16 May 2018

**Department of Policy and Planning Sciences**
**Doctoral Program in Policy and Planning Sciences**

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| | AKIYAMA, Eizo | Evolutionary game theory, Dynamical systems theory, Agent-based simulation. |
| | ARITA, Tomokazu | Industrial location, Agglomeration economies, Urban and regional policies, City planning systems. |
| | △ITOIGAWA, Eiichi | Urban disaster mitigation planning: Mathematical modeling of urban disaster mitigation, risk assessment of urban disaster. |
| | SATO-ILIC, Mika | Multi-dimensional data analysis, statistics: latent structure models, fuzzy clustering, and multi-way data theory. |
| | OHSAWA, Yoshiaki | City Planning through IoT, Infrastructure asset management, Spatial voting equilibrium, Quantitative analysis on landscape, Spatial competition and harmonization in Europe, Location Theory |
| | OKAMOTO, Naohisa | Tourism Science, Transportation planning, Transport Policy, Travel Behavior Analysis and Demand Forecasting, Evaluation on Infrastructure Development |
| | SHIGENO, Maiko | Mathematical programming, combinatorial optimization, Network flow theory, Algorithm engineering. |
| | SUZUKI, Tsutomu | Urban Analysis, Facility Planning, Location Analysis, Environmental Modeling, Geographical Information Science. |
| | TANIGUCHI, Mamoru | Compact city, Sustainable urban and regional planning, Management of urban layout, National land-use plan, Social capital. |
| | ZHANG, Yongbing | Resource allocation and management in parallel/distributed systems, mobile and pervasive computing, wavelength routing in optical networks. |
| | TSUTSUMI, Morito | Spatial Statistics, Spatial Econometrics, Geospatial Information Sciences, Economic analysis of infrastructure investment, Industrial location, Urban modeling, Local government/Public facilities management |
| | FUJIKAWA, Masaki | Spatial composition of early modern cities and modernization of traditional cities. |
| | MIAO, Ying | Combinatorial design theory and its applications to coding theory, Cryptography and DNA library screening. |
| | MURAKAMI, Akinobu | Urban and rural planning history, Evaluation of the role of urban greenery in environmental conservation, Urban landscape planning. |
| | YOSHISE, Akiko | Mathematical optimization and its applications, Algorithms for solving conic optimization problems |
| | WATANABE, Shun | Architectural and urban planning toward the highly-networked information society, Development of intelligent information systems for their planning and design. |
| | △WATANABE, Shinichiro | Studies on person-situation interactions and organizational Behavior. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| | AMEMIYA, Mamoru | Environmental design and community planning for crime prevention, Planning and management of residential environment in depopulating society |
| | ANDO, Hiroyasu | Mathematical modeling of bio-inspired complex networks and its application to social systems |
| | IKUINE, Fumihiko | management of product development, MOT (management of technology), Innovation |
| | ISHII, Kenichi | Social psychology of consumer behavior; Diffusion and adoption of information media; Use of mobile communications; Nation branding. |
| | UEICHI, Hiedo | Individual differences and decision-making, risk perception, cognitive psychology, emotion. |
| | UMEMOTO, Michitaka | Countermeasures against infrequent risk in urban and regional area: Evacuation planning, Disaster information, Regionals' countermeasures against nuclear disaster, Perception of disaster risk. |
| | OKUBO, Masakatsu | Empirical study on intertemporal consumption decisions, Application of time series econometrics. |
| | OTA, Mitsuru | Selforganization of spatial economic system and structural change. |
| | OKADA, Yukihiko | Management accounting in service organizations. Service target costing. |
| | OKUSHIMA, Shinichiro | Environmental economics, Energy economics, Policy analysis, Environmental ethics, Poverty analysis, Inequality analysis, Welfare analysis. |
| | KAIDA, Naoko | Pro-environmental Behavior; Economic Valuation of Environmental and Natural Resources; Built Environment Systems; Environmental Governance; International Environmental Cooperation |
| | KURATA, Hisashi | Research on marketing-operations interfaces in a supply chain system. |
