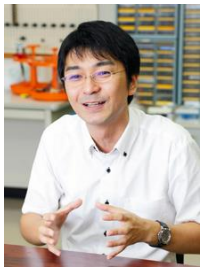
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kei Eguchi</td><td>Title 職位</td><td colspan="2">Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="4">Switching converters</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="4">Information Electronics</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="4">Material Science and Production Engineering</td></tr>
<tr><td>e-mail</td><td>eguti@fit.ac.jp</td><td>URL</td><td colspan="2">http://www.fit.ac.jp/research/search/profile/id/176</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="5">In mobile electronic devices such as smart phones, tablets, and so on, a switching converter is one of the most important blocks. Because the mobile electronic device consists of several sub-circuits, each with its own voltage level requirement different from that supplied by a secondary battery. To develop multifunctional and portable products, the demand for a switching converter realizing small volume and light weight is increasing in recent years. To meet such demands, our laboratory members are developing the switching converter which is implementable in VLSI. By this research, Prof. Dr. Eguchi received 2022 Outstanding Reviewer Award (IEEE Power Electronics Society), ICIC International Outstanding Contribution Award, Top Peer Reviewer Award2019 (Web of Science), ICICIC2018, 2017, 2016, and 2009 Best Paper Award, 2016 Institute of Industrial Applications Engineers Award, and 2010 Takayanagi Research Encourage Award.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="5">1. K. Eguchi, D. Nakashima, Fluctuation analysis and experimental evaluation of an inductor-less battery charge equalization circuit with a CMOS cross-coupled structure, Energy Reports, vol. 9, no. 8, pp. 214-223, 2023
2. K. Eguchi, D. Nakashima, T. Ishibashi, “Experimental study on discharging current to reduce voltage stress during underwater shock wave generation,” Energy Reports, vol.8, supplement 10, pp. 113-120, 2022
3. M. A. Kamarposhti, H. Shokouhandeh, M. Alipur, I. Colak, H. Zare, K. Eguchi, “Optimal Designing of Fuzzy-PID Controller in the Load-Frequency Control Loop of Hydro-Thermal Power System Connected to Wind Farm by HVDC Lines,” IEEE Access, vol. 10, pp. 63812-63822, 2022
(177 journal papers & 161 conference proceedings)</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="5">1. Senior member of IEEJ (Institute of Electrical Engineers of Japan)
2. President of Intelligent Networks and Systems Society
3. International Journal of Intelligent Engineering and Systems, Editors-in Chief
4. Associate Editor of International Journal of Innovative Computing, Information and Control (IJICIC)
5. Associate Editor of ICIC Express Letters</td></tr>
<tr><td>Remark /備考</td><td colspan="5"></td></tr>
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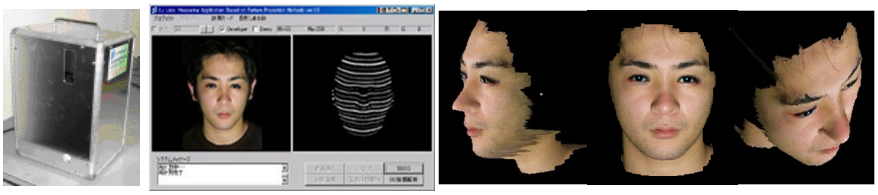
Professor Information / 教員情報

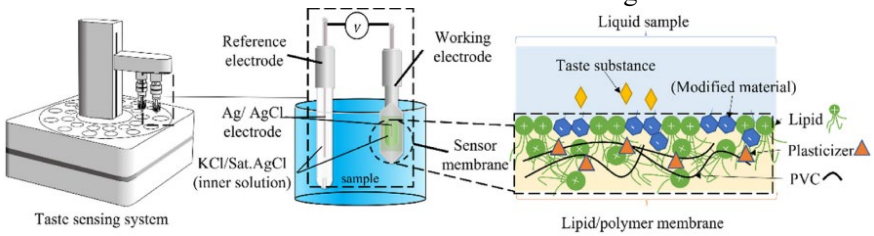
(Graduate School of Engineering / 工学研究科)

Name 氏名	Cunwei Lu 盧存偉	Title 職位	Professor	
Major 専門分野	3-D Image measurement and pattern recognition			
Master's Program 修士課程	Information Electronics			
Doctor's Program 博士課程	Intelligent Information System Engineering			
e-mail	lu@fit.ac.jp	URL	www.fit.ac.jp/~lu	

Research introduction 研究紹介	(1) 3-D Camera(An Optimal 3-D Image Measurement system) and 3-D printer We measure the surface 3-D form and space 3-D coordinates of an object from one sheet digital photograph by use of optimal pattern light projection technique. The measurement result can be applied to broad fields, such as form measurement, quality control, and facial recognition, and can be applied also to 3D printer. (2) Image measurement and quality control of automobile body (3) Research about the measurement and the prediction of tsunami (4) Application of AI technology for 3D image 
Publication / patent list 論文/特許リスト	(1) C. Lu, L. Xiang: Optimal Intensity-Modulation Projection Technique for Three-Dimensional Shape Measurement, Applied Optics-IP, Vol.42, No.23, pp.4649-4657, August 2003. (2) C. Lu and G. Cho, 3-D Image Measurement by Combination of Monochrome-Projection Color-Analysis and OIMP Technique, Transactions of The Institute of Systems, Control and Information Engineers, Vol.19, No.6, pp.233-240, 2006 (3) C. Lu, H. Kamitomo, K, Sun, K, Tsujino, G. Cho: 3D Camera: Development and Applications of a 3D Image Measurement System, The transactions of the Institute of Electrical Engineers of Japan. C, pp.320-328, Vol.131, No.2, 2011 (4) C. Lu and K, Tsujino, Automatic Measurement System Development of Crack and Dent for Used Car Body Panels, IEICE Trans. Inf.& Syst. (Japanese Edition), Vol.J101-D, No.1, pp.124-134, 2018 ********** (1) About 3-D camera, Japan: No.4883517,USA: US7,583,391 B2,China: ZL200580039510.9 (2) 3-D image measurement for move object, Japan: No.4986679, China: 101646919B (3) Image measurement for automobile, Japan: No. 6099115, China: ZL201210417628.2
Other academic activities / その他の学術活動	(1) Research about the measurement and the prediction of tsunami (2) 3-D facial recognition technique and its application for crime prevention system (3) 3-D shape measurement technique for high-temperature and large-size forging
Remark / 備考	(1) Industry-university cooperation Research • Image measurement and quality control of automobile body • Form measurement and quality control of forge object • 3-D image measurement of the form and size for a building (2) Equipment: 3-D Camera, Multiple- spectrum Camera, 3-D Microscope, etc. (3) Scholarship: We have a scholarship original with our laboratory

