Doctoral Program in Computer Science
Faculty member list

Field of Research	Faculty	Detailed Description of Research Field
Information Mathematics and Modeling	KAWABE Tohru	Control design: Theory and applied research in Biologically Inspired Technology, Computational Intelligence based Control, Robust Control, etc.
	KUNO Takahito	Mathematical optimization: Numerical algorithms for globally solving nonconvex optimization problems.
	SAKURAI Tetsuya	Computational Mathematics, Numerical Mathematics for Computers, Parallel Computing Algorithms for Supercomputers, Algorithms for Large-scale Data Analysis, Computational Science, Mathematical Software.
	TOKUNAGA Ryuji	Chaos, fractals and bifurcation theory. Computer amusement oriented elementary technologies.
	AIHARA Ikkyu	Mathematical modeling of animal behavior and its applications: Nonlinear dynamics, Field recordings of animal calls, Sensor networks.
	IMAKURA Akira	Numerical analysis: Numerical algorithms for solving linear systems, eigenvalue problems and matrix computation-based machine learning.
	CAI Dong Sheng	Multimedia using artificial life theory. High performance computing and parallel computing for space simulation. Imaging using chaos and fractals.
	SANO Yoshio	Discrete Mathematics, Graph Theory, Combinatorics
	HIRATA Yoshito	Nonlinear time series analysis: theory and its applications.
	【BAKKU Ranjith Kumar】	Bioinformatics approaches for Omics data and Mass-Spectrometry, Biological networks, Biochemical regulatory mechanisms and Computational Functional genomics
	【FUTAMURA Yasunori】	Numerical analysis, High performance parallel algorithm, Parallel solver for large-scale linear systems and eigenvalue problems, Parallel numerical software.
	【MORIKUNI Keiichi】	Numerical linear algebra, large sparse matrix computations, preconditioning algorithms for Krylov subspace methods, least squares problems, singular linear systems.
Intelligent Software	OHYA Akihisa	Intelligent robots and sensing: Mobile robots working in humans' daily life environment, real world sensory information processing, networked robotics, cooperative multiple mobile robots.
	KAMEYAMA Yukiyoshi	Programming languages and symbolic logic: type system, metaprogramming, programming logic, program verification.
	SHIZUKI Buntarou	Human-computer interaction: Visual programming and interaction techniques for end users.

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Intelligent Software	MISUE Kazuo	Information visualization: visual interface, visual analytics, network visualization, graph drawing.
	UNNO Hiroshi	Program verification : model checking, type systems, program analysis, automated theorem proving.
	TAKAHASHI Shin	User interface software, Ubiquitous computing, Computer-supported cooperative work (CSCW).
	【MIZUTANI Tetsuya】	Program theory and musical informatics: Logical foundation of verification and analysis of realtime intellectual program systems and musical information.
	【VASILACHE Simona】	Software engineering, software development process, human computer interaction; intercultural communication, global software engineering
	【KAWAGUCHI Ikkaku】	Human Computer Interaction, Remote Communication Support, Communication Robot.
	【YOROZU Ayanori】	Intelligent robot for human-harmonious collaboration, Task and motion planning, Human and environmental sensing, Field robotics.
Software System	AMAGASA Toshiyuki	Database system, data engineering: XML/RDF Database, social media, and scientific database.
	KATO Kazuhiko	System software: Distributed system, cloud computing, operating system, cyber-physical system, software security
	KITAGAWA Hiroyuki	Database systems and data engineering : Information integration, WWW and DB, XML databases, multimedia databases, and DBMS architecture.
	ABE Hirotake	System Software, Distributed Systems, Computer Security, Computer Network.
	OYAMA Yoshihiro	Computer security, system software, operating systems, virtualization.
	OKA Mizuki	Social Media, Web Science, Artificial Life.
	SHIOKAWA Hiroaki	Database systems and data engineering.
	SHINJO Yasushi	Operating systems, distributed systems, virtualization, privacy protection, decentralized social networking services.
	HASEBE Koji	Multi-agent systems: Game theory, Mathematical logic, Formal methods, Autonomous distributed systems.
	MAEDA Atusi	Implementation of programming languages, parsing, runtime system, resource management.
	MACHIDA Fumio	System dependability, dependability evaluation, stochastic models, system design optimization.