| | KONISHI, Yoshifumi | Empirical microeconomics, Applied econometrics, Transportation and environment |
| | SAWA, Ryoji | Evolutionary game theory, Cooperative games, Behavioral game theory. |
| | TAKANO, Yuichi | Mathematical optimization, Financial engineering, Machine learning |
| | TANIGUCHI, Ayako | Attitude and behavioral modification concerning urban transportation planning, Risk communication towards disaster preventional behavior, Mobility management. |
| | TURNBULL, Stephen John | Internet economy (equipment and system organization; electronic commerce), Economic environment of open source software. |
| | HACHIMORI, Masahiro | Discrete Mathematics, Combinatorics, Analysis of discrete structures |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| | FUJII, Sayaka | Urban Planning, Urban and Community Planning of Neighborhoods, Living Environment in Aging Housing Estates, Community Business Utilizing Local Resources. |
| | MATSUBARA, Kosuke | Urban planning, planning history, Urban planning in Asia and Africa. |
| | YAMAMOTO, Sachiko | Management system of building stocks, Regional facility planning, Community design with the urban-rural exchange. |
| | 【KAWASHIMA, Hiroichi】 | Public-sector management, Open data, Public information-driven innovation generation, city development strategies, local government information policy making. |
| | 【ARIMA, Sumika】 | Supply chain management, Logistics. |
| | △【KONDO, Fumiyo】 | Research on the state of the profit management in a service organization. Theoretical and empirical research of a service cost plan. |
| | 【ANNO, Hidekazu】 | Matching market design, Game theory, Microeconomics |
| | 【IGARASHI, Gaku】 | Nonparametric density estimation |
| | 【USHIJIMA, Koichi】 | Empirical analysis of investment in child human capital, residential choice, health investment, educational investment. |
| | 【ORIHARA, Masanori】 | Empirical analysis of corporate finance |
| | 【KUROSE, Yuta】 | Bayesian statistics, State space models |
| | 【SANO, Yukie】 | Physics of socio-economic systems, Social media, Computational social science, Web science |
| | 【TRAN, Lam Anh Duong】 | International Economics, Economic Growth, Income Distribution |
| | 【PHUNG-DUC, Tuan】 | Applied Probability, Stochastic Models, Performance Evaluation, Queueing Theory, Operations Research |
| Visiting Professor of Cooperative Graduate School | KOBAYASHI, Hiroshi (National Institute for Land and Infrastructure Management) | Road Design, Traffic Safety Analysis and Measures, Bicycle Traffic, Community Road |
| | KONDO, Yoshinori (National Institute for Environmental Studies) | Vehicle evaluation in real world conditions, Proposal of environmental conscious traffic and life style, Development of personal mobility based on inclusive way of thinking. |
| | HASEGAWA, Hiroshi (National Institute for Land and Infrastructure Management) | Housing policy, Housing safety net policy, Housing market trend analysis, Housing planning for the elderly and child-care household, Management of housing estates, Housing refurbishment. |
| | MATSUHASHI, Keisuke (National Institute for Environmental Studies) | Integrated planning of sustainable region and transport, Public involvement. |
| | MENO, Fumitake (Building Research Institute) | Housing policy in collaboration with welfare, Housing supply and support by NPOs, Disaster reconstruction of houses and areas, Urban and community planning by residents. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Visiting Professor of Cooperative Graduate School | YAMANO, Hiroya (National Institute for Environmental Studies) | Spatio-temporal dynamics of environment and ecosystems based on fieldwork and remote sensing, Biodiversity and ecosystem conservation |
| | ISHII, Norimitsu (National Institute for Land and Infrastructure Management) | Evaluation and visualization of urban spatial structure, Urban and Regional management, Mathematical model of urban disaster mitigation. |
| | ONISHI, Masaki (National Institute of Advanced Industrial Science and Technology) | Computer Vision, Pattern Recognition, Human Behavior Recognition, Big data analysis, Visualization |
| | HASHIMOTO, Hiroyoshi (National Institute for Land and Infrastructure Management) | Travel Behavior Survey, Road Traffic Survey, Smoothing of road traffic. |

