ADMISSIONS

	Examination Date	Application period
The 1st selection	July 5 and 6 , 2025	May 29 - June 5 , 2025
The 2nd selection	August 30 and 31 , 2025	August 1 - 7 , 2025
The 3rd selection	October 11 and 12 , 2025	September 12 - 19, 2025
The 4th selection	January 24 , 2026	December 11 - 18 , 2025

%For interview and oral examinations will be conducted through the Internet.

% For the 1st, 2nd, and 3rd entrance examination, one of the two days will be respectively designated for the examination day by Graduate School of Life Science and Systems Engineering.



Kyushu Institute of Technology Graduate School of Life Science and Systems Engineering 2-4 Hibikino, Wakamatsu-ku, Kitakyushu, Fukuoka, 808-0196, JAPAN



Kyushu Institute of Technology **Graduate School of** Life Science and Systems Engineering 2025



MESSAGE FROM DEAN

Invitation to Life Science and Systems Engineering



Dean Chikamune WADA Graduate School of Life Science and Systems Engineering (LSSE) was established in 2000 at Kitakyushu Science and Research Park to promote advanced research based on superior biological functions and implement them into practical engineering technology. LSSE has succeeded in creating frontier technologies for meeting social needs in broad technical fields related to environment/energy, robot/artificial intelligence, medical application, etc.

Diversity in students is a big feature of LSSE. In addition to students from two undergraduate schools of Kyushu Institute of Technology, many students gather from domestic universities and colleges of technology throughout Japan and from various overseas universities. Collaborative works among these students with different experiences and values generate fresh ideas leading to technical innovation as well as fostering communication ability with recognition of diversity.

LSSE has educational programs and research projects in collaboration with universities and companies within Kitakyushu Science and Research Park. Also, LSSE is offering study abroad programs with overseas partner universities, and conducting many international joint research projects with them. Through these programs and projects students can strongly enhance their global perspectives.

We sincerely invite you to LSSE to immerse yourself in a cutting-edge education and research environment and to launch your promising career on an international stage.

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General Features
Special courses for International students
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Department of Biological Functions Engineering
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Access

CHARACTERISTICS of the graduate course

Utilizing Life in Engineering Applying Engineering to Life

Distinguishing Features of the Graduate School

The primary mission of this graduate school is to educate and train engineers and researchers who can elucidate the structures and functions of living organisms to advance resource and energy conservation, environmental harmony, and human-friendly technologies. To achieve this mission, LSSE offers master's programs in two departments, and a doctoral program in one department. The master's program of the Department of Biological Functions Engineering focuses on applying superior biological functions to address societal challenges and needs. The Department of Human Intelligence Systems develops the skills required to design and maintain optimal societies that integrate complex intelligence, human physiology, and environmental systems. The doctoral program of the Department of Life Science and Systems Engineering emphasizes specialization in life science and systems engineering while promoting cross-disciplinary education and global perspectives. The Department is committed to nurturing professionals who stay ahead of emerging research and technological trends, driving innovation and progress. In summary, LSSE aims to cultivate globally minded professionals who collaborate with society to address contemporary challenges and contribute to a sustainable and harmonious future.



CONTENTS

SPECIAL COURSES FOR INTERNATIONAL STUDENTS



Global Advanced Assistive Robotics (Global AAR) Course

This international course has been offered by our institute since 2015. It includes both Japanese and international students from the Department of Human Intelligence Systems (Master's Program) and the Department of Life Science and Systems Engineering. The course attracts students from diverse fields such as integrated circuits, control systems, sensing, nanosystems, artificial intelligence, IoT systems, behavioral science, and neuroscience

The course is specifically designed to accommodate international students by using English for slide presentations and Q&A sessions. It also provides valuable opportunities for training in English presentation and communication skills. For example, students participate in journal clubs where they read and analyze the latest research papers. In addition, AAR seminars feature top-tier lecturers who share their expertise. The program also includes practical training such as the practicum in Robot Operating Systems and the practicum in Care and Medical DX.

This comprehensive program fosters cross-disciplinary learning and equips students with the skills needed for advanced research and global collaboration.



Global AAR Course

Website URL: https://www.brain.kyutech.ac.jp/global_aar/

ABOUT





Global Education of Green Energy and Green Environment (GE³) Course

This course provides an integrated program of education and research related to "green energy/green electronics technology" and "carbon-neutral technology", with a view to the future of energy and environmental cooperation across a wide area of Asian countries, including Japan. It is also an innovative program to develop 21st-century global engineers who can maintain a sustainable socio-economy and lead the world through global seminars and collaborative projects. Education and research on these green technology will not only contribute to the development of peaceful, safe, and secure societies but also step forward towards achieving the Sustainable Development Goals (SDGs). Lectures are also designed for international students, and it is possible to complete the master's and Doctoral course in English only. "GE³ Seminar" provides state-of-the-art technologies and research topics inviting lecturers from academics and Japanese companies.

- Printable photovoltaic cells
 Biomolecular Engineering
- Functional materials and their electrochemical devices
- Organic electronic devices
 Motor-drive system
- Highly efficient and flexible energy-conversion
- Environmental-Benign Functional Materials
- Next-generation power semiconductor devices and their applications





Leading Southeast Asia Cooperative Program for the Development ofAdvanced Medical and Diagnostic Technologies (DAMD program)

The "Leading Southeast Asia Cooperative Program for the Development of Advanced Medical and Diagnostic Technologies (DAMD program)" is a program that trains students to become innovative leaders in healthcare and welfare. This program is a part of the educational programs in the Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology. The DAMD program will offer students from Southeast Asian countries the chance to learn advanced engineering skills. These skills include creating new materials for healing injuries, making devices to diagnose diseases, developing new ways to deliver medicine, and making systems to support welfare of patients, disabled and elderly people. The goal of DAMD program is to train global engineers who can help create a sustainable society.



