SymPS: BRDF Symmetry Guided Photometric Stereo for Shape and Light Source Estimation
・Wetness and Color from a Single Multispectral Image

SUGIMOTO, Akihiro Professor

[Keywords]
Computer Vision, Digital Geometry, Human-Computer Interaction
[Papers]
・Paired-D GAN for Semantic Image Synthesis
・Modeling Large-scale Indoor Scenes with Rigid Fragments using RGB-D Cameras

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

GOTODA, Hironobu Associate Professor

[Keywords]
3D Modeling, Rendering, Animation
[Papers]
・A multilayer display augmented by alternating layers of lenticular sheets
・Design of time-multiplexed autostereoscopic displays based on virtual stacking of multi-layer panels

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 removal of fixed pattern noise on multi-focus images

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

IKEHATA, Satoshi Assistant 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

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

YU, Yi Assistant Professor

[Keywords]
Representation Learning, Deep Generative Models, Multimedia Content Analysis, Artificial Intelligence
[Papers]
・Category-Based Deep CCA for Fine-Grained Venue Discovery from Multimodal Data
・Conditional LSTM-GAN for Melody Generation from Lyrics

Research Field and Advisors at the Dept.

Research Keywords and Major Research Papers Titles

Intelligent Systems Science

AI Technology Enhancing Human Intelligent Tasks

Artificial Intelligence (AI) is an emergent technology which enhances human intelligent tasks by intelligent computer systems. The intelligent systems science course offers studies on intelligent systems to give students a full understanding of various advanced research topics in the field and aims to foster human resources to create core technology on 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, Constraint Programming, Multi-Agent Systems
［Papers］
・Linear Algebraic Characterization of Logic Programs
・Learning from interpretation transition

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

SATOH, Ken Professor

［Keywords］
Reasoning, Knowledge Representation, Multi-Agent Systems, Machine Learning, Computational Logic, Legal Reasoning
［Papers］
・Obligation as Optimal Goal Satisfaction
・Modelling Last-act Attempted Crime in Criminal Law

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

INAMURA, Tetsunari Associate Professor

［Keywords］
Human-Robot Interaction, Intelligent Robot, Human Behavior Modeling, Human Digital Twin
［Papers］
・SIGVerse: A Cloud-Based VR Platform for Research on Multimodal Human-Robot Interaction
・VR platform enabling crowdsourcing of embodied HRI experiments – case study of online robot competition

MIZUNO, Takayuki Associate Professor

［Keywords］
Computational social science, Econophysics, Complex networks, Economic big data, Finance
［Papers］
・The power of corporate control in the global ownership network
・Structure of global buyer-supplier networks and its implications for conflict minerals regulations

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"
・t-Soft Update of Target Network for Deep Reinforcement Learning

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 Indispensable 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

OYAMA, Keizo Professor

[Keywords]
Information Retrieval, Information Systems, Web Information Processing, Information Access Technology, Text Processing
[Papers]
- Context Oriented Analysis of Interest Reflection of Tweeted Webpages based on Browsing Behavior
- An Exploratory Analysis of Browsing Behavior of Web News on Twitter

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

SUN, Yuan Associate 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

Visiting Professors

HU, Zhenjiang
Software Science
Visiting Professor

SATOH Shin'ichi
Multimedia Information Science
Visiting Professor

PLANAS, Emmanuel
International Relations
Visiting Professor

Annual Events at the Dept.

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 Department of Informatics 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 SOKENDAI will be held at the National Institute of Informatics. Each graduate will be presented individually with a medal to commemorate their achievement.
Final presentation will be held afterword and this will be the final presentation as a compilation of their work.

Students' Research

MASUOKA, Yukihiro

Enrolled in 2018,
5-year Ph.D. course
Main supervisor: Prof. TATSUTA, Makoto

I study basic theory for software verification.

Software verification is to mathematically prove that programs satisfy requirements.