△: Appointed until 31 March 2021

(Note)

Applicants cannot choose faculty members written in square brackets as a prospective supervisor directly, but, can choose them with the cooperation of faculty members who are not written in square brackets.

Applicants have to contact a prospective supervisor (a faculty member from whom you wish to receive academic instruction) and obtain his/her consent to your application in advance.

[Contact Information]

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Web：http://www.sk.tsukuba.ac.jp/PPS/en/

**Doctoral Program in Risk Engineering**

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Total Risk Management | SATO-ILIC Mika | Multi-dimensional data analysis, statistics: latent structure models, fuzzy clustering, and multi-way data theory. |
| | ITOH Makoto | Systems safety: mutual trust and cooperation in human-machine systems, cognition, inference, and decision making under uncertainty or gray zone, perception and acceptance of risk. |
| | ENDO Yasunori | Fundamentals and applications of the following methods based on soft computing technique: systems: machine learning including clustering, fuzzy inference and fuzzy control, and risk analysis of uncertain systems by methodology of functional analysis. |
| | KAMEYAMA Keisuke | Pattern recognition, learning theory, and signal/image processing. |
| | KURAHASHI Setsuya | Social simulation, Evolutionary computing, Agent technology, Data mining, Skill extraction support system, Recommender system. |
| | KINO Yasunobu | Project Risk Management, Application Development, Social Systems Modeling and Design. |
| | FURUKAWA Hiroshi | Cognitive interface design: human interface to extend cognitive capability, navigation support, learning support, mental models. |
| | 【MISAKI Hiroumi】 | Statistics, econometrics and quantitative finance: high-frequency data analysis, volatility and covolatility of asset prices, financial risk management, state space models, and particle filters. |
| Cyber Risk | TSUDA Kazuhiko | Database, Information Retrieval, Human Factors, Cognitive Science, Natural Language Processing, Computer Algorithm, Software Engineering. |
| | YOSHIDA Kenichi | Application of Internet, Data Mining, Artificial Intelligence. |
| | OMOTE Kazumasa | Network Security: malware countermeasure, risk assessment for cyber attacks, cloud security and sensor network security. |
| | KATAGISHI Kazuki | Wisdom information communication systems: Hyperfunctions-based “Fluency Information Theory”, New Generation Network, Network security technologies. |
| | NISHIDE Takashi | Information security: design of public key encryption, cryptographic protocol, privacy-enhancing technology, method for securing information systems. |
| Urban Risk | △ITOIGAWA Eiichi | Urban disaster mitigation planning: Mathematical modeling of urban disaster mitigation planning, risk assessment of urban disaster. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Urban Risk | SUZUKI Tsutomu | Urban Analysis, Facility Planning, Location Analysis, Environmental Modeling, Geographical Information Science. |
| | UMEMOTO Michitaka | Countermeasures against infrequent risk in urban and regional area: Evacuation planning, Disaster information, Regionals' countermeasures against nuclear disaster, Perception of disaster risk. |
| | TANIGUCHI Ayako | Urban transport planning, Attitude and behavioral modification, Public acceptance, Risk communication, Mobility management. |
| Environmental and Energy System Risk | OKAJIMA Keiichi | New energy systems: LCA evaluation and reliability analysis of energy systems with new energy devices such as photovoltaic cell and fuel cell systems. |
| | HATANO Yuko | Fate and transport of pollutants in the natural environment. Remediation; adsorption; molecular dynamics simulations. |
| | 【SUZUKI Kengo】 | Energy system: model analysis of electricity and heat supply system including renewable energy and micro-CHP; education and research of energy system by using gaming simulation. |
| | 【TAKAYASU Akitoshi】 | Verification methods for nonlinear mathematical models including mathematical models for environmental problems, Numerical analysis, Verified numerical computation. |