Clean Cycle Chemistry Course to learn SDGs realized by chemistry

The SDGs are the "17 goals set by 193 UN member states to achieve in the 15 years from 2016 to 2030" adopted at the 2015 UN Summit. The "Clean Cycle Chemistry Course" is an active learning program with the theme of research and development aiming at the goals that can be achieved by chemical technology among the 17 goals and the establishment of the chemical technology. Professors in charge of this course are advanced researchers who promotes green chemistry research and green biogeochemical research to make elements a recyclable resource. The professors not only gives lectures, but also conducts active learning as a FACILITATOR of "cultivation of creativity". In one of the compulsory subjects, students will plan and present concept and chemical methods that students can contribute to achieving their goals in their respective research fields. Excellent Presentation Prize will be awarded to excellent proposal. and in addition, feasible collaboration proposals will be developed into cross-disciplinary cyclical chemistry research by conducting collaboration demonstration experiments between the students and professors in charge of this course. This course is intended for graduate students in the master's program to take the designated 5 compulsory subjects. (The language used for all curriculums is Japanese.) Those who complete the course will be awarded a "Certificate of Completion of the Clean Cycle Chemistry Course".

01

回活

MAIN ACTIVITIES





MAIN ACTIVITIES Join Robot Competitions!!

02 111 Hibikino-Musashi@Home

Hibikino-Musashi@Home is the student project team to develop a home service robot that helps our daily lives in a home Through active participation in the RoboCup@Home league and six times wins in worldwide competitions, they demonstrate their outcomes to realize the future of robots and also focus on robot AI education

https://www.brain.kyutech.ac.jp/~hma/

ACHIEVEMENT

- RoboCup 2024 Eindhoven @Home DSPL 1st place
- WRS FCSC Convenience Store Innovation Task (Demonstration)
- WRS FCSC in CyberSpace
- 🔀 RoboCup JapanOpen 2024, @Home DSPL 2nd place OPL 2nd place S-OPL 2nd place
- RoboCup 2023 Bordeaux, @Home DSPL 2nd place
- 🚜 RoboCup JapanOpen 2023, @Home DSPL 3rd place, @Home OPL 2nd place
- RoboCup 2022 Bangkok, @Home DSPL 3rd place
- RoboCup Asia-Pacific 2021, @Home OPL 1st place, DSPL 1st place, S-OPL 1st place
- RoboCup 2021 Online, @Home DSPL 2nd place
- 🛞 World Robot Challenge 2018, 2020, Real Space 1st place

TEAM INTRODUCTION

Team KUROSHIO, the allied team of 8 institutions including Kvutech, won the second place and 1 million US dollars in Shell Ocean Discovery XPRIZE, the international competition of autonomous ocean exploration technologies.





Kyutech Underwater Team won in the AUV League of Underwater Robotics Competition in Okinawa URC in 2020-2022. As the URC is held in the sea, AUVs are required to be highly autonomous and hold completeness



Hibikino-Toms , agricultural robots must work in the actual field and need AI, gentle mechanism to living things. Kyutech "Tometoers" join the Tomato-Harvesting-Robot competition and show good results (Winner in 2019, 3rd in 2020, 2nd in 2021)



Hibikino-Musashi, the Kyutech Robo Cup MSL team Hibikino-Musashi won the championship more than 10 times in Japan Open and one of experienced teams in World Cup. Each team joins with 5 soccer robots which act autonomously with mounted sensors only.





DEPARTMENT OF BIOLOGICAL FUNCTIONS ENGINEERING

Division Overview



The research and education in this department deals with the realization of materials, structures and energy conversion functionalities of nature/organisms along with their utilization in engineering. The main objective of this department lies in discovering solutions to social issues like the global environment and human health to promote the creation of new industries, by integrating the fields of the environment, energy, materials, and bioengineering. Apart from this, global education such as international internship has been performed at our international research bases.

Divisions



Division of Green Electronics

This division is devoted to the investigation of "green electronics technology," such as the fabrication and evaluation of printable solar cells, new functional materials, and their application to electrochemical devices, organic photo-electronic devices, construction of flexible and efficient power conversion and motor control systems, development of energy production systems utilizing renewable energies and environmentally friendly devices with carbon materials. The teaching curriculum is provided under the research themes outlined above.



Divsion of Biological Mechanics

are conducted based on mechanical engineering such as the mechanics of materials, fluid and thermodynamics, the dynamics of machinery and micromachining, and the materials science of metals and ceramics. These activities contribute to the following area of industrial/medical applications: (i) the maintenance and recovery of bio-functions, (ii) medical and welfare support, (iii) development of biocompatible materials and medical devices, and (iv) design and development of biomimetic materials and intelligent machines.

Graduate School of Life Science and Systems Engineering



The research and education in this division

Division of Environment Conscious Chemistry and Bioengineering

The goal of this division is to re-vitalize the engineering technologies responsible for the sustainable development of industries and society with environmental consciousness. The academic field of this division includes chemical and biological research and technologies that are learned from the highly efficient reactions of biological systems. Environmentally conscious chemistry and bioengineering may lead to innovations in chemical and biological technologies. This division strives to globalize our graduate program through the development of frontier research in environmentally conscious chemistry and bioengineering.

Division of Green Electronics Power Electronics

Professor, Ph.D

Tsuyoshi HANAMOTO Study on power electronics and its application.