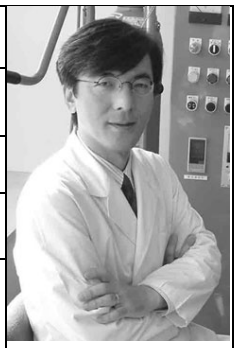
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Xiao Wu 巫 霄</td><td>Title 職位</td><td>Assistant Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Electronic Tongues and Electronic Noses</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="3">Information Electronics</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="3">—</td></tr>
<tr><td>e-mail</td><td>xiao@fit.ac.jp</td><td>URL</td><td></td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">(1) Taste sensing using lipid polymer membranes.
We mimic the biological system and concentrate on a potentiometric taste sensor that utilizes artificial lipid membranes. Our research encompasses the design of sensor receptors, elucidation of principles, device production, and signal acquisition and analysis.
・Development of taste sensor for sweetness, umami, and bitterness
・Quantitative prediction of bitterness masking effect
・Development of taste sensor for education
・Identification and evaluation of food and beverages
  </td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">(1) X.Wu & K.Toko, Taste sensor with multiarray lipid/polymer membranes, Trends in Analytical Chemistry,158,116874(2023)
(2) X.Wu et al., Quantification of pharmaceutical bitterness using a membrane electrode based on a hydrophobic tetrakis [3,5-bis (trifluoromethyl) phenyl] borate, Chemosensors,9(2),28(2021)
(3) X.Wu et al., Quantification of bitterness of coffee in the presence of high-potency sweeteners using taste sensors, Sensors and Actuators B: Chemical,309,127784(2020)
(4) X.Wu et al., Taste Sensor: Electronic tongue with lipid membranes, Analytical Sciences,36,147-159(2020)
(5) X.Wu et al., Improved durability and sensitivity of bitterness-sensing membrane for medicines, Sensors,17,2541(2017)
(6) X.Wu et al., Quantitative prediction of bitterness masking effect of high-potency sweeteners using taste sensor, Sensors and Actuators B: Chemical,235,11-17(2016)</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">(1) Artificial olfaction system using sensor arrays.
In our laboratory, we are also developing an artificial olfactory system (odor sensor) using a method that involves preparing a multitude of sensors capable of recognizing multiple types of chemical substances and employing AI for pattern recognition of their outputs.
・Application of colorimetric sensor arrays
・Application of semiconductor gas sensor arrays
・Food and beverage identification, freshness assessment</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">Equipment: Taste sensing system, Electrochemical workstation, screen printer, contact angle meter, environmental experiment chamber, etc.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name	Mikito Kitayama	Title	Professor	
Major	Materials Science (Ceramics)			
Master's Program	Life, Environment and Applied Chemistry			
Doctor's Program	Material Science and Production Engineering			
e-mail	kitayama@fit.ac.jp	URL	www.fit.ac.jp/~kitayama	
Research topics	1. Ceramic filter (ceramic membrane and bio-filter) 2. High thermal conductivity Si3N4 ceramics 3. Water treatment by the AOP (advanced oxidation process) using solid-state catalysts 4. Solar fuel (water split by visible light) 5. Dye-sensitized solar cell			
Recent Publications	・R. Shiraishi, Y. Ohta and M. Kitayama, "Development of Porous Silicon Nitride with Tailor-made Pore Structure for Bio-Filter: III. Control of Micro-pore," *J. MMIJ*, **128** [4,5] 173-77 (2012). ・A. Kusuda, M. Kitayama and Y. Ohta, "Catalytic Activities of Zeolite Compounds for Decomposing Aqueous Ozone," *J. Environ. Sci.*, **25**(Suppl.) S141-145 (2013). ・W. Ueta, Y. Ohta and M. Kitayama, "Development of Porous Silicon Nitride with Tailor-made Pore Structure for Bio-Filter: IV. Evaluation of permeability and bio-compatibility," **129** [5] 165-170 (2013). ・W. Ueta, Y. Ohta and M. Kitayama, "Development of Porous Silicon Nitride with Tailor-made Pore Structure for Bio-Filter: V. Verification of the microbe consortium formation," **130** [6] 225-230 (2014).			
Other academic activities	Member of American Ceramics Society, Ceramic Society of Japan, Japan Institute of Metal, Mining and Materials Processing Institute of Japan Head of Kyushu Branch, Corrosion Engineering of Japan			
Remark				

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	Junko Kuwahara	Title 職位	Professor	
Major 専門分野	Synthesis and Characterization of Soft Matter, Surfactants, Peptides and Biopolymers			
Master's Program 修士課程	Life, Environment and Applied Chemistry			
Doctor's Program 博士課程				
e-mail	j-kuwahara@fit.ac.jp	URL		

Research introduction 研究紹介	**1. Development of extraction method of collagen and gelatin derived from tilapia scales** We are investigating a method of efficiently extracting gelatin and collagen by physical stimulation such as crushing and heating without using chemicals by acid and base as much as possible. **2. Synthesis and characterization of hydrogels using biopolymers such as gelatin and polysaccharides** In order to obtain disposable soft actuators, hydrogels are synthesized on the basis of gelatin and polysaccharides which are biopolymers. **3. Influence of natural pigments on amino acid surfactants on solution physical properties (surface tension, electric conductivity, contact angle)** To improve the quality of cosmetic products and toiletry products, we investigate the physical properties of mixed systems of surfactants and natural pigment used in these products.
Publication list 論文リスト	1. The influence of surfactant on decomposition of pigment derived from Basella alba from Fukuoka prefecture by heating or artificial sunlight irradiation, Junko Kuwahara, *Journal of MMIJ* (2017) in press. 2. Screening Evaluation of the Interaction of Linear-Chain or Branched-Chain Peptides with Multilamellar Vesicle, Using Confocal Laser Microscopy, Junko Kuwahara, Hajime Mita, Tetsuya Marume, *Journal of Oleo Sci.* (2017) in press. 3. Conformational Analysis of Fish Collagen in Denaturation Process, Fumio Nakazawa, Riki Miura, Junko Kuwahara, Hajime Mita, *PEPTIDE SCIENCE 2012*, 371-374 (2013).
Other academic activities / その他の学術活動	Japan Oil Chemists' Society, Division of Interface Science, Secretary of Kyushu area
Remark / 備考	