△: Appointed until 31 March 2021

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[Contact Information]

e-mail：entexam@risk.tsukuba.ac.jp

Web：http://www.risk.tsukuba.ac.jp/index_eng.html

**Doctoral Program in Computer Science**

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Information Mathematics and Modeling | KAWABE Tohru | Control design: Theory and applications in robust control, receding horizon control, hybrid system, computational intelligence assisted control, etc. |
| | △KITAGAWA Takashi | Numerical analysis: Numerical algorithms for inverse and Illposed problems.<br>Mathematical model of meaning and multimedia information system. |
| | 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. |
| | 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 and Mathematical Optimization: Structure and Algorithms in Network Optimization. |
| | 【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 and eigenvalue problems. |
| | 【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. |
| | 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. |
| | SHIZUKI Buntarou | Human-computer interaction: Visual programming and interaction techniques for end users. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Intelligent Software | 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, formal methods, human-computer interaction. |
| | 【KAWAGUCHI Ikkaku】 | Human Computer Interaction, Remote Communication Support, Communication Robot. |
| Software System | AMAGASA Toshiyuki | Database system, data engineering: XML/RDF Database, social media, and scientific database. |
| | KATO Kazuhiko | System software: distributed systems, operating systems, information security. |
| | △KITAGAWA Hiroyuki | Database systems and data engineering : Information integration, Data mining, Information retrieval, Bigdata, Stream processing, and Scientific databases. |
| | ABE Hirotake | System Software, Distributed Systems, Computer Security, Computer Network. |
| | OYAMA Yoshihiro | Computer security, system software, operating systems, virtualization. |
| | OKA Mizuki | Web Mining, Social Network Analysis, Web Science. |
| | SHINJO Yasushi | Operating systems, distributed systems, virtualization, privacy protection, decentralized social networking services. |
| | HASEBE Koji | Applications of logic to computer science : Formal methods, distributed systems, multi-agent systems, game theory. |
| | HARAIKAWA Tomohiro | Networked appliances, embedded system, accessibility. |
| | MAEDA Atusi | Implementation of programming languages, garbage collection, runtime system, resource management. |
| | 【CHEN Hanxiong】 | Database system, knowledge-base system, e-education, information retrieval, knowledge discovery and data mining. |
| | 【FURUSE Kazutaka】 | Database systems, information retrieval, and data engineering. |
| | 【SHIOKAWA Hiroaki】 | Database systems and data engineering: Large-scale data analysis, Data mining, and Graph databases. |
| | 【TSUGAWA Sho】 | Network mining: Social network analysis, data mining in large-scale online communities, and design of network services utilizing social networks. |
| | 【HAYASE Yasuhiro】 | Software Engineering : Program comprehension, software repository mining, software maintenance. |
| | 【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. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Computer Architecture | TATEBE Osamu | Parallel and distributed system software, data-intensive computing, and high performance computing. |
| | BOKU Taisuke | Massively parallel and high performance computing systems : Massively parallel processing system architecture, cluster computing and its system software, performance evaluation in high performance computing. |
| | YASUNAGA Moritoshi | VLSI engineering: VLSI design and implementation of parallel and distributed systems and evolutionary systems. |
| | △WADA Koichi | Parallel/distributed processing and computer architecture: Parallel computer architecture. Parallel and distributed processing system including parallel programming language processors and applications. |
| | KIMURA Shigetomo | Information communication engineering: Process algebra, network protocols and performance evaluation of communication systems. |
| | SHOUNO Kazuhiro | Analog integrated circuit and circuit theory: Highly linearized CMOS transconductors and complex filters. |
| | YAMAGIWA Shinichi | Algorithm and application development for stream data compression and AI technology for human/system movements. System integration techniques for embedded, parallel computing and stream computing systems. |
| | YAMAGUCHI Yoshiki | Reconfigurable architecture, computing, and highly Efficient systems with high performance and low-power consumption applied to AI, encryption, IoT, and scientific applications. |
| | 【SATO Akira】 | Design and operation technology for academic network systems, information systems and computing systems. |
| | 【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. |
| Media Engineering | KAMEYAMA Keisuke | Learning, adaptive information processing, signal / image encoding, and applications to retrieval and restoration. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Media Engineering | KUDO Hiroyuki | Image processing and medical imaging : Image and video processing, imaging science, medical imaging (CT,PET,MRI) and computer-aided diagnosis, intelligent image sensing, music and sound processing, mathematics of inverse problems. |
| | MAKINO Shoji | Acoustic signal processing, Music signal processing, Computational auditory scene analysis: Blind source separation, Acoustic echo cancellation, Segregation, processing, synthesis, 3D reproduction, and retrieval of music, Technical realization of the cocktail party effect. |
| | MITANI Jun | CG and CAD : Geometric modeling, Human computer interface, Computational origami. |
| | KANAMORI Yoshihiro | Computer graphics, image editing techniques, computer-assisted creation of illustration and animation, non-photo realistic rendering (NPR), real-time rendering and visual simulation. |
| | TAKIZAWA Hotaka | Intelligent image processing: medical image recognition, computer-aided diagnosis, computer vision, 3-D object recognition. |
| | YAMADA Takeshi | Speech and acoustic information processing: speech recognition, sound scene understanding, multi-channel signal processing, media quality assessment, and e-learning. |
| | 【SUZUKI Taizo】 | Media signal processing: Image and video processing, source coding, multidimensional transform. |
| Intelligent System | ○KANOH Hitoshi | Evolutionary computation, genetic algorithm, swarm intelligence, artificial life, intelligent transportation systems. |
| | SAKAI Ko | Computational vision: early-to-intermediate-level vision, 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, hyper-parameter optimization in machine learning, reinforcement learning, application of information geometry to algorithm design. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Intelligent System | 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】 | Study of Artificial Intelligence, Machine Learning and Evolutionary Computation. Applications for Optimization, Bioinformatics and Gaming. Parallelization of Machine Learning Algorithms. |
| | 【YE Xiucai】 | Feature selection for high dimensional data, Clustering, Machine learning, Data analysis, Classification, Network computing. |
| Visiting 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 a 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. |
| | 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 31 March 2020
△: Appointed until 31 March 2021