Especially, I am interested in verification with separation logic and cyclic proofs both of which come from mathematical logic, and I study mathematical properties of them. Actually, basic properties of cyclic proofs are not known, so I am eager to study it.

$$\frac{P \vdash Q}{P * S \vdash Q * S}$$

DINH, Thi Ha Ly

Enrolled in 2017,
5-year Ph.D. course
Main supervisor: Assoc. Prof. KANEKO, Megumi

Given the ever-increasing number of wireless subscribers and the expansion of IoT communications, the volume of mobile data traffic is expected to grow exponentially. However, radio spectrum scarcity poses a major challenge for the design of future wireless communication systems, required to support such a deluge of data while guaranteeing excellent performances.

My research addresses this issue by investigating spectrum and energy-efficient resource management for distributed cloud & fog radio access networks, which will be part of next-generation wireless networks. Specifically, I am aiming at designing intelligent resource allocation and interference management methods leveraging both mathematical optimization and machine learning techniques, in order to support application-specific heterogeneous Quality of Service requirements, while improving global network performances.
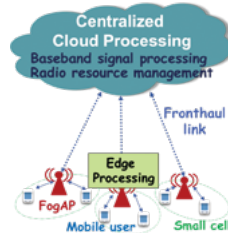

ZHANG, Lin

Enrolled in 2020,
3-year Ph.D. course
Main supervisor: Prof. YAMAGISHI, Junichi

Automatic speaker verification (ASV) is vulnerable to manipulation through presentation attacks. To protect ASV from spoofing attacks, countermeasures (CMs) are proposed to distinguish bona fide and spoofed biometric data.

But all existing CMs only consider detecting attacks in the utterance-level, which is not suitable for realistic scenarios. My research aims to develop more elaborate countermeasures, which can detect spoof at the segmental-level or linguistic units such as words and phrases. That makes it easier to display and visualize which segment of the voice signal is the spoofed voice and thus improves the possibility of explanation for the whole audio.
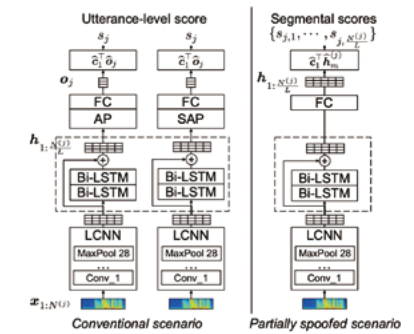

TSUMURA, Takahiro

Enrolled in 2019,
5-year Ph.D. course
Main supervisor: Prof. YAMADA, Seiji

Human-Agent Interaction is a research area that designs interactions between humans and anthropomorphic agents and robots. Especially, my research focuses on agent's social advancement through empathy between humans and agents.

One of the ways to improve anxiety and discomfort toward agents, which are becoming increasingly familiar to society, is to improve impressions of agents by focusing on empathy.

This research develops the conventional human-to-human relationship into a human-to-agent relationship. I investigate the influence of empathy between humans and agents based on various factors such as appearance, self-disclosure, and task. My research is expected to extend human empathy and help agents acquire empathy.
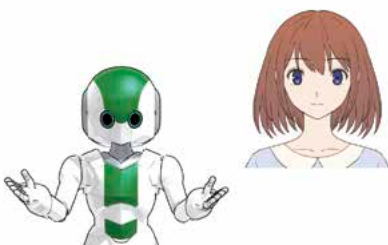

NGUYEN, Trong Bach

Enrolled in 2018,
5-year Ph.D course
Main supervisor: Prof. HASUO, Ichiro

Bidirectional transformations (BXs) serve to maintain consistency between two representations of related and often overlapping information, one referred to as the source and the other as the view. When the view is modified, the source may need updating to restore the consistency. BXs are applied in many fields, for instance, databases, user interface design and model-driven development.