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	Xing-Zheng Wu	Title 職位	Professor	
Major 専門分野	Analytical Chemistry, Environmental Analysis			
Master's Program 修士課程	Life, Environment and Applied Chemistry			
Doctor's Program 博士課程	Material Science and Production Engineering			
e-mail	wu@fit.ac.jp	URL		

Research introduction 研究紹介	The following research projects are carrying out in my Lab. 1) Preparation of functional Au nanoparticle and its novel application. 2) Development of novel analytical methods for plants by making use of optical beam deflection and fluorescence 3) Capillary electrophoresis and its application in determination of sugar and study of protein-protein interaction. 4) Chemiluminescence methods for studying environmental and biochemical samples.
Publication list 論文リスト	1. Improvements on the Fluorescence Quenching/Deflection Method for Real-time in situ Simultaneous Monitoring of Dissolved Oxygen and Material Movement-induced Beam Deflection in the Vicinity of an Aquatic Plant , Xing-Zheng WU, and Luowei HUANG, Anal. Sci., 34, 1335-1337 (2018). 2. Real-time in-situ simultaneous monitoring of dissolved oxygen and materials movements at vicinities of an aquatic plant by fluorescence quenching/deflection with an improved calculation method Luowei Huang, Xing-Zheng Wu, SDRP Journal of Plant Science, 2 (2), 1-7 (2017). 3. Real-time in-situ Simultaneous Monitoring of Dissolved Oxygen and Materials Movements at a Vicinity of Micrometers from an Aquatic Plant by Combining Deflection of a Probe Beam and Fluorescence Quenching Xing-Zheng Wu,* Xiaoyan Wu, and Tomomi Inoue, Anal. Sci., 33, 351-355 (2017).. 4. Comparative studies on effects of acid solutions on aquatic plants by beam deflection and absorbance spectroscopy methods Xing-Zheng Wu, Liangjiao Nie, and Tomomi Inoue, Anal. Sci., 31, 837-840 (2015). 5. Real-time Noninvasive Monitoring of UV Light-induced Cell Death by the Deflection of a Probe Beam
Other academic activities / その他の学術活動	
Remark / 備考	Students who like to challenge new research are welcome.

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kiyoshi Matsuyama</td><td>Title 職位</td><td colspan="2">Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="4">Chemical Engineering</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="4">Life, Environment and Applied Chemistry</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="4"></td></tr>
<tr><td>e-mail</td><td>matsuyama@fit.ac.jp</td><td>URL</td><td colspan="2">www.fit.ac.jp/~matsuyama</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="5">The objectives of our study were to develop the formation process of micro- and nano-scale porous and particle materials using supercritical fluid technology. In the addition to reducing organic solvent emissions, supercritical fluids offer a number of specific physical, chemical, toxicological advantages as alternative solvents for the production of advanced materials.
1)Development of advanced nanoparticulate and porous materials using supercritical fluids
2)Particle design of drug and supplement substance using supercritical fluids
3)Extraction bioactive compounds from plants using supercritical fluids
4)Thermodynamic modeling for chemical engineering</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="5">1)I.Ushiki, K.Matsuyama, R.L.Smith, Sustainable approaches for materials engineering with supercritical carbon dioxide, in: G. Szekely, A. Livingston(Eds.), Sustainable Nanoscale Engineering, Elsevier, Amsterdam, 2020, pp.395–414.
2)K.Matsuyama, Supercritical fluid processing for metal–organic frameworks, porous coordination polymers, and covalent organic frameworks, The Journal of Supercritical Fluid, 134, 197–203(2018) invited review
3)K.Matsuyama,M.Motomura, T.Kato, T.Okuyama, H.Muto, Catalytically active Pt nanoparticles immobilized inside the pores of metal organic framework using supercritical CO_2 solutions, Microporous and Mesoporous Materials, 225, 26-32(2016)
4)K.Matsuyama, N.Hayashi, M.Yokomizo, T.Kato, K.Ohara, T.Okuyama, Supercritical carbon dioxide-assisted drug loading and release from biocompatible porous metal-organic frameworks, Journal of Materials Chemistry B, 2, 7551-7558(2014)</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="5">·Editorial board member of The Journal of Supercritical Fluids (Elsevier)
· Plant Production Science (Taylor & Francis) Best Paper Award (2018)
· The Journal of Supercritical Fluids (Elsevier) Editor-in-Chief’s Featured Article Award(2015)</td></tr>
<tr><td>Remark /
備考</td><td colspan="5">Our research group collaborate with companies such as Samsung Electronics, Toyota motor, Toyo Ink, Daicel etc.</td></tr>
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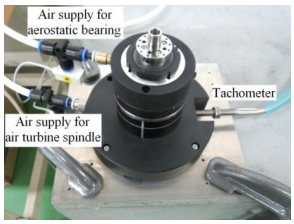
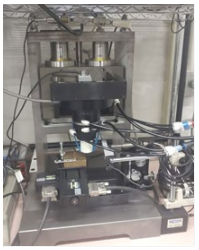
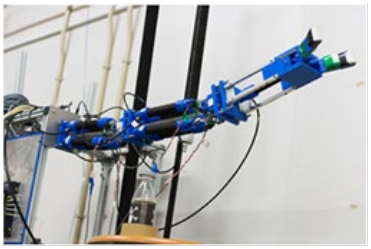
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Nobuyoshi Miyamoto</td><td>Title 職位</td><td>Associate Professor</td><td rowspan="6">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Synthesis and functions of inorganic/organic nano-composite materials: 2D materials, liquid crystals, energy devices, molecular robotics, and environmentally benign materials</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Life, Environment and Applied Chemistry</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Material Science and Production Engineering</td></tr>
<tr><td>e-mail</td><td>miyamoto@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~miyamoto</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">My main research topic is the chemistry of soft functional materials with well-defined nanostructures mainly based on inorganic layered materials, inorganic nanosheets, and organic polymers. The synthesis, physics, and application of nanosheet colloid liquid crystals (LC) are the important and original points of my research. Inorganic LCs are obtained from layered materials such as clays and layered perovskites; these new LCs have properties inherent to inorganic materials and will be applicable as various functional materials, different from conventional organic LCs. Fabrication of photo-responsive anisotropic hydrogels by combining a polymer and a nanosheet LC for soft actuator applications is my recent topic funded by "Molecular Robotics" project. I currently plan new research topic in which nanosheet chemistry is combined with microfluidics and/or DNA materials.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">J. Am. Chem. Soc. 2014, 136, 5491 "Gigantic Swelling of Inorganic Layered Materials: A Bridge to Molecularly Thin Two-Dimensional Nanosheets"
Nature Commun., 2013, 4: 1632 "Reversible, Instant, and Unusually Stable ~100-Fold Swelling of Inorganic Layered Materials"
Chem. Commun., 2013, 49, 1082"Liquid Crystalline Inorganic Nanosheets for Facile Synthesis of Polymer Hydrogels with Anisotropies in Optical Property, Structure, Swelling/Deswelling, and Ion Transport/Fixation"
Phys. Rev. E., 2012, 85, 011403"Aspect Ratio Dependent Phase Transitions and Concentration Fluctuations in Aqueous Colloidal Dispersions of Charged Plate-Like Particles"
Chem. Commun., 2010, 46, 4166 "Liquid Crystal Phases in the Aqueous Colloids of Size-Controlled Fluorinated Layered Clay Mineral Nanosheets"
Angew. Chem. Int. Ed., 2007, 46, 4123 "Extremely Stable Photoinduced Charge Separation in a Colloidal System Composed of Semiconducting Niobate and Clay Nanosheets"</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">The Chemical Society of Japan (a regular member); The Society of Polymer Science, Japan (a regular member); The Japan Liquid Crystal Society (a regular member); The Clay Science Society of Japan (a regular member); The Molecular Robotics Research Group (a regular member); The West-Japan Nanosheet Society (the Chief Organizer)</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">On-going large research projects: The Canon Foundation “Development of functional inorganic nanosheet liquid crystals based on layered perovskites”, 2013-2014; Grant-in-Aid for Scientific Research on Innovative Areas of "Molecular Robotics" from the MEXT Japan. 2012-2016.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