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Applicants have to contact a prospective supervisor (a faculty member from whom you wish to receive academic instruction) and obtain

his/her consent to your application in advance.

[Contact Information]

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Web：http://www.cs.tsukuba.ac.jp/english/index.html

**Doctoral Program in Intelligent Interaction Technologies**

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| System Design | MARUYAMA Tsutomu | Reconfigurable Computer Systems, Adaptive Complex System. |
| | MORITA Masahiko | Brain-like Computing, Neural Networks, Modeling Brain Functions. |
| | KAWASAKI Masahiro | Neuroscience, Cognitive Science, Psychology, Communication, Signal Processing. |
| | NOBUHARA Hajime | Computational Intelligence, Multimedia Processing, Advanced Sensing by UAV. |
| | HASEGAWA Manabu | System Modeling. |
| | 【SHIBUYA Takeshi】 | Machine Learning, Reinforcement Learning, Multi-Agent System including Hardware Components. |
| | 【NIIZATO Takayuki】 | Emergence, Learning and Collective Behavior. |
| Man-Machine System and Robotics | AIYAMA Yasumichi | Human-like Dexterous Robot Manipulation, Advanced Industrial Robot. |
| | IWATA Hiroo | Virtual Reality. |
| | KUZUOKA Hideaki | Computer Supported Cooperative Work, Groupware, Telepresence System, Human-Robot Interaction, Mixed Reality, e-Health, User Interface. |
| | SANKAI Yoshiyuki | Cybernics: Fusion of Humans, Robots and Information Systems, Cybernic Interface/Device/System, Big-Data & AI in Physical/Physiological/Life field, Biomedical Engineering. |
| | SUZUKI Kenji | Artificial Intelligence, Autonomous Humanoid Robot, Human Assistive Technology, Music & Sound Media Technology, Kansei Research. |
| | TSUBOUCHI Takashi | Self-Contained Autonomous Mobile Robots, Outdoor Autonomous Mobile Vehicles. |
| | NAKAUCHI Yasushi | Human-Robot Interaction, Intelligent Environments, Sensor Network. |
| | HOSHINO Kiyoshi | Biomedical Measurement and Analysis, Mathematical Models for Biological System, Brain Science. |
| | YANO Hiroaki | Cooperative VR Environment, Virtual Reality, Assistive Technology. |
| | KAWAMOTO Hiroaki | Integration of Human and Robot, Biological Control Systems, Biological Motion & Physiology Analysis, Robot Therapy, Robot Safety. |
| | TANAKA Fumihide | Social Robotics, Feel Safe AI, Feel Safe Technologies, Human-Robot Interaction, Education Support, Development and Learning, Active Seniors. |
| | MOCHIYAMA Hiromi | Soft Robotics, Haptics Technology. |
| | 【YAMASHITA Jun】 | Application of Ubiquitous Computing to Remote Collaboration and Computer Supported Collaborative Learning. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Man-Machine System and Robotics | 【IIO Takamasa】 | Social cognitive engineering, Social robotics, Human robot interaction |
| | 【OSAWA Hirotaka】 | Human-Agent Interaction, Artificial Intelligence, Human-Robot Interaction, Communication Game. |
| | 【ZEMPO Keiichi】 | Extension of Human Perception, Big Data Utilization and Integration based on Sensor Signals, Service Systems such as Recommendation and Anomaly Detection. |
| | 【HASHIMOTO Yuki】 | Tactile Interface, Tactile Perception, Interactive Technique, Virtual Reality, Telexistence. |
| | 【HIROKAWA Masakazu】 | Artificial Intelligence, Human-Machine Cooperation, Robotics for Developmental Support, Sports Engineering |
| Instrumentation and Control Engineering | HORI Noriyuki | Digital Control; Theory and Applications. |
| | YABUNO Hiroshi | Nonlinear Mechanical Systems, Nonlinear Control of Nano-Micro Machines, Bifurcation Control and its Applications. |
| | DATE Hisashi | Model Predictive Control for Nonlinear Systems, Autonomous Mobile Robot, Self-Driving System, Snake-Like Robot and Mechanical System Design. |
| | WAKATSUKI Naoto | Simulation based Visualization, Vibration Sensors and Actuators, Acoustical Engineering, Musical Acoustics, Inverse Problems. |
| | 【MAEDA Yuka】 | Non-invasive Measurement by Photoplethysmography, Developing Wearable Devices for Home Healthcare System. |