Development of motor controls and power conversion systems hanamoto@life.kyutech.ac.jp

https://www.life.kyutech.ac.jp/~hanamoto/ **Research Overview** Development of human-friendly and environmentally

Nanomaterials, solar cells, Metal ion batteries

Development of nanomaterials and application

https://www.life.kyutech.ac.jp/~tinglima/

Design and syntheses of nanomaterials and their

characterization. Development of new materials for

materials with high performance and low cost for

stable perovskite solar cells. Development electrode

application to Li-ion batteries and Na-ion batteries,

Power semiconductor, Semiconductoer material

Development of diamond power devices to

https://www.life.kyutech.ac.jp/~watanabe/

Research on ultra-high performance power devices

based on the superior semiconductor properties of

will contribute to the realization of a decarbonized

society by enabling the highly efficient use of electrical

energy and the construction of energy grids with the

realize the next generation power society

watanabe@life.kyutech.ac.jp

Research Overview

Ultra high voltage power device diamond. The realization of diamond power devices

direct current transmission.

Akihiko WATANABE

for solar cell, metal ion batteries,

ail tinglima@life.kvutech.ac.ip

as well as metal-air batteries.

Research Overview

Tingli MA

friendly electrical power conversion systems and application for motor control systems.

 High efficiency power conversion Environmentally friendly control

Division of Green Electronics

Professor, Ph.D.

metal air batteries

Associate Professor,

Keywords

Keywords

Low cost

Application

Keywords

Diamond

Power semicnductor

Li ion battery

Na ion Battery

Metal air battery

High performance

Perovskite solar cell

Design and synhthesis of Nano material

Division of Green Electronics

Dr. Eng.

Power electronics

Hardware control

Motor control



Department of Biological Functions Engineering

Carbon Neutral Silicon Wefer Condition Moni

Functional Materials and Devices Shyam S.PANDEY Professor, Ph.D. Synthesis and Characterization of Photo-functional Materials for Advanced Device Applications

efficiency.

shyam@life.kyutech.ac.jp https://www.life.kyutech.ac.jp/~shyam/

Design and development of photo-functional materials for energy harvesting and organic electronic devices.

Biomechanics Hiroshi YAMADA Professor, Dr. Eng. **Biomedical Engineering and Biomechanics for**

Keywords Biomedical engineering Microbiomechanics Mechanical testing Finite element method Sensor device development • Vascular diseases Pressure injury Endodontic instruments

Division of Biological Mechanics



Takashi YASUDA Professor, Ph.D.



Bio-microdevices

https://www.life.kyutech.ac.jp/~yasuda/

Research Overview Semiconductor processing

 MEMS (Micro Electro Mechanical Systems) cell culture, we are developing microdevices for medical and drug discovery applications, including signals from neurons, and microfluidic devices with reconstructed brain structure.

Department of Biological Functions Engineering





-	Research Area	Functional Inte	rface Engineering	
	Profess	sor, Dr. Eng.	Tetsuya HARUYAMA	
E.	Establ interfa social	ishing techno ice functions: issues	ology from elucidation of leading to solutions to	
E-mail		haruyama@life.k	yutech.ac.jp	
1 1	URL	https://www.life	.kyutech.ac.jp/~haruyama/	
Keywords		Research Overvie	ew	
 Functional interface New energy CO₂ fixation Radical chemical process Phases and Interfaces 		We are developing research to realize various functional interfaces (reaction fields) by elucidating the functions of heterogeneous interfaces. "Chemical resource conversion of nitrogen, oxygen, and water (phase interface reaction technology) ", "interface that converts CO ₂ into resources", "process technology with low environmental load", "safe decomposition of harmful substances", etc.		



Photoacoustic spectroscopy

Keywords

Photocatalyst

Nanomaterial

Photoelectrode

Professor, Ph.D. Naoya MURAKAMI Spectroscopic analysis on semiconductor photocatalyst and development of photocatalytic system for light-energy conversion

Analytical Physical Chemistry

murakami@life.kyutech.ac.jp

https://www.life.kyutech.ac.jp/~murakami/ Research Overview

Analysis of photofunctional material using photoacoustic spectroscopy, Development of photocatalytic system for light-energy conversion.

Biofluid Engineering Professor, Dr.Eng. Masaaki TAMAGAWA **Biofluid Engineering for Advanced Medicine** and Development of Medical Devices

tama@life.kyutech.ac.jp https://www.life.kyutech.ac.jp/~tama/

Research Overview

 Computational Fluid Dynamics (CFD) 1. Computational and experimental studies of Flow visualization

Blood flows

Keywords

Division of Biological Mechanics

Hemolysis and Thrombus formation in blood flows, 2. Application of Shock Waves and Ultrasonic to Drug Hemolysis and Thrombus formation Delivery Systems, Water treatment, Tissue Engineer Shock wave drug delivery systems ing. 3. Development of driving force of micromachines

 Microfluidic device MPS (Microphysiological systems) Cell culture Cell analysis Nerve cell ● iPS cell

Using techniques of semiconductor processing and devices for analyzing human iPS cell-derived neurons microelectrode array devices for measuring electrical

Research Overview

 Smart sensing materials **Division of Biological Mechanics**

Life-Sustaining Technologies il yamada@life.kyutech.ac.jp

https://www.life.kyutech.ac.jp/~yamada/ **Research Overview**

Medical diagnosis assistance and prevention of diseases and injuries through measurement-device development, mechanical testing, constitutive modeling and computational analysis, focusing on mechanics of diseased arteries, endodontic treatments, prevention of pressure injury





Organic devices

noto-functional materials



FACULTY MEMBER

Division of Biological Mechanics



Associate Professor, Kazuto TAKASHIMA Ph.D. (Eng.) Study on soft sensors and actuators, and applications to medical, welfare and industrial technologies

https://www.life.kyutech.ac.jp/~ktakashima/english/index-e.html

ktakashima@life.kyutech.ac.jp

Intelligent machine

Keywords

 Smart soft materials Soft actuator Endovascular treatment Tactile sensor

 Surgical simulato Stiffness control

Biomimetics

Biotribology

Research Overview Applications of shape-memory materials and artificial muscle to human-interactive robot. Development of soft tactile sensor. Development of device placement simulator for endovascular treatment.

