Doctoral Program Faculty, Graduate School of Engineering, Kitami Institute of Technology

Co-creative Engineering　　Academic Year 2025

Research Fields	Faculty		Research Topics
Mechanical and Electrical Engineering	(Prof.)	URA Sharifu	3D Printing, Industry 4.0, Remanufacturing, Sustainable Product Development
	(Prof.)	OHNO Tomoya	All solid state Li-ion battery. Ceramis Nano-coating on Nano-particles.
	(Prof.)	OKUMURA Takashi	Artificial intelligence in medicine Public health informatics Health crisis management Policy assessment for healthcare information systems
	(Prof.)	OBARA Shinya	Distributed power supply, Compound energy system, Optimal design, Operation plan.
	(Prof.)	SATO Michihiro	Turn motion analysis and skill evaluation of alpine ski athletes.
	(Prof.)	TAKEYAMA Mayumi	Thin-films for electronics. LSI process engineering. Physics and chemistry for metal/semiconductor interfaces.
	(Prof.)	HAYASHIDA Kazuhiro	Improvement of engine combustion technology and engine performance under low temperature conditions.
	(Prof.)	HOSHINO Yohei	Study on vibration analysis and control for higher efficiency mechanical systems and application of robot technology
	(Prof.)	MORITA Shinichi	Latent heat storage system, Heat transfer enhancement of fluid including nano-sized dispersoid
	(Prof.)	YOSHIDA Yutaka	Evaluation of damage in materials, Study on mechanical properties of biomaterials.
	(Assoc. Prof.)	UENISHI Toru	Carbon dioxide capture and recycling technology, Fuel cells, Exhaust gas aftertreatment systems
	(Assoc. Prof.)	UMEMURA Atsushi	Design and analysis of wind energy conversion system,Analysis of power system dynamics, Analysis and control of rotating electrical machines. Control of power electronic equipments.
	(Assoc. Prof.)	KAGAYA Katsushi	Cybernetics and biomimetics of organisms as adaptive systems evolved in extreme and real enviromentments
	(Assoc. Prof.)	KANEKIYO Yasumasa	Design and synthesis of stimuli-responsive molecular recognition systems.
	(Assoc. Prof.)	KAWANO Yoshiki	Development of numerical methods and systems to evaluate mechanical propeties in materials and their application to metals and bones
	(Assoc. Prof.)	SAKAGAMI Hirotoshi	Manufacture of turquoise hydrogen and nanocarbon, Study on effective utilization of underutilized energy resources
	(Assoc. Prof.)	SATO Masaru	2.5D/3D LSI process engineering
	(Assoc. Prof.)	TAKAI Kazunori	Flow-Induced Vibration, Fluid-Structure Interactions.
	(Assoc. Prof.)	TAKAHASHI Rion	Design and analysis of wind energy conversion system,Analysis of power system dynamics, Analysis and control of rotating electrical machines.
	(Assoc. Prof.)	HIRAI Shigeto	Development and characterization of electrocatalysts for the activation of next generation energy conversion technologies
	(Assoc. Prof.)	YASUI Takashi	Numerical analysis and design of optical waveguide devices.
	(Assoc. Prof.)	Liangliang YANG	Agricultual machinery, field vehicle type robots, Machine vision and AI in agriculture.
	(Assoc. Prof.)	RAVANKAR Abhijeet	Study of autonomous mobile robots, Artificial Intelligence (AI), Deep Learning, Machine Learning, Computer Vision, Robotics & AI in service, automation, and healthcare.

Research Fields	Faculty	Research Topics
Civil and Environmental Engineering	(Prof.) INOUE Masumi	Study on durability and workability of cold weather concrete.
	(Prof.) KAMEDA Takao	Clarifying the impact of global warming on the Cryosphere (lake ice, snow depth and etc.), research on curling (analysis of trajectory of a curling stone, clarifying the sweeping mechanism), study on the stalagmites in Hyakujoujiki Cave, Hokkaido, Japan
	(Prof.) KAWAGUCHI Takayuki	Study on ground behavior in cold regions and ground reinforcement.
	(Prof.) KOMAI Katsuaki	Modeling on water resources management, water pollution, aquatic ecosysytem, and blue carbon
	(Prof.) TAKAHASHI Kiyoshi	Evaluation of transportation project.
	(Prof.) CHOI Heesup	Study on behavior prediction and self-healing of cracks in concrete structure.
	(Prof.) TOMIYAMA Kazuya	Human factor-based evaluation of transportation infrastructure
	(Prof.) NAKAMURA Dai	Study on changes in physical properties of rock due to freeze.
	(Prof.) HACHIKUBO Akihiro	Formation processes and thermal properties of snow, ice and gas hydrate.
	(Prof.) MINAMI Hirotsugu	Development of analytical methods for the determination of trace elements in material and environmental samples.
	(Prof.) YAMASHITA Satoshi	Study on deformation and strength characteristics of geomaterials.
	(Prof.) YOSHIKAWA Yasuhiro	Study on flood control, water-utilization and environment of river in cold regions.
	(Assoc. Prof.) OHNO Hiroshi	Physicochemical properties of ice and gas hydrate
	(Assoc. Prof.) KIDA Masato	Study on clathrate hydrate-based technologies
	(Assoc. Prof.) SAITO Takehiko	Study on seismic isolation devices and disaster prevention in cold regions.
	(Assoc. Prof.) SHIRAI Hidekazu	Study on waves and current flows in estuarine and constal regions.
	(Assoc. Prof.) SHIRAKAWA Tatsuo	Changes in snow and ice environments associated with climate change and its impact on transport.
	(Assoc. Prof.) TATEYAMA Kazutaka	Study on the ice covered seas environment using satellite and in-situ data.
	(Assoc. Prof.) HORI Akira	Environmental conservation and physical properties of ice in cold regions.
	(Assoc. Prof.) WATANABE Tatsuya	Study on periglacial processes and mass movement.