| | 【YAMAGUCHI Tomoyuki】 | Instrumentation Engineering, Robotics, Robot's Eye, Human Interface, Image Processing. |
| Communication System | UTSURO Takehito | Natural Language Processing, Web Mining, Information Retrieval, Human-Machine Communication by Speech and Language, Understanding and Creating Entertainment and Educational Contents, Language Processing by Deep Learning, Artificial Intelligence. |
| | KAMEDA Yoshinari | Massive Sensing, Intelligent Image Understanding / Processing, Multimedia Understanding, Model based Vision, Mixed Reality. |
| | KOGA Hiroki | Information Theory, Information Security. |
| | △MIZUTANI Koichi | Medical Electronics, Welfare Technologies, Complement of Human Sensory Functions, Robot Sensing, Communication System in Sensing Grid, Environment Monitoring, Applied Optics, Applied Acoustics, Musical Acoustics, Food and Agricultural Engineering, Health Monitoring Engineering of Livestock. |
| | EBIHARA Tadashi | Communication and Information Engineering, Oceanic Engineering, Network Engineering. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Communication System | KAKEYA Hideki | 3D Imaging, Information Display, Geometric Optics, Computer Aided Surgery, Media Technology, Natural Language Processing |
| | KITAHARA Itaru | Real World Imaging, Free-Viewpoint Video, Mixed-Reality, Augmented Reality. |
| | HOSHINO Junichi | Entertainment Computing, Game Technologies, Storytelling Technologies. |
| Visiting Professor of Cooperative Graduate School | KANEHIRO Fumio (National Institute of Advanced Industrial Science and Technology) | Mechanism, Motion Planning, Motion Control, Environment/Object measurement and recognition, simulation of Humanoid robots |
| | KITA Yasuyo (National Institute of Advanced Industrial Science and Technology) | Robot Vision, Visual Recognition of Soft Objects. |
| | KURATA Takeshi (National Institute of Advanced Industrial Science and Technology) | Mixed-Reality-Interaction Technology and the Service-Engineering Oriented Applications. |
| | GOTO Masataka (National Institute of Advanced Industrial Science and Technology) | Music Information Processing, Singing Information Processing, Media Interaction. |
| | SAKANASHI Hidenori (National Institute of Advanced Industrial Science and Technology) | Medical Image Processing, Computer-Aided Diagnosis (CAD), Clinical Decision Support, Pattern Recognition, Machine Learning. |
| | MURAKAWA Masahiro (National Institute of Advanced Industrial Science and Technology) | Sensor Network, Data Mining, Adaptive Algorithm, and the Applications to Structural Health Monitoring. |
| | YOSHIDA Eiichi (National Institute of Advanced Industrial Science and Technology) | Humanoid Robotics and its Application, Motion Planning and Optimization for Robots, Human Modeling and Simulation, Human-Centered Product Design. |
| | YODA Ikushi (National Institute of Advanced Industrial Science and Technology) | Intelligent Human Sensing by Computer Vision and Pattern Recognition, Gesture Interface, Video Surveillance, Media Art. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Visiting Professor of Cooperative Graduate School | KAMIMURA Akiya (National Institute of Advanced Industrial Science and Technology) | Modular Robot System, Decentralized Ad Hoc Wireless Network, Self-Organization System, and Infrastructure and Disaster Investigation Robot System. |
| | KONDOH Shinsuke (National Institute of Advanced Industrial Science and Technology) | Development of Design Tools and Methodologies for Sustainable Design, Life Cycle Design, and Environmentally Conscious Design. |
| | HAMASAKI Masahiro (National Institute of Advanced Industrial Science and Technology) | Online Community System, Social Media Analysis, Web Mining, Semantic Web. |
| | MATSUMOTO Yoshio (National Institute of Advanced Industrial Science and Technology) | Service Robotics (Assistive Robotics and Rehabilitation Robotics), Evaluation, Real-Time Vision, Human-Robot Interaction, Android. |