Division of Biological Mechanics



Harmonic Functional Materials Associate Professor, Jin NAKAMURA

Development of harmonic functional materials towards medical and environmental applications

Development of composite materials (ceramics,

metals, and organic molecules) that exhibit

jin@life.kyutech.ac.ip https://www.life.kyutech.ac.jp/~jin

Research Overview

Keywords

 Functional materials Ceramics

Metals

 Organic molecules Tissue regenerative medicine Environmental purification

multifunctions in response to stimuli emitted by living organisms. Development of synthetic processes for composite materials with controlled structures at molecular order. Development of materials for tissue regeneration medicine and environmental purification

Division of Environment Conscious Chemistry and Bioengineering



Microbial Biotechnology

Professor, Ph. D.

Toshinari MAEDA

Advanced Biotechnologies using Unique Microbial Functions

Keywords Metabolic Engineering Protein Engineering

 Genetic Engineering mental Biotechnology White Biotechnology

Bioremediation

Environmental Bio-adaptation Bacterial interaction

ail toshi.maeda@life.kyutech.ac.jp

https://www.life.kyutech.ac.jp/~toshi.maeda/ Research Overview

Unique microbioal functions can be elucidated and improved using biotechnologically-engineered approaches to construct an innovative technology which should be useful to the environment and human society

Division of Environment Conscious Chemistry and Bioengineering Biopolymers, Structure and Function



Design, synthesis, and conformational analysis of functional biomolecules.

https://www.life.kyutech.ac.jp/~tmkato/

tmkato@life.kyutech.ac.jp



Research Overview Design, synthesis, and conformational analysis of peptide-based artificial functional molecules (Peptide nanostructures, peptide-based drug design etc).



Division of Environment Conscious Chemistry and Bioengineering Biomolecular Engineering Associate Professor, Shinya IKENO

Development and application of functionalized nanomaterials using biomolecular

https://www.life.kyutech.ac.jp/~ikeno/index-e.html

ikeno@life.kvutech.ac.ip

Keywords
 Functionalized peptide Genetic engineering Recombinat protein Biopesticide
 Drug screening
 Biostimulants Biosensor

Research Overview I have been studying development of functionalized nanomaterial combined with biomolecule and nanoparticle, and application of functionalized biomolecular to bioprocess such as production of recombinant protein.



Department of Biological Functions Engineering

Division of Green Technology

Senso



Catalyst Electrolytic Engineering Associate Professor, Yoshiyuki TAKATSUJI

Efficient and selective electrochemical conversion of substances

-mail takatsuji@life.kyutech.ac.jp

Keywords

Catalytic metal electrode Plating technology

● CO₂ fixation Energy and environment Electroche

Research Overview Our research has committed to solving to environmen tal and energy problems with the catalytic a metal electrode that can produce the efficiency substance. The catalytic metal electrodes have been developing and also analyzing the reaction mechanism and the produced substance.We will pursue research in the field of clean cycle chemistry (Tri-C) and achieve the goals of the SDGs.

Division of Green Technology



Visiting Professor, Doctor **Hideki HONDA** of Engineering YASKAWA Electric corporation https://www.yaskawa.co.jp/

Mechatronics Control to fit in human society

honda@life.kyutech.ac.jp

Mechatronics

Keywords Mechatronics

Control Theory Motion Control

https://www.life.kyutech.ac.jp/~honda/

Research Overview As robots are good examples, mechatronic devices are now used in various fields as well as in the industry. Therefore, in addition to research on the high-speed and high-accuracy performance required by the industry, we also study mechatronics technology that is kind to people and supports them.

Plant Life Cycle Engineering Special Appointment Masahiro NAKANO Associate Professor Plant Life Cycle Engineering

Iwao SASAKI

Research Overview Plant Life Cycle Engineering (Research on autonomously controlled robot welding, and Research Image analysis on thermal elasto-plastic analysis of welds and Thermal elasto-plastic analysis optimization of welding order) AI Equipment diagnosis Welding repair

Next Generation Power Electronics Research Center Power Electronics, Power semiconductor Assistant Professor, Tripathi Ravi Nath Dr. Eng. Power electronic system control and power semiconductor control tripathi.ravi-nath639@mail.kyutech.jp https://power.kyutech.ac.jp/

Research Overview

 Power Electronics Power Semiconductor Device Gate Driving Control Power Converter Control
 Hardware-in-the-loop (HIL) Model based design (MBD)

Keywords

Power electronics systems can utilize green energy by efficiently converting electrical energy. We are conducting research on power semiconductor converters and control technology for environmentally friendly technologies, and virtual prototyping using model-based development and design (MBD). "



Biomass Utilization in Sustainable Material Development

lease.jacqueline708@mail.kyutech.jp



Biomass

Cellulose

Composite

Green Chemistry

https://www.life.kyutech.ac.jp/~green_material/wp/ Research Overview

> Focusing on wood-based biomass as a sustainable resource, the goal is to develop materials that do not rely on petroleum-derived raw materials. Wood mass contains natural polymer materials such as cellulose, lignin, oligosaccharides, and lipids, By utilizing these components, new materials are designed and explored to help address issues such as plastic pollution and resource depletion