Research Fields	Faculty	Research Topics
Information and Communication Engineering	(Prof.) KASHIWA Tatsuya	Numerical analysis of microwave circuits and antennas.Analysis of digital communication systems.
	(Prof.) KUROKAWA Kenji	Reliability of optical fiber when exposed to high-power light for ultra high capacity optical communication
	(Prof.) HARADA Kenji	Natural optical phenomena and information photonics.
	(Prof.) HIRAYAMA Koichi	Research on numerical analysis and design of optical and microwave waveguide devices.
	(Prof.) PTASZYNSKI Michal Edmund	Applications of Data Science, Generative AI, and Natural Language Processing to Real-World Problems (Natural Language Processing, Artificial Intelligence, Affective Computing, Cyberbullying and Online Harms Detection, Revitalization of Endangered Languages)
	(Prof.) MAEDA Yasunari	Knowledge information processing and its applications.
	(Prof.) MASUI Hiroshi	Development of bus location system and data analysis based on public transportation open data, optimization of cloud-based collaboration platform using machine learning, utilization and analysis of academic information databases.
	(Prof.) MASUI Fumito	Natural Language Processing and its application, Curling Informatics and Tourism Informatics.
	(Prof.) MIURA Noriaki	Development of image restoration methods and their applications.
	(Prof.) YOSHIZAWA Shingo	Underwater acoustic communication and localization.
	(Assoc. Prof.) KAWAMURA Takeshi	Stability analysis and synthesis for control system, Robotics, Intelligent Transport Systems(ITS), and Forest Engineering.
	(Assoc. Prof.) KIRIHARA Takanobu	Numerical astronomy, Nearby Universe, Formation and evolution of galaxies, Big data analysis for astronomy
	(Assoc. Prof.) SAKAI Daisuke	Holography, Optical property around tranparent medium, Display technique for optical information.
	(Assoc. Prof.) SHIBUYA Takatoshi	Extragalactic Astronomy, Observational Astronomy, Early Universe, Big Data Analysis, Digital Image Processing, Research on Distant Galaxies using Artificial Intelligence
	(Assoc. Prof.) SUGISAKA Jun-ichiro	Hybrid artificial intelligence using holograms and computers, design of computer-generated hologram, and application of numerical scattering simulation
	(Assoc. Prof.) SONE Hiroyasu	Optical information processing using optical device.
	(Assoc. Prof.) TAGUCHI Kenji	Study on biomedical EMC and optimal design of electromagnetic device using numerical simulation
	(Assoc. Prof.) TAKEKOSHI Tatsuya	Research on cosmic star formation, and the development of submillimeter instruments and data analysis methods

Research Fields	Faculty	Research Topics
Applied Chemistry	(Prof.) ARAI Hirofumi	Suppression of allergy and inflammation by food factors using cell lines.
	(Prof.) OHTSU Naofumi	Development of biofunctional metallic implants for medical application, Analysis of bio/biomaterial interface reaction
	(Prof.) KAWAMURA Midori	Preparation and application of black metal films, Development of ultra-pure metal film deposition process, High-performance thin-film materials utilizing nanolayers
	(Prof.) KIM Kyung Ho	Optoelectronic devices based on nanostructures.
	(Prof.) KONISHI Masaaki	Investigation and application for environmental microorganisums, development of bioprocess.
	(Prof.) SHIBATA Hiroyuki	Development of superconducing sensor and its application
	(Prof.) MURATA Miki	Synthesis of organoboron and - silicon compounds by transition - metal- catalyzed coupling reactions.
	(Prof.) WATANABE Shinji	Synthesis of aromatic polyester and polyether. Synthesis of polymer microsphere having mercapto groups.
	(Assoc. Prof.) KIBA Takayuki	Development and characterization of metal/semiconductor nanostructured materials and their application to optical devices
	(Assoc. Prof.) CHIOU Tai-Ying	Analysis and application of food microorganisms, and development of novel fermented food materials.
	(Assoc. Prof.) KOHARI Yoshihito	Synthesis of biologically active compounds using organocatalysts
	(Assoc. Prof.) KONDO Hiroko	Computational biophysics and bioinformatics
	(Assoc. Prof.) SHIMOTORI Yasutaka	Stereoselective synthesis of functional organic compounds and evalutation of their properties.
	(Assoc. Prof.) NAMIKOSHI Takeshi	Synthesis of functional polymeric materials by living polymerization.
	(Assoc. Prof.) HATTORI Kazuyuki	Synthesis and analysis of biomolecules, especially carbohydrates and carbohydrate polymers.
	(Assoc. Prof.) FENG Chaohui	Development of an innovative meal added with flavonoids extracted from waste citrus peels and quality evaluation by using non-invasive detection
	(Assoc. Prof.) MIYAZAKI Kensuke	Development of environmentally friendly polymer materials.
	(Assoc. Prof.) YOKAWA Ken	Bioengineering of plant environmental adaptation and metabolism
Other related Fields	(Prof.) SAWADA Okihiro	Theories of Mathematical Fluid Dynamics
	(Assoc. Prof.) KABAYA Yuichi	Hyperbolic geometry and topology.
	(Assoc. Prof.) SHIBUKAWA Genki	Special functions and Integrable systems
	(Assoc. Prof.) NAKAMURA Fumihiko	Ergodic theory and Random dynamical systems
	(Assoc. Prof.) MATSUDA Kazunori	Commutative ring theory and Combinatorics