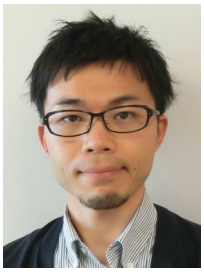
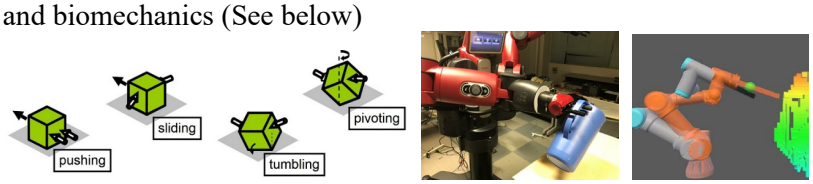
<table>
<tr><td>Name 氏名</td><td>KATO Tomonori
加藤 友規</td><td>Title 職位</td><td>Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Fluid power systems, Actuators, Robotics</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Intelligent Mechanical Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Material Science and Production Engineering</td></tr>
<tr><td>e-mail</td><td>t-kato@fit.ac.jp</td><td>URL</td><td>http://www.fit.ac.jp/research/search/profile/edit_lang_division/E/id/147</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">My research is based on the following subjects.
-Fluid Power Systems (Pneumatics), Actuators, Control Engineering, Robotics-
Our recent research themes are as follows:
-(1) Control of air turbine spindle and ultraprecision milling
-(2) Hybrid electro-pneumatic ultra-precision positioning stage
-(3) Robot systems driven by pneumatic energy and its tele-operation
-(4) Robots playing musical wind instruments
-(5) Development of a new soft actuator driven by gas-liquid phase change
 
(1) 
(2) 
(3)</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">(1) T. KATO, et al. : Proposal of Disturbance-Compensating and Energy-Saving Control Method of Air Turbine Spindle and Evaluation of Its Energy Consumption, Precision Engineering, Vol.43, pp.439-447 (2016)

(2) T. KATO, et. al. : Improvement of dynamic characteristics of manipulator driven by a gas-liquid phase-change actuator using an antagonistic drive, MATEC Web of Conferences (EDP Sciences), Vol.192, p.02015 (2018)