△: Appointed until 31 March 2021

(Note)

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[Contact Information]

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**Doctoral Program in Engineering Mechanics and Energy**

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Solid Mechanics and Material Science | KAWAI Masamichi | Modeling and experiments for deformation and strength of fiberreinforced composite materials in aerospace structures and for inelastic and damage behavior of refractory metals in hightemperature components. |
| | KAMEDA Toshihiro | Computational mechanics which covers inverse analysis to obtain mechanical behavior of inelastic and/or inhomogeneous material, and finite element method based on stress-strain relationship database. |
| | ○HORI Sankei | Major studies are machine tools, machining, and measurement method using an ultrasonic technique. For example, measurement of the cutting edge position of micro-tool. |
| | MATSUDA Akihiro | Study on development of design tool for sportswear and sports equipment using computational mechanics. Aging estimation of rubberlike material for electric power industry. |
| | MATSUDA Tetsuya | Study of multi-scale simulation techniques. Property evaluation of solid materials that exhibit microscopic internal structures using homogenization theory / finite element method based computational mechanics. |
| | 【SHINTAKU Yuichi】 | Numerical and experimental study on fracture mechanism of materials, development of crack propagation analysis using enhanced finite element method (FEM) such as finite cover method and s-version FEM, and strength evaluation on engineering product by its application. |
| Structure, Disaster Mitigation and Reliability Engineering | ISOBE Daigoro | Numerical and experimental studies on impact and collapse problems of structures, Development of computer simulation techniques aiming disaster prevention and mitigation, Application of computational mechanics and structural engineering essence to robotics. |
| | KANAKUBO Toshiyuki | Studies on structural performance of seismic, isolated or controlled structures. Development of high performance structural materials and new techniques for buildings and infrastructures. |
| | SAKAI Yuki | Studies on relationship between characteristics of strong ground motions and damage to structures and its application to earthquake damage mitigation. |
| | MATSUSHIMA Takashi | Mechanics of granular materials. Mechanics of liquefaction and debris flow. Mechanics of long-term geological formation.<br>Mechanics of planetary surface processes. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Structure, Disaster Mitigation and Reliability Engineering | SHOJI Gaku | Earthquake engineering and structural dynamics. Clarification on nonlinear seismic response of infrastructure subjected to extreme ground motions, development of seismic retrofit technologies, structural reliability assessment |
| | YASOJIMA Akira | Studies on performance evaluation and seismic evaluation technology of reinforced concrete buildings with focuses on maintenance and life extension |
| | 【ASAI Takehiko】 | Smart structural vibration control and self-powered control systems with energy harvesting technologies |
| | 【TANAKA Seizo】 | Studies on development of numerical simulation methods for natural disaster prevention and reduction with high performance computing technologies |
| | 【YAMAMOTO Kyosuke】 | Studies on “Partial Safety Factor Method” , “Efficiency of Updraft Tower Power Generator” and “Structure Health Monitoring based on Vibration Analysis” for civil structures. |
| Fluid and Environmental Engineering | KYOTOH Harumichi | Micro-bubble generating devise: Curtain coating; Soil Contaminant removal by wet sorting. |
| | TAKEWAKA Satoshi | Field survey, numerical computations and remote sensing on coastal environments. |
| | SHIRAKAWA Naoki | River basin management with engineering and socioeconomic approaches. Environmental flow, environmental economics, decision making process. |
| | 【KANAGAWA Tetsuya】 | Theoretical basic studies on physical fluid mechanics: Bubble dynamics and Nonlinear acoustics. |
| Energy and Thermal Engineering | △ABE Yutaka | Research on thermal hydraulic behavior and development of its application for active control of energy systems. |
| | ISHIDA Masayoshi | Development of high voltage insulation technique at high temperatures and high output generation systems using fuel cells are being studied to improve efficiency on energy conversion and transmission, and also ultra long HVDC. |
| | NISHIOKA Makihito | Based on reactive gasdynamics and aerothermochemistry, stabilities of fundamental laminar flames, formation mechanisms and reduction methods of pollutants such as NOx in flames are studied. |
| | MONJI Hideaki | Basic study and its application on dispersed two-phase flow; Drag force acting on a car in a line arrangement, High speed microbubble flow. |
| | AKI Hirohisa | Power and energy systems engineering: studies on demand-side oriented energy systems. |
| | KANEKO Akiko | Study on fluid mechanism of multiphase flow based on the energy and environmental issue. |