Jepartmeni Funct Engineering

Nanoparticle



62



ision of Human	Intelligence and Machines



Div

Field robot

Underwater robot

Agricultural robot

Inspection robot

Neural networks

Human interface

Keywords Bio-inspired system

Bobot vision

Keywords

Soft computing

Computer syst

Hippocampus

Prefrontal cortex

Home service robot

Amygdala

EPGA

Embedded syster

• Visual information processing

Assistive technology

Functional substitution

Biological information

Rehabilitation engineering

Motion control system

Soccer robot

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> Development of field robots such as underwater robot, agricultural robot, inspection robot, and research on related topics, environment recongnition system, self-localization system, adaptive learning system, motion control system, bio-inspired information processing, etc

Kazuo ISHII



Division of Human Intelligence and Machines

Human function substitution systems

Professor, Ph.D. (Eng.) Chikamune WADA



wada@brain.kyutech.ac.jp https://www.brain.kvutech.ac.ip/~wada/

Research Overview

Research on developing human-friendly assistive device/substitution system for the disabled/the elderly people based on psychophysical analysis of human sensorv-motor systems. Biological data measurement

Keywords



systems and their applications in field robotics

s-yasukawa@brain.kyutech.ac.jp

http://www.brain.kyutech.ac.jp/~s-yasukawa/

Research Overview

Associate Professor,

Division of Human Intelligence and Machines

Ph.D.

Associate professor,

Ph.D

Development of living creature observation/ manipulation technique using robot, Simulation of the visual nervous system, Development of Bio-inspired robot vision system, Trials of their techniques in field, etc.



Yuichiro TANAKA ntelligence and its application for robots

ail tanaka-yuichiro@brain.kyutech.ac.jp

Brain-inspired integrated system

Development of brain-inspired artificial

Research Overview

Aiming for a future in which home service robots work as human partners, I develop artificial intelligence models that mimic the functions of the brain. especially those of the hippocampus, amygdala, and prefrontal cortex, and hardware that operates them with low power consumption

DEPARTMENT OF HUMAN INTELLIGENCE SYSTEMS

Graduate School of Life Science and Systems Engineering



Department of Human Intelligence Systems aims to incorporate the principles of human intelligence into intelligent information processing platforms and artificial intelligent systems, as well as to actively contribute to the development in the industry. The research and education in this department covers but is not limited to (i) advanced development of mechanical systems and devices such as intelligent autonomous robots, (ii) intelligent information system development and artificial intelligence algorithms design that incorporates the principles of human reasoning, (iii) scientific analysis of social activities and human intelligence by using mathematical modeling, brain science and cognitive science in general.

Divisions



Division of Human Intelligence and Machines

Division of Human Intelligence and Machines is teaching and researching in the fields of robotics and devices, which could realize human-like intelligence by utilizing rational and significant structures as well as functions of biological organisms to achieve low-energy consumption, harmony with the environment, and human-friendly behavior. Through the teaching and research, we will bring students up to be persons and professionals who are actively involved in the global world with to create new public services, new business, and new social value.



Division of Intelligence Systems and Emergent Design

The division is engaged in the design of new technologies and theories that are inspired by human intelligence.It is a form of societal engineering focusing not only on cognitive functions of recognition, learning, and reasoning, but also on social abilities with emotions,Kansei,and communications.This field requires the study of mathematical modeling, informatics, and systems engineering toward a comprehensive understanding of computation in brain-body environment interaction and an advanced development of intelligent partners and platforms.



Division of Human Interaction and Brain Functions

It is important to study the relationship between the function of the brain, and the nature of society made by humans to clarfy human intelligence.In this division,we study the characteristics of neurons of which the brain consists, the information processing in which many neurons are involved, behaviors as results of the processing, and the communication mechanism of humans in a



society.

Division of Human Intelligence and Machines





Hirofumi TANAKA Design, development, and integration of nanodevices for artificial intelligence

hardware devices

-mail tanaka@brain.kvutech.ac.ip



Keywords

 Intelligent information processing nanodevices Artificial intelligence nanodevices Neuromorphic nanodevices Integrated circuits for nonlinea

dynamical nanosystems, and nanostructure device designing

Research and development of electric nanodevices for artificial intelligence hardware, whose target is to generate new electrical functionalities by using the circuit of the nanodevices.

Division of Human Intelligence and Machines



Brain-like Computer System Professor, Ph.D. Realization of a brain-like computer system and its application to human-friendly systems

-mail tamukoh@brain.kyutech.ac.jp

https://www.brain.kyutech.ac.jp/~tamukoh/

Research Overview

 Brain-like computer Softcomputing hw/sw complex system Digital hardware design

A brain-like computer system laboratory aims to realize a brain-like computer based on a hardware/software complex system and its application to embedded systems on home-service robots.

Division of Human Intelligence and Machines



Field Robotics

Associate Professor, Dr.Eng.

Yuya NISHIDA

Hakaru TAMUKOH

Development of control system and technology for field robot

mail y-nishida@brain.kyutech.ac.jp

Field robot Autonomous underwater robo Motion control Motion analysi

Research Overview

To reliably accomplish the mission, our laboratory develops robot that robustly navigates in actual environment, and its elemental technology. We survey actual environment using developed robot and system to benefit society.