(3) T. KATO, et al. : Tool wear estimation method in milling process using air turbine spindle rotation-control system equipped with disturbance force observer, International Journal of Hydromechatronics (Inderscience Publishers), Vol.1, No.4, pp.384-402 (2019)</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">1) Member of JSME, JSPE, ASPE, SICE, JFPS.
2) Registered Professional Engineer, Japan (P.E. Jp).
3) Funded by several national grants.
4) Collaboration with several industrial companies.</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Satoshi MAKITA</td><td>Title 職位</td><td colspan="2">Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="4">Robotic manipulation, grasping, and automation, Biomechanics of Human hands</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="4">Intelligent Mechanical Engineering</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="4">—</td></tr>
<tr><td>e-mail</td><td>makita@fit.ac.jp</td><td>URL</td><td colspan="2">https://www.fit.ac.jp/~makita/</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="5">(1) Mechanical Analysis of Contact Forces in Manipulation
In Robotic manipulation, appropriate contact forces are applied to target objects by robots and environments and help the robots accomplish stable grasping and manipulation. Hence analysis of the forces is a key issue for the performances of dexterous manipulation.
(2) 3D Multifingered Caging: basic formulation and planning
Caging is a geometrical method to confine an object by robots surrounding it, even though the robots are in position control. We formulate the basic theory of multifingered caging in three-dimensional space and apply it to some dexterous manipulation.
(3) Other research on robotics related to automation, virtual/mixed reality, and biomechanics (See below)
  </td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="5">[1]. S. Makita, T. Sasaki and T. Urakawa: ``Offline Direct Teaching for a Robotic Manipulator in the Computational Space," Int. J. of Automation Technology, Vol. 15, No. 2, pp. 197--205, Mar. 2021.<br>[2]. S. Makita and W. Wan: ``A Survey of Robotic Caging and its Applications," Advanced Robotics, vol. 31, issue 19--20, pp. 1071--1085, Sep 2017.
[3]. S. Makita and K. Nagata: ``Evaluation of Quality of Partial Caging by a Planar Two-Fingered Hand," Advanced Robotics, Vol. 30, Issue 3, pp. 178--189, Feb 2016.<br>[4]. S. Makita, K. Okita and Y. Maeda: ``3D Two-Fingered Caging for Two Types of Objects: Sufficient Conditions and Planning," Int. J. of Mechatronics and Automation, vol. 3, no. 4, pp. 263--277, Dec 2013.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="5">(1) Research on robotic automation in assembly tasks.
(2) Research on synthesis of virtual/mixed reality and physical robots.
(3) Research on biomechanics, especially muscle/tendon of human hands</td></tr>
<tr><td>Remark /
備考</td><td colspan="5">(1) Basis of mechanical engineering and computer programming are mandatory. Majors in robotics and mechatronics are welcomed.
(2) Equipment: some industrial robots and sensors are available.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Masayoshi Inoue</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Applied superconductivity for energy & environmental engineering</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Electrical Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Material Science and Production Engineering</td></tr>
<tr><td>e-mail</td><td>ms-inoue@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~ms-inoue</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">1. Investigation of electro-magnetic properties in high-temperature superconducting materials.
High-temperature superconducting materials, especially superconducting wires are very attractive for energy and environmental engineering because of those low energy loss and high current density. However, more high electro-magnetic properties are required for practical applications. We are investigating 1) current-voltage properties in a wide range of temperature and magnetic field, 2) critical current distributions by using scanning Hall-probe microscopy, 3) microstructures by using X-ray CT and several microscopes such as SEM and TEM.

2. Engineering design of superconducting power applications
Based on the above mentioned electro-magnetic properties, we design superconducting power applications such as Superconducting Fault Current Limiters (SFCL), Superconducting motor/generator, Superconducting cable and analyze the efficiency in individual operation and electric power grid.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">1. “Enhancement of In-Field Critical Current Density of $BaZrO_3$-Added (Y, Gd) BCO-Coated Conductors by Using a Multi-Coating TFA-MOD Method”, IEEE Trans. on Applied Superconductivity (28) 2018
2. “Study of Growth Process for $YBa_2Cu_3O_y$ Coated Conductors with $BaZrO_3$ Flux Pinning Centers by Monitoring Electrical Conductivity”, IEEE Trans. on Applied Superconductivity (28) 2018
3. “Current Capacity of Cu-Sheathed Multifilamentary Coated Conductors Under the Influence of Spatial Variation of Local Critical Currents in Each Filament”, IEEE Trans. on Applied Superconductivity (28) 2018
4. “Comparison between Bi-2223 tape and RE-123 coated conductor from the view point of current transport properties influencing thermal stability”, Cryogenics (80) 2016
5. “Three-Dimensional Analysis of MgB_2 Wire by use of X-ray Micro-Tomography”, IEEE Trans. on Applied Superconductivity (26) 2016</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">・Vice Chairman of Planning committee, the Cryogenic and Superconductivity Society of Japan
・General Secretary of Superconductor Division, the Japan Society of Applied Physics
・Council member of Kyushu-branch, the Institute of Electrical Engineering of Japan</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kazuhiro Ohyama</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Power electronics and motor control</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Electrical Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Electrical Engineering</td></tr>
<tr><td>e-mail</td><td>ohyama@fit.ac.jp</td><td>URL</td><td>http://www.fit.ac.jp/</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">1. Development of High Efficient Switched Reluctance Motor Drive for Electric Vehicles: This project develops a high efficient switched reluctance motor (SRM) and its inverter including control system to achieve the practical realization of high efficient SRM drive system for electric vehicle.
2. Development of Sensorless Switched Reluctance Drive for Electric Vehicle: Developments of sensorless switched reluctance motor (SRM) drives for electric vehicle are urgent issue to exploit robust feature of SRM. Therefore, this project develops sensorless SRM drives.
3. Electric Vehicle Conversion Project: This project converts a car using petrol engine to an electric vehicle. The electric vehicle employs the high efficient SRM drive system which is developed in the previous projects.
4. Development of Wind Generation System Using Switched Reluctance Generator and Capacitor-less AC-AC Converter: Low cost power generation, reliability improvement, and environmental enhancement are urgent issues for developments of wind power generation systems. Therefore, this project proposes the wind generation system using the switched reluctance generator and capacitor-less AC-AC converter which brings solutions to the above-mentioned urgent issues.
5. Development of Hydraulic Power Generation System Using Flutter Phenomena: This project develops a generator and power converter for a hydraulic power generation system using flutter phenomena. This hydraulic power generation system will make efficient use of the hydraulic power of agricultural water passages.
6. Development of Wave-Activated Power Generation System: This project develops generation devices using dielectric elastomers. Mainly high voltage power converter and stepdown converter are treated to realize the high-efficiency power generation. The developed generation device will be applied to a wave-activated generation system in the final phase of this project.
7. Development of Flexible Linear Actuator: This project develops a flexible linear actuator (FLA) using a wire and coils which can have a motion like a muscle. The FLA will be applied to tendon-driven robots.
8. Development of High Performance Sensorless Vector Control Drive: Sensorless induction motor drives are widely used for electric vehicles, rolling plants, and general-purpose inverters. However, the sensorless induction motor drive systems do not have enough performance in very low speed and regenerating operation regions. Therefore, this project develops a novel control method to improve the performance of very low speed.
9. Stability Analysis and Design Methods of Sensorless Induction Motor Drive System: This project proposes stability analysis and design methods of sensorless induction motor drive system which is used for electric vehicles, rolling plants, and general-purpose inverters.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">See following web pages
https://researchmap.jp/read0191922/?lang=english
https://www.fit.ac.jp/research/search/profile/edit_lang_division/E/id/57</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Members of IEEJ and IEEE