| Field of Research | Faculty | Detailed Description of Research Field |
|---|---|---|
| Energy and Thermal Engineering | FUJINO Takayasu | Research on application of magnetohydrodynamics and plasmadynamics to energy and aerospace engineering. |
| | YOKOTA Shigeru | Advanced space propulsion systems, such as electric propulsion or laser propulsion. |
| | 【SHIMAMURA Kohei】 | Aerospace and aeronautical engineering in terms of advanced energy technology: 1.Space propulsion (Laser propulsion) 2.Wireless power transmission for a flight object via magnetic coupling resonance. |
| | 【TAKAHASHI Toru】 | Research and development on predictive design techniques for power conversion circuits. |
| Visiting Professors of Cooperative Graduate School | ZHOU Haoshen (National Institute of Advanced Industrial Science and Technology) | Research on electrode active materials and electrolytes for energy storage technology. |
| | SUGITA Hiroyuki (Japan Aerospace Exploration Agency) | Research on active thermal control devices and efficient space cryocoolers for innovative spacecrafts. |
| | HARADA Yoshihisa (National Institute of Advanced Industrial Science and Technology) | Research and development of materials reliability performance based on damage evaluation for structural and processing components such as electric power plants or transportation. |
| | MATSUMOTO Satoshi (Japan Aerospace Exploration Agency) | Study on thermo-fluid phenomena utilizing the International Space Station, Non-linear dynamics of levitating drop. |
| | YOSHIDA Hiroyuki (Japan Atomic Energy Agency) | Research on evaluation of multi-phase flow behavior for improvement of nuclear reactor safety |
| | OHASHI Hirofumi (Japan Atomic Energy Agency) | Research and development on High Temperature Gascooled Reactor (HTGR) and thermochemical water splitting IS process to produce hydrogen using hightemperature nuclear heat from HTGR. |
| | SAKAKITA Hajime (National Institute of Advanced Industrial Science and Technology) | Research on medical, aerospace, energy and environmental applications using plasma technologies. |
| | DENDA Masatoshi (The Public Works Research Institute) | Field survey, remote sensing analyses and numerical simulations on problems of river environments. |
| | MIZUTANI Tadahito (Japan Aerospace Exploration Agency) | Research on smart structures and structural health monitoring both for spacecraft and space transportation vehicles utilizing precise measurement technologies |

○: Appointed until 31 March 2020
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