Division of Human Intelligence and Machines



Nano device and brain-like integrated system Associate Professor, Sumito TSUNEGI Dr. Eng. **Construction and Application of Brain-Like Integrated System Utilizing Nanodevices**

Keywords

Intelligent information processing

Neuromorphic nanodevices

Spiking neural network

 Integrated circuits for nano device Application of spintronics

CMOS technology and its application

Research Overview

mail s_tsunegi@brain.kyutech.ac.jp

With the limitations of semiconductor miniaturization, nanodevices utilizing novel physical properties have attract much attention. We study spiking neural networks (SNNs) that mimic the behavior of synapses and neurons using nanodevices, including spintronics devices, aiming for applications such as robotic recognition processing.

Division of Human Intelligence and Machines



Keywords

Keywords

Visual analytics

Brain-like artificial intelligence

Embodied knowledge discovery

Emergence of intelligence

Learning theory of meta-modeling

Nanomaterial Intelligence

Assistant Prof, Dr. Sci. Yuki USAMI Creation for brain-inspired information processing system by nanomaterial

usami@brain.kvutech.ac.ip

Research Overview

Division of Intelligence Systems and Emergent Design

Learning theories of brain-like

-mail furukawa@brain.kvutech.ac.ip

Research Overview

Division of Intelligence Systems and Emergent Design

Professor, Ph.D.

Professor, Ph.D.

Nanomaterial Hybrid material Mesoscopic physics Neuromorphic computing Nanostructure analysis Molecular electronics In-materio reservoi

Research and development of nanoscale various basic pysical properties of organic/inorganic materials for extracting flexible bio-inspired function. Creation of unconventional nanodevices by circuitization and deviceization from nanomaterial function

Learning theory of brain-like artificial intelligence

artificial intelligence and embodied knowledge

https://www.brain.kyutech.ac.jp/~furukawa/

Our destination is to develop the learning theory and

its algorithms, which enable us to discover general

rules and intrinsic information underlying the given

datasets. Typical themes are higher-order modeling

throuhgh meta-learning and multi-task learning. We

also challenge to devleop embodied knowledge

discovery systems from complex data network.

Intelligent Information Processing Systems

telligent information processing system aiming at

nodeling and analyzing behavior of human beings

https://www.brain.kyutech.ac.jp/~horio/

The Research aimed at estimating and classifying

individual characteristics by measuring and analyzing

the intervention method based on analysis results and

human behavior. Besides, we pursue optimization of

aim to apply it to real-world society, especially data

evelopment of fundamental technology of

horio@brain.kyutech.ac.jp

analysis involving humans.

Research Overview

Keiichi HORIO

discoverty from complex data network

Tetsuo FURUKAWA



Division of Human Intelligence and Machines

 Vision and image recognition model Integrated systems for robots Integrated circuit for nonlinear dynamical system Analog integrated system

1-

Robotics

Biomechanics

Brain Science

Social Implement

Research and development of brain-like processing models, new functional devices and digital/analog integrated circuits (VLSI) and systems mainly targeted to service robots toward achieving brain-like artificial intelligence.

Division of Intelligence Systems and Emergent Design

Human and Social Intelligence Systems

tom@brain.kvutech.ac.ip

Department of Human Intelligence Systems

Tomohiro SHIBATA

Science and Engineering Understanding of Huma and Societies, Assistive System Development for Nursing and Medical Care, and Welfare, and Social Implementation

https://www.brain.kvutech.ac.ip/~tom/

Research Overview We are researching and developing assistive technologies to Artificial intelligence Biological Signal Processing Mixed Reality/Metaverse Nursing and Medical, Care, Welfare

Professor, Ph.D.

apply various knowledge and technologies, such as robotics, artificial intelligence, biomechanics, and biological signal processing, to the medical, nursing, and welfare fields. We are also promoting the social implementation of these technologies in collaboration with various players, including the elderly, people with disabilities, medical, nursing, and nursing care professionals private companies, and governments.

Division of Intelli	igence	Systems and	Emergent Design
	Research Area	IoT / Big Data	
(Sales)	Professor, Doctor of Engineering S		Sozo INOUE
E	Human Activity Recognition and Application to Elderly and Nursing Care		
E-m		sozo@brain.kyute	ech.ac.jp
	URL	https://sozolab.jp	p
Keywords		Research Overvie	W
 Human Activity Recognition 		We develop huma	n activity recognition from

• Web / Ubiquitous Application of I Big Data Application

smartphones and sensors, and their services. We also ate AI by collecting medical and nursing care big

Change			
on for Healthcare / Nursing	data.		
on or wachine Learning	cultivate Al	by conecting	illeuical al



engineering.

Division of Intelligence Systems and Emergent Design

Department of Human Intelligence Systems







Keywords

Team Communication

Key Words Meeting*

Integrated Solution

Keywords

Patch-clamp

Ca²+-imaging

Single cell BT-PCB

Taste signal transduction

Professor, Ph.D. Doosub JAHNG A Story of diverse individuals becoming one as

mail jahng@brain.kyutech.ac.jp https://www.brain.kyutech.ac.jp/~jahng/

Research Overview

For diverse individuals to agree with each other and Occupational Health Marketing become one as a team, innate needs, learned knowledge/skills acquired needs from personal/ /ersatile Educational Tools environmental circumstances, self-action, health Comprehensive Health Resources resources and communication become essential. We conduct research on the factors above by utilizing both people's conceptual needs and experimental/ statistical designs to further our study on team management.

Division of Human Interaction and Brain Functions





We investigate the cellular and molecular mechanisms underlying the signal processing occurred in mammaliar taste buds and we contribute to develop a new signal processing based on features of taste buds

Yoshitaka OTSUBO



waga@brain.kyutech.ac.jp https://www.brain.kyutech.ac.jp/~waga/

Research Overview Episodic memory and emotion

We explore systems design inspired by biological emergent intelligence, through an understanding of what makes us human (intelligence), how we are embodied in the environment (body kinetics/ morphology), why emotional and social aspects are so important to us (sociality). Our mathematical modeling and investigation are applied to the design of an artificial intelligence, robot development, and rehabilitation tools.