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Software System	【CHEN Hanxiong】	Database system, knowledge-base system, e-education, information retrieval, knowledge discovery and data mining.
	【TSUGAWA Sho】	Network mining, Social network analysis, Computational social science.
	【HAYASE Yasuhiro】	Software Engineering : Program comprehension, software repository mining, software maintenance.
	【BOU Savong】	Database system, data engineering, scientific database, XML/RDF Database
	【HORIE Kazumasa】	Machine Learning, Neural Network, Pattern Recognition, Biological Signal Processing.
Computer Architecture	TAKAHASHI Daisuke	High-performance computing: High-performance numerical algorithms on parallel computers and performance evaluation.
	TATEBE Osamu	Parallel and distributed system software, data-intensive computing, and high performance computing.
	NUKADA Akira	High Performance Computing, Performance Optimization, GPU Computing
	BOKU Taisuke	Massively parallel and high performance computing systems: Massively parallel computer architecture, cluster computing and its system software, high performance computing system including GPU/FPGA accelerators.
	△YASUNAGA Moritoshi	VLSI engineering: VLSI design and implementation of parallel and distributed systems and evolutionary systems.
	KIMURA Shigetomo	Information communication engineering: Process algebra, network protocols and performance evaluation of communication systems.
	SATO Akira	Design and operation technology for academic network systems, information systems and computing systems.
	SHOUNO Kazuhiro	Analog integrated circuit and circuit theory: Highly linearized CMOS transconductors and complex filters.
	YAMAGIWA Shinichi	Algorithms, Software/Hardware and Applications of Embedded System, Data Compression, Distributed System, Computer Architecture and Sports Engineering.
	YAMAGUCHI Yoshiki	Reconfigurable architecture, computing, and highly Efficient systems with high performance and low-power consumption applied to AI, encryption, IoT, and scientific applications.

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Computer Architecture	【TOMIYASU Hiroshi】	Making better use of significantly progressing microprosessors for parallel computer architecture after Age of vector supercomputers and massively parallel computers.
	【KANAZAWA Kenji】	VLSI Engineering, Reconfigurable computing, Accelerator for hard computation problems using reconfigurable LSI.
	【KOBAYASHI Ryohei】	FPGA applications, Reconfigurable Computing System, High-speed RTL Simulation.
	【SANNOMIYA Shuji】	Autonomous, parallel, and distributed processor architecture: Research on data-driven chip-multi-processor based on self-timed elastic pipeline.
	【TADANO Hiroto】	Numerical analysis: Numerical algorithms for large scale linear systems. Parallel computing for eigenvalue problems.
	【FUJITA Norihisa】	High Performance Computing, Accelerator, GPU Computing, Reconfigurable Computing, High Performance Interconnection
Media Engineering	KAMEYAMA Keisuke	Learning, adaptive information processing, signal / image processing, and applications to retrieval and biometric authentication.
	KUDO Hiroyuki	Image processing and medical imaging : Image and video processing, imaging science, medical imaging (CT, PET, MRI) and computer-aided diagnosis, machine learning and artificial intelligence, intelligent image sensing, music and sound processing, mathematics of inverse problems.
	TAKIZAWA Hotaka	Intelligent image processing: medical image recognition, computer-aided diagnosis, computer vision, 3-D object recognition.
	MITANI Jun	CG and CAD : Geometric modeling, Human computer interface, Computational origami.
	KANAMORI Yoshihiro	Computer graphics (CG), rendering, deep learning, image editing techniques, CG applications for industry
	SUZUKI Taizo	Multi-perception media processing: Signal processing, image/video processing, compression, perceptual encryption, information hiding, sparse representation, filter banks/wavelets.
	YAMADA Takeshi	Speech and acoustic information processing: speech recognition, sound scene understanding, multi-channel signal processing, media quality assessment, and e-learning.