Collaborative research with Meiwa Manufacturing Co.</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

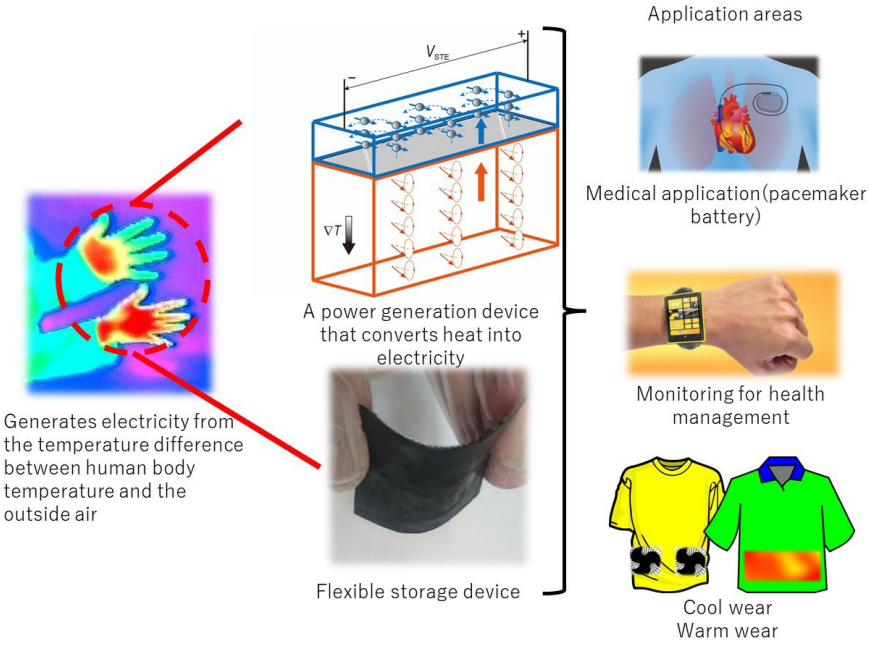
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	Daisuke Tashima	Title 職位	Professor	
Major 専門分野	Super capacitor, magnesium air fuel cell, battery, energy harvesting, thermos-electric generator			
Master's Program 修士課程	Electrical Engineering			
Doctor's Program 博士課程	Energy System Engineering			
e-mail	tashima@fit.ac.jp	URL	https://www.fit.ac.jp/~tashima/e_index.html	

Research introduction
研究紹介

"Batteries are not inserted into the body" is a means of avoiding risks for human beings to live a healthy life. Batteries for current pacemakers are embedded in the body, and although they are highly safe, the possibility of the liquid used in the batteries leaking into the body cannot be denied. There is a demand for the development of technology to supply electricity more safely and stably.
Thermoelectric power generation technology using semiconductor devices is attracting attention as a method of converting thermal energy into electric power. However, current semiconductor devices require advanced manufacturing processes and high-purity materials, and their manufacturing costs tend to be high. On the other hand, the manufacturing process of single-crystal polycrystalline film by ultra-thin platinum coating is attracting attention as a relatively inexpensive method. Wearable devices developed in this laboratory that generate and store electricity using the temperature difference between the human body and the outside air can achieve high energy efficiency and reduce environmental impact by utilizing sustainable energy sources.



Publication list 論文リスト	1. Research book published: **D. Tashima**, A. Samantara:"Supercapacitors for the Next Generation", IntechOpen, 2022 2. **D. Tashima**, T. Kashio, T. Eguchi, S. Kumagai, T. Tsubota, John D. W. Madden, "Recycling Marine Plastic Waste to Energy Storage Devices", Materials Letters: X, Vol.18, No.100193/1-100193/4, June 2023 3. M. Imamura, H. Asada, Y. Kano, R. Matsuda, **D. Tashima**, J. Kitagawa, "Underlying Mechanism of the Driving Force for Generating Spin Currents Thermally in a Ferrimagnetic Insulator Due to a Temperature Gradient", AIP Advances, Vol.13, No.2, February 2023 4. T. Ryu, **D. Tashima**, T. Kawabata,"Characteristics of electric double-layer capacitors based on solid polymer electrolyte composed of sodium polyacrylate", Journal of Physics: Conference Series, No.2368, pp.012002/1-012002/8, November 2022 5. T. Omori, M. Nakanishi and **D. Tashima**, "High-Temperature Degradation Tests on Electric Double-Layer Capacitors: The Effect of Residual Voltage on Degradation", Materials, Vol.14, No.6, pp.1520/1-1520/10, March 2021 6. **D. Tashima**, M. Hirano, S. Kitazaki, T. Eguchi, S. Kumagai, "Solution-plasma treatment of activated carbon from shochu distillery waste for electrochemical capacitors", Materials Chemistry and Physics, Vol.254, 123523, November 2020 7. T. Eguchi, **D. Tashima**, M. Fukuma, S. Kumagai, "Activated carbon derived from Japanese distilled liquor waste: Application as the electrode active material of electric double-layer capacitors", Journal of Cleaner Production, Vol.259, 120822 June 2020 total journals: **73**, total international conferences: **97**
Other academic activities / その他の学術活動	Journal reviewer: Electrochemistry, Electrochimica acta, Journal of Physics and Chemistry of Solids, Journal of Solid State Electrochemistry, Materials Chemistry and Physics, Microporous & Mesoporous Materials
Remark / 備考	Equipment: vacuum glove box(for making supercapacitor), battery charge-discharge tester, electrochemical measurement system