Keywords Neuroscience Shorts Science Medical and Welfare Engineering Sports for the Disabled Biological Signal Processing Biomechanics

Neurorehabilitation

modulation

Nou

The objective of the research is to develop new neurophysiological methods or assistive devices which promote gait rehabilitation and motor skill training by approaching both sides of neuroscience and



Keywords

Behavior analysis

Learning system

Keywords

Societal robot

Neuroinformatics

Nonlinear dynamics

Emergent intelligence

Computational neuro

Sport biomechanics

Behabilitation support

Communication analysi

Estimation of personality

ntelligent data analysis

Intelligent image processing











mechanisms, academic studies about biologically inspired systems based on robotics have been conducted.

Division of Human Interaction and Brain Functions

Professor, Ph.D.



Keywords Neuronal rhythm

Circadian rhythm Hippocampus Brain machine interface L2 English learning Music rhythm esports

Neuronal rhythm and Brain Machine Interface (BMI)

Kiyohisa NATSUME

neuronal rhythm and memory process natume@brain.kyutech.ac.jp -mail https://www.brain.kyutech.ac.jp/~natume/

The relationship between the generation of

Research Overview

We study experimentally on the generation of neuronal rhythm and compute the rhythm on the computer. We also developed the e-learning system for Japanese English learners using BMI technology.

Division of Human Interaction and Brain Functions

Mathematical Neural Network



Professor, Ph.D.

Katsumi TATENO

Neural coding and Neurodynamics

tateno@brain.kyutech.ac.jp

https://www.brain.kyutech.ac.jp/~tateno/

Keywords Neural coding Hippocampus Medial entorhinal cortex Memory Learning Glass catfish Electrorecepto

Research Overview

Our interests are complex behavior of neural activity and theoretical investigation on neural coding in the brain. Specifically, we are currently researching neural network models of the medial temporal lobe.

Division of Human Technology



Systems Intelligence Visiting Professor, Hiroshi NAKAJIMA Ph.D. OMRON CORPORATION https://www.omron.com/jp/ja/technology/ Basic and applied research on intelligent system development

Keywords

Intelligent system Soft computing Computational intelligence Causal analysis Social intelligence Systems healthcare Health managemer Machine learning

Research Overview

Research and development on algorithms of intelligent systems by studying soft computing, statistical analysis, and social intelligence in human-machine collaboration systems with application studies.

Division of Human Technology Vision Sensing

Visiting Professor, Masaki SUWA Ph.D.

OMRON CORPORATION https://www.omron.com/jp/ja/technology/ Basic and applied research on intelligent vision system

Keywords Vision Sensing 3D Sensing Phyisics-based Vision Pattern Recognition

Research Overview Research and development on vision sensing technologies such as object detection, 3D surface reconstruction and reflectance property analysis, for applications in factory automation or society's infractructure.



Biomimetic Robot System Visiting Professor, Takayuki MATSUO National Institute of Technology,Kitakyushu College Development of Robot Systems based on motion control and information processing system of animals

Department of Human Intelligence Systems

Research Overview

 Biomimetic robot Development of mobile robot systems inspired by Adaptive control mechanisms of animals for irregular terrain, Nonlinear oscillator underwater and so on. Neural network



List of overseas dispatched students in FY2024 (by country)

Since globalization is a priority at LSSE, we are striving to develop internationally competent human resources, by mutually sending students to partner schools.

The "MSSC", which was established in 2013 on the campus of Universiti Putra Malaysia (UPM), one of our partner universities, supports students and faculty in their study and research activities in Malaysia, including study abroad programs, internships at Japanese companies in Malaysia, and joint research.





Human-Centered AI / Ubiquitous Computing Assistant Professor, **GARCIA** Christina Doctor of Engineering Ambient sensing and recognition systems for healthcare

garcia.christina-alvarez199@mail.kyutech.jp

Keywords

Ambient Sensing Human-Centered AI Machine Learning for Healthcare Indoor Localization

Research Overview

Developing ambient sensing and recognition systems merging multimodal data and context for healthcare application and human-centered AI. We deploy systems and collect real-field data from hospitals.

Jenarmen 15 Graduate Scho of Life Science and Systems Engineering, Kyushu Institute of Technology

England 1 A Netherlands 10 A	
Germany	Mongolia
France 1	6 ∧ China 3 ∧
3A Italy	Thailand
$\begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \\ \lambda \end{array} \begin{array}{c} \text{India} \\ 2 \\ \lambda \end{array}$	a 1 Å Vietnam 4 Å
	Malaysia
	43 A Singapore
	MSSC

Tuition and Enrollment fee waiver, Research Assistant and Living cost	Only a limited number of study selection procedure. Application fee: ¥30,00 Enrollment fee: ¥282,00 Tuition fee: ¥267,900 p Doctoral course students may The monthly cost of living in K including house rent and utilitie	
Scholarship	For a list of scholarships and please check the Kyutech web	
Accommodation	Students can apply to stay in Wakamatsu campus. However able to stay at Sakura House. The rent of Sakura House is ¥	
Tutor	A tutor, who is a current stud and daily life in Japan. This tu	
Japanese language class	Students can take Japanese la	
▼English Information for international students in our website is as		
Q https://www.kvutech.ac.ip/english/		

INTERNATIONAL EXCHANGES



ents can get exemption of full or half of fees through a

00 er half year

get about ¥45,000 per month as a research assistant. Kitakyushu city is approximaterly from ¥60,000 to ¥80,000 ies.

details on each scholarship, bsite.



tps://bap.jimu.kyutech.ac.jp/publishes/11302/index

the international student housing (Sakura House) near r, as we have limited rooms available, not all students will be

f13,500 per month.

dent in the laboratory, can help new students for their study utor system is available for the first three months after enroll-

anguage classes appropriate to their level.

llows.