My research is mainly related to bidirectional programming which are means of constructing well-behaved BXs. I have proposed different interpretation methods to optimize the evaluation of bidirectional programs especially those formed by composing simpler programs. Currently I am studying the synthesis of bidirectional programs from given specifications that can be a set of input-output examples or refinement types.
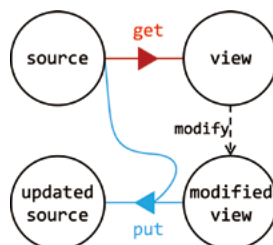
WANG, Jian

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.
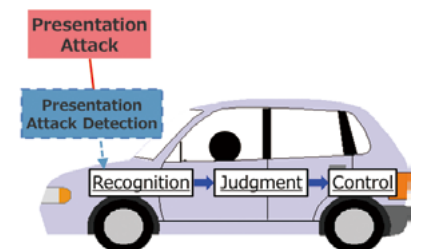
Message from an Alumnus

WAGA, Masaki
Ph.D.

2018 - 2020
3-year Ph.D. course, Department of Informatics, SOKENDAI

Assistant Professor, Graduate School of Informatics, Kyoto University
He is working on quality assurance of cyber-physical systems using lightweight formal methods.

After finishing my master's program, I entered the Graduate University for Advanced Studies, SOKENDAI for the third year due to the transfer of my supervisor, Professor Ichiro Hasuo. In SOKENDAI, I studied the quality assurance of cyber-physical systems requiring high reliability, such as automobiles. In my research, I utilized mathematical methods such as logic and automata to improve reliability. Currently, I am an assistant professor at the Graduate School of Informatics, Kyoto University. I am continuing my research on improving the reliability of cyber-physical systems.

In the Department of Informatics at SOKENDAI, all students are hired as research assistants at the National Institute of Informatics (NII) except for MEXT scholarship students and working students. Moreover, there is a special research assistant program for outstanding students. The qualified students can receive a higher salary. These financial supports by employment, which are unfortunately not very common in Japanese universities, are very helpful for full-time students.
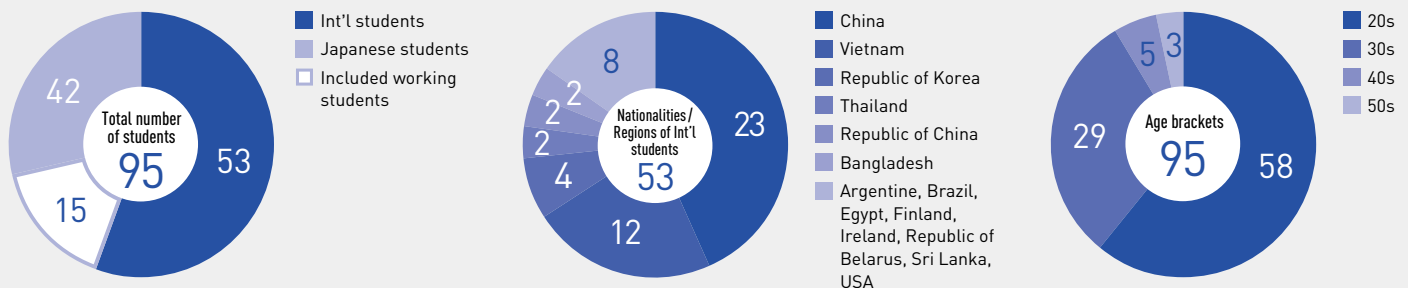
At SOKENDAI, there are a lot of opportunities to have a discussion with many other researchers. The Open House of NII is one of such opportunities. The Open House is an annual event of NII to present the research to the public, including researchers in other fields, researchers in industry, and the general public. The students in this department have an opportunity to present their research at this event and discuss their research with various people. Such an opportunity is helpful in looking at our own research from other viewpoints.
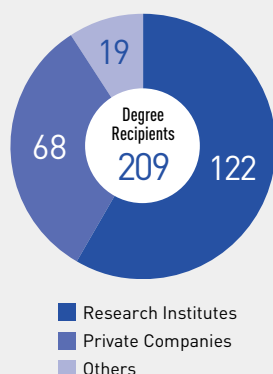
Another fruitful opportunity to broaden the scope is a discussion with various students, many of them are from abroad. There are many international students and internship students at SOKENDAI. We can broaden our research scope through discussion with them, which is, in my experience, quite helpful to the research. We can also improve our English skills and learn about different cultures through daily conversations with them.