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Media Engineering	【AOTO Takahito】	Computational Photography, Computer Vision
	【ENDO Yuki】	Computer graphics, image synthesis and editing techniques, image recognition, data mining, machine learning, deep learning
Intelligent System	KUNIHIRO Noboru	Cryptography, Information Security, Quantum Computation, Cryptanalysis, Cryptographic Protocol.
	SAKAI Ko	Computational vision: representation of shape, perception of 3D structure, figure-ground segregation, cortical representation, cognitive neuroscience, and psychophysics.
	SAKUMA Jun	Security and Privacy for Artificial Intelligence: Machine Learning, Artificial Intelligence, Data Privacy, Applied Cryptography.
	FUKUI Kazuhiro	Pattern recognition and computer vision: Face recognition, 3D object recognition, human sensing, robot vision.
	YAMAMOTO Mikio	Natural Language Processing on the Web using statistical methods: Statistical machine translation and Web documents processing such as sentiment analysis.
	AKIMOTO Yohei	Black Box Optimization and its Applications: probabilistic model based optimization, evolutionary computation, reinforcement learning, automated machine learning.
	IGARASHI Yasuhiko	Machine learning, Multivariate analysis, Sparse modeling, Data-driven science, Measurement informatics, Materials informatics
	INUI Takashi	Natural Language Processing: Information extraction and knowledge acquisition from natural language data, opinion mining, and sentiment analysis.
	BABA Yukino	Human computation, Crowdsourcing, Collective intelligence, Machine learning, Data mining.
	【ARANHA Claus】	Research on Evolutionary Computation: Optimization, Program Generation, Procedural Generation, Intelligent Agents and Artificial Life.
	【IIZUKA Satoshi】	Computer graphics, image processing, image editing, computer vision, machine learning
	【FUKUCHI Kazuto】	Mathematical statistics and machine learning: statistical inference, statistical learning, fairness and privacy in machine learning, data mining
	【YE Xiucai】	Feature selection for high dimensional data, Clustering, Machine learning, Data analysis, Classification, Network computing.

Field of Research	Faculty	Detailed Description of Research Field
Professors of Cooperative Graduate School	INO Shuichi (National Institute of Advanced Industrial Science and Technology)	Human machine interface, soft actuator technology, information accessibility, haptic interface design, healthcare and quality of life technology, rehabilitation engineering.
	SATO Mitsuhisa (Institute of Physical and Chemical Research (RIKEN))	High-performance parallel computing systems : Cluster computing, parallel programming systems such as OpenMP and HPF, benchmarking and performance evaluation of parallel computing systems, parallel and distributed computing on Grid
	SATOH Yutaka (National Institute of Advanced Industrial Science and Technology)	Ubiquitous vision, Robot vision, Stereo omnidirectional system (SOS).
	NAKADA Hidemoto (National Institute of Advanced Industrial Science and Technology)	Parallel computing, distributed computing, grid, cloud, machine learning.
	TANIMURA Yusuke (National Institute of Advanced Industrial Science and Technology)	Parallel and distributed storage. Large-scale data processing. Cloud computing. Grid computing. E-science applications.
	NAKATA Ayako (National Institute for Materials Science)	Application of Computational Mathematics and Machine Learning to Materials Science (Quantum chemistry, First-principles simulation).

△: Appointed until March 31, 2024

(Note)
Before applying, applicants must contact a faculty member and obtain consent to become your prospective supervisor (the person who gives you academic instructions after enrollment).
Applicants cannot choose faculty members whose names are written in square brackets as a prospective supervisor. However, under the supervision of a faculty member without square brackets, you can choose a faculty member with square brackets as a sub-supervisor and conduct research related to the sub-supervisor's research topics. The supervisor and the sub-supervisor must be chosen from the same "Field of Research."

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