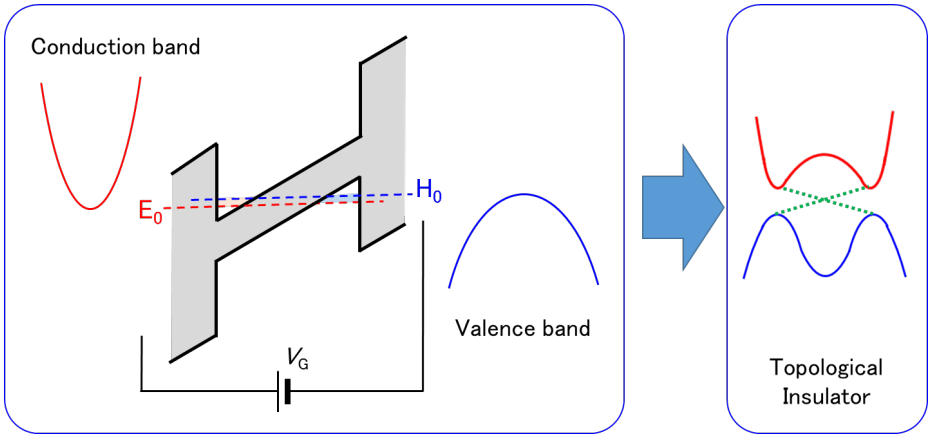
Professor Information
(Graduate School of Engineering)

Name	Kyoichi Suzuki	Title	Associate Professor	
Major	Semiconductor nanostructures			
Master's Program	Electrical Engineering			
e-mail	k-suzuki@fit.ac.jp	URL		

Research introduction

As semiconductor devices develop and become highly integrated, the quantum mechanical properties, rather than the quantity of the electrons, mainly dominate their characteristics. As a result, the conductance quantization has been observed, such as quantum Hall effect and quantum point contact. In addition, recently, the materials, which have a topologically-different insulating state inside, called topological insulators, have been found. In the topological insulators, the inside insulating state and the outside one could not be connected due to their different topology. As a result, dissipation less, quantized transport is expected at the boundary.

We have investigated electronic transport in semiconductor nanostructures and topological insulators. Particularly, we are now devoting to realize a topological insulating state in semiconductor heterostructures. For example, the usual semiconductor quantum well has a trivial insulating state when the Fermi level is in the band gap of the well layer. In contrast, by applying a large electric field, the conduction and valence bands overlap in energy. Due to the hybridization of the wavefunctions for both bands, the topologically insulating state should be realized artificially.



Publication list

Gate-controlled Semimetal-Topological Insulator Transition in an InAs/GaSb Heterostructure, K. Suzuki *et al.*, Phys. Rev. B **91**, 245309 (2015).

Edge Channel Transport in InAs/GaSb Topological Insulating Phase, K. Suzuki *et al.*, Phys. Rev. B **87**, 235311 (2013).

Imaging of Interference between Incident and Reflected Electron Waves at an InAs/GaSb Heterointerface by Low-Temperature Scanning Tunneling Spectroscopy, K. Suzuki *et al.*, Jpn. J. Appl. Phys. **46**, 2618 (2007). [Jpn. Soc. Appl. Phys. Paper Award 2008]

Spatial Imaging of Two-Dimensional Electronic States in Semiconductor Quantum Wells, K. Suzuki *et al.*, Phys. Rev. Lett. **98**, 136802 (2007). [Editor's Suggestion]

Landau-Level Hybridization and the Quantum Hall Effect in InAs/(AlSb)/GaSb Electron-Hole Systems, K. Suzuki *et al.*, Phys. Rev. Lett. **93**, 016803 (2004).

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Masahiro
Nakanishi</td><td>Title 職位</td><td>Asistant
Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Soft Matter Physics</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Soft Matter Physics</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Soft Matter Physics</td></tr>
<tr><td>e-mail</td><td>m-nakanishi@fit.ac.jp</td><td>URL</td><td>http://www.fit.ac.jp/research/search/profile/edit_lang_division/E/id/222</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">(i) Electrical Properties of Composite Materials
Mixing several materials is practically important method to make materials which have both properties together. For example metal conductors are typically hard while insulating plastics are soft and bendable. Then mixing metals into plastics yields conducting soft materials. If the fraction of the minority component is far less than 1, electric property of the composite can be straightforwardly calculated by mean-field approach such as Maxwell-Wagner theory. As the fraction increases, this approach breaks down and correlation between particles plays central roll on the electrical properties of the composite. My group studies the electrical properties of conductor/insulator composites by broadband dielectric spectroscopy and seeks a route to go beyond the mean-field approach of composite materials.

(ii) Molecular Dynamics of Soft Condensed Matter
By means of broadband dielectric spectroscopy in the range from μHz to sub THz, we study molecular dynamics of hydrated proteins, ice, ionic solutions, and their glass transition phenomena.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">N. Yamamoto, S. Ito, M. Nakanishi, E. Chatani, K. Inoue, H. Kandori, K. Tominaga, J. Phys. Chem. B 122, 1367 (2018), “Effect of Temperature and Hydration Level on Purple Membrane Dynamics Studied Using Broadband Dielectric Spectroscopy from Sub-GHz to THz Regions".

D. N. Voylov, P. J. Griffin, B. Mercado, J. K. Keum, M. Nakanishi, V. N. Novikov, A. P. Sokolov, Phys. Rev. E 94, 060603(R) (2016), “Correlation between temperature variations of static and dynamic properties in glass-forming liquids”.

M. Nakanishi, A. P. Sokolov, J. Non-Cryst. Solid. 407, 478 (2015), “Protein dynamics in a broad frequency range: Dielectric spectroscopy studies”.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4"></td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Makio Ishihara</td><td>Title
職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Human Computer Interaction</td></tr>
<tr><td>Master’s Program
修士課程</td><td colspan="3">Information Engineering</td></tr>
<tr><td>Doctor’s Program
博士課程</td><td colspan="3">-</td></tr>
<tr><td>e-mail</td><td>m-ishihara@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~m-ishihara/Lab</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">The research field of Human Computer Interaction focuses on how people use computers and discusses what makes them use computers intuitively, naturally, and comfortably. It is also known as User Interface. The research question is what is the best way for people to communicate with computers? In my laboratory, the students take various approaches to answer the question using Head-Mounted Displays, Data-gloves, 3D Displays, HoloLens, Tobii Eye Tracker, Leap Motion, CAVE, Vicon Motion Tracker, AR techniques etc. The range of my research includes getting-lost problem, mixed reality, real-world oriented user interface, pointing interface, gamification, spatial Interface and the details of these topics are introduced on the laboratory homepage: http://www.fit.ac.jp/~m-ishihara/Lab/
 