Overall, there are many opportunities to broaden the research perspectives as well as many other supports by SOKENDAI. I believe that broadening the research perspectives is highly helpful in deepening our research, and thus, the environment in SOKENDAI is very attractive.

Students Data

Total number of students: 95
- Int'l students: 53
- Japanese students: 42
- Included working students: 15

Nationalities / Regions of Int'l students: 53
- China: 23
- Vietnam: 12
- Republic of Korea: 4
- Thailand: 2
- Republic of China: 2
- Bangladesh: 2
- Argentine, Brazil, Egypt, Finland, Ireland, Republic of Belarus, Sri Lanka, USA: 8

Age brackets: 95
- 20s: 58
- 30s: 29
- 40s: 5
- 50s: 3

Employment Place of Degree Recipients as of April 2022

Degree Recipients: 209
- Research Institutes: 122
- Private Companies: 68
- Others: 19

[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, Tokyo Institute of Technology, Tsukuba Univ., The Univ. of Tokyo, Yamanashi Univ., Okinawa Institute of Science and Technology Graduate University, 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 University

[Private Companies]
ACCESS CO.,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, KDDI Corp., KINTO Technologies Corporation, 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, Rrakuten Inc., SBI BITS Co, Ltd., SECOM Co., Ltd., Toshiba Memory Corporation, Sony Interactive Entertainment, Toshiba Infrastructure Systems & Solutions Corporation, Total Access Communication PCL, Works Applications Co.,Ltd.

Conference presentation award

- 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.

SOKENDAI Special Researcher

This program is designed to foster future leaders in academic research by appointing SOKENDAI students as special researchers and providing financial support to them. A special researcher with outstanding achievements will be offered a two-year research position at the parent institute* upon the completion of their doctoral course.
*Parent institute: The Inter-University Research Institute, where their department is located.

Scholarship	
Fellowship (for living expenses) **190,000 yen/ month** (Amount of provision for 2021)	Research grant **up to 220,000 yen/year**

*Application screening and interview will be conducted.
*This shall not preclude the students from being offered a position with research institutes and private corporations after graduation.

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"

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

Interspeech   ICME   ICASSP

Accepted cases in AY2021 **4**

Applied int'l conferences
· **ICASSP**(Canada, Toronto)*Changed to online
· **Interspeech**(Czech Republic, Brno)
· **ICME**(China)
· **ICTAI**(Online)