LSSE STUDENTS

Alif Syafiq Bin Kamarol Zaman

😶 Mv future dream

I would like to make use of the knowledge I've acquired here in Kyutech to work in the semiconductor industry in my home country (Malaysia). I aim to be a research and development engineer in this industry and as a way of giving back to my country. Leniov working with machines and in the clean room as it gives a sense of peace because doing precision work with 100% focus allows me to relax in way. The research I'm involved in now (Neuromorphic Computing) has a bright future and I'm positive I could be the pioneer or the one who will be responsible to bring this technology to Malaysia. This could open opportunities for future collaboration between Malaysia and Japan in terms of trade and knowledge transfer. Ultimately, I aim to be a humble servant of God, acknowledging that all knowledge belongs to Him and striving to use my abilities in service to others.

Why Kyutech?

I chose Kyutech because it is a prestigious university renowned for its strong academic programs and innovative research. Additionally, Kyutech maintains an excellent relationship with my previous institution, Universiti Putra Malaysia (UPM), which made the transition smoother. I had heard a lot about Kyutech's welcoming environment for international students, especially through opportunities like the MEXT scholarship. The diverse range of research topics available here presented a fantastic opportunity for me to pursue my academic interests.

About Research

In my research, I focus on neuromorphic computing, an innovative area of artificial intelligence that aims to mimic the computational processes of the human brain. While AI is increasingly prevalent across various fields, its complexity often leads to high power consumption. Neuromorphic computing addresses this challenge by enabling complex task performance with significantly lower energy usage, around 20 watts. My work involves leveraging material science to design and develop devices that can perform intricate computations efficiently, thereby overcoming the limitations of traditional AI systems

Best point of Kyutech

The best aspect of Kyutech is its dedication to accommodating both local and international students. The university goes above and beyond to create an inclusive and welcoming environment through various initiatives such as organized bus tours, mochi-making events, and other cultural activities. These efforts foster strong relationships



Souwalauk Na Khampo

beauty around the campus.

What kind of life

among students from diverse backgrounds making

Kyutech a truly international and supportive

• My recommended place from Kyutech

I highly recommend visiting the pavement in front of

Kyutech, where the sakura trees line up beautifully.

especially during the spring season. It's a serene

and picturesque spot that I often enjoy taking walks

in whenever I have the chance. The cherry

blossoms create a stunning backdrop, providing a

perfect place to relax and appreciate the natural

What surprised me most about Japan is the rich

language, unique culture, diverse cuisine, and the

distinct four seasons. Coming from Malaysia, where

we primarily experience hot and rainy weather

throughout the year, the clear seasonal changes in

Japan were quite remarkable. The cultural nuances

and the variety of traditional and modern foods also

I maintain a balanced lifestyle by dedicating the five

working days to intensive research and academic

pursuits. On weekends, I take the time to rest.

provided a fascinating and enriching experience.

• What surprised me most in Japan

community

Why Kyutech?

First, I know several supervisors from Thailand who graduated from Kyutech, and when they talked about their activities, it sounded so interesting. Moreover, since January 2023 I have participated as an exchange student for 10 days in a PBL class with Kyutech lizuka campus students, I also had an opportunity to visit the lab at both the Wakamutsu and the lizuka campuses. After completing the project. I cannot stop thinking about Japan, and Fukuoka cityeverything was so impressive. As a result, I set a new goal to return, and I decided to study for a Master's degree at Kyutech.

About Research

The enormous impact problem in the world is single-use plastic which requires solving. In our lab focus on the improvement of biomaterials can be instead of Petro based, then my research focus on biodegradation of biomaterials by superworms. Moreover, in this project have been studying how after superworms eat food fed for them, what is happening? When pass biodegradable is made it happens by superwoms, also is it can be reused or not.

Best point of Kyutech

The best point of Kyutech is the people, there are several people who come from everywhere in the world. Then you can learn about their culture and languages, because of diversity. In addition, Kyutech is one of the best universities in Japan, so you can get various knowledge from here.

• My recommended place from Kyutech

It's the first floor that has a table tennis table. also you can borrow table tennis stuff from the student section for free. I have found a lot of people there, it's a good sport for breaking the ice with your friends.

What surprised me most in Japan

I think about "Transportation" which is different from Thailand. Kitakvushu it's the southern part of Japan but there are many line trains you can use for travel, also buses. On the other hand, in Thailand if you are a person who lives outside Bangkok or the perimeter, quite hard to travel if you do not have your own car. Moreover, sometimes when you walk through children or someone, they will say "Konichiwa" to say hi to you this looks so kind.

What kind of life

I love to do activities, play games, do sports, and go to travel. In addition, I love watching Formula 1 and cars racing, then when I walk around the city I see a lot of cool cars. I am so happy. To be honest, I already paid for a Formula 1 ticket to the Suzuka circuit, but I do not have a friend to go with me, lol. Currently, I still find activities that I can do with

friends, such as yakiniku or traveling somewhere, I am very enjoyable



In the future, I require work in research and development, either in the industrial or academic sectors, depending on the opportunity at that time. I plan to continue research that addresses reducing or eliminating single-use waste as much as possible. This will be quite challenging, both in terms of research and in making it a reality in the industrial sector.





and Systems Engineering

Cafeteria

















lizuka Campus



😶 My future dream

ACCESS