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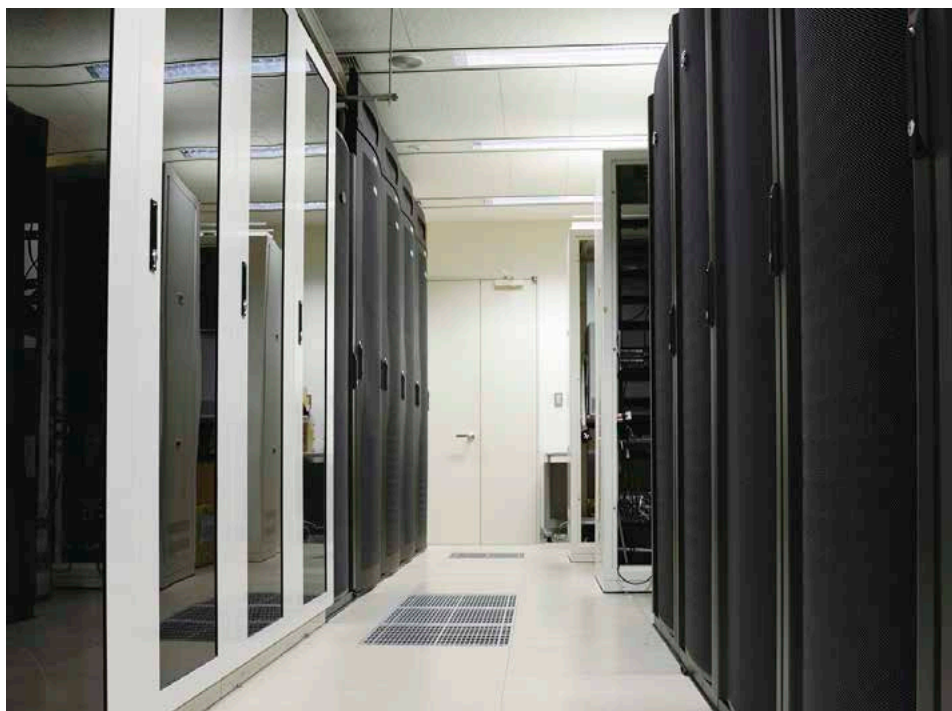
Network
- Wireless / Wired networks are available at each floor.
- Research resources are accesibble from outside of NII by using Virtual Private Network (VPN)
- Wireless network (Eduroam) at other university/ institutes in Japan or abroad are available by using NII account

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 Department 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.
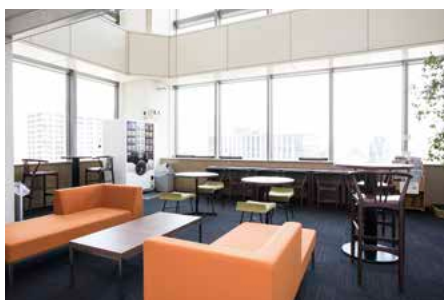

Dining Hall
The dining hall is a bright, clean space where students can take their meals in comfortable surroundings.

Cafeteria
Provides light meals and refreshments; also serves as a venue for small informal parties organized by students.

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

Department of Informatics, 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)
  MEXT scholarship Priority Graduate Program (MEXT PGP)

This scholarship is offered for the special program "Interdisciplinary PhD Program on AI and Data Science for Global Leaders", which has been granted to SOKENDAI by Ministry of Education, Culture, Sports, Science and Technology (MEXT).

  The program aims at developing next-generation global researchers and highly skilled professionals who should lead researches on Artificial Intelligence (AI) and Data Science (DS) as well as many scientific fields that apply AI and DS.

https://www.soken.ac.jp/en/admission/mextscholarship/university_ recommendation___pgp_/index.html

•Embassy recommendation process for MEXT scholarship

Scholarship recipients are recruited and initially screened by a Japanese embassy. The students who passed the initial screen first enroll in a nondegree program of SOKENDAI Department of Informatics, and then apply to our graduate program through the General Admissions System.

https://www.soken.ac.jp/en/admission/mextscholarship/scholarship_jpn/

Access

Our campus is conveniently situated in the center of Tokyo, near the Imperial Palace and within 2km distance from Tokyo station.
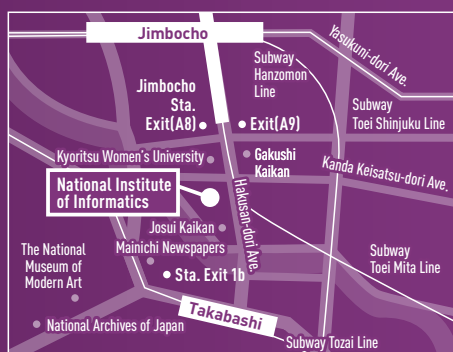
3 min. walk from Jimbocho Sta. or Takebashi Sta.

Int'l Affairs and Education Support Team, National Institute of Informatics
Address: 2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo 101-8430
Email: daigakuin@nii.ac.jp
https://www.nii.ac.jp/graduate/en/

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