Programming learning system
 
Evacuation training system
 
Texture creating system</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">[1] M. Ishihara and R. Kawashima, Multi-Distance Function Trilateration over k-NN Fingerprinting for Indoor Positioning and Its Evaluation, IEICE Trans., vol. e103-d, no. 5, pp. 1055-1066, 2020
[2] Y. Mako and M. Ishihara, A long-arrow mouse cursor for sense of ownership and its evaluations, IEICE Trans., vol. j102-d, no.12, pp. 812-821, 2019.
[3] Y. Ishihara and M. Ishihara, Preliminary study on angular properties of spatial awareness of human in virtual space, Proc. of the 24th ACM Symposium on Virtual Reality Software and Technology (VRST '18), 113, Nov. 2018
[4] Y. Mako and M. Ishihara, Long arrow mouse cursor and its properties on SoO, International Journal of Affective Engineering, vol. 17, no. 4, pp. 221-225, 2018.
[5] M. Ishihara and Y. Ishihara, Impact of viewing distance on task performance and its properties, IEICE Trans., vol. e101-d, no. 10, pp. 2530-2533, 2018.
[6] M. Ishihara and Y. Ishihara, A shadow cursor for calibrating screen coordinates of tabletop displays and its evaluation, IEICE Trans., vol. e100-d no. 6, pp. 1271-1279, 2017.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4"></td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
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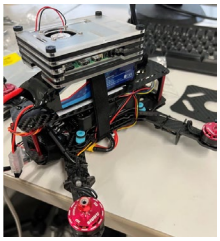
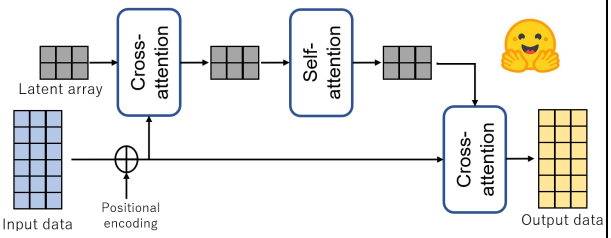
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kazumasa OIDA</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Studies on security, social network, and blockchain technologies</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Computer Science and Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>oida@fit.ac.jp</td><td>URL</td><td>http://www.fit.ac.jp/~oida/index.html</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">1. Malware analysis and detection
Monitoring two smishing malware families, XLoader and FakeSpy, currently prevalent in Japan to mitigate damage caused by them.
2. IP traceback over Tor
Tracking attackers in order to deter crimes that exploit the anonymous network Tor.
3. Bi-polarization in cascade size distributions
Demonstrating the bi-polarization phenomenon by means of simulations and mathematically rigid formalization.
4. Secure auto-pilot drone systems
Developing Transformer-based machine learning software with GPS spoofing and GPS jamming avoidance capability.
 
Botnet monitoring
 
Auto-pilot drone
 
Machine learning for GPS attack avoidance</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">✓ K. Oida, “Information cascade final size distributions derived from urn models,” Applied Network Science, 8, 30, 2023.
✓ R. Saeki, et.al., "Smishing Strategy Dynamics and Evolving Botnet Activities in Japan," IEEE Access, 10, 114869-114884, 2022.
✓ K. Oida, “Bi-polarization in cascade size distributions,” IEEE Access, 9, 72867-72880, 2021.
✓ Y. Pei, and K. Oida. "Tracing Website Attackers by Analyzing Onion Routers’ Log Files," IEEE Access, 8, 133190-133203, 2020.
✓ K. Oida and K. Okubo, “Adopter community formation accelerated by repeaters of product advertisement campaigns,” IEEE Trans. Computational Social Systems, 6, 1, 56-72, 2019.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Collaboration with Fukuoka Prefectural Police for malware analysis.</td></tr>
<tr><td>Remark /備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

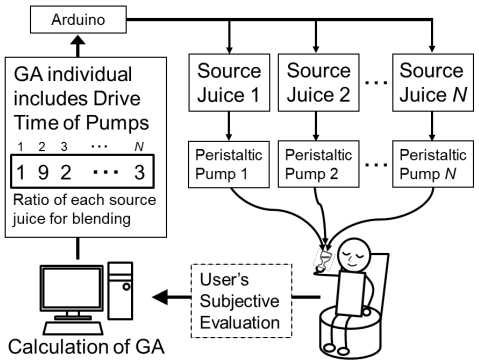
(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Takayoshi Shoudai</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Algorithmic Graph Theory and Machine Learning</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Mathematics</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Information Systems</td></tr>
<tr><td>e-mail</td><td>shodai@fit.ac.jp</td><td>URL</td><td>https://gslt.cs.fit.ac.jp</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">Recently, due to the rapid growth of available data, there are growing expectations and desires for discovering interesting and useful patterns which are hidden in datasets. Particularly, many researchers are interested in knowledge discovery from data having structures such as sequences, trees, or graphs. Graph-structured data widely appears in various practical fields. For example, HTML and XML texts can be expressed by ordered trees and chemical compounds can be expressed by graphs whose vertices and edges correspond to atoms and bonds between atoms respectively. For such graph data, graph mining and learning techniques for finding their characteristic structures will be useful for many practical applications.
Our main research projects are as follows. (1) Design and analysis of efficient graph pattern learning algorithms for new and interesting graph pattern classes: A graph pattern is a graph-structured pattern with internal variables that represents a characteristic common structure in graph-structured data. (2) Development of graph generation models based on graph grammars: Our object is to design algorithms for mining interesting patterns in dynamic graphs. In addition, we are now studying graph neural networks (GNNs) in data mining and machine learning fields.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">1. T. Shoudai, T. Miyahara, T. Uchida, S. Matsumoto, and Y. Suzuki, An Efficient Pattern Matching Algorithm for Unordered Term Tree Patterns of Bounded Dimension. IEICE Trans. Fundamentals, Vol.E 101-A, No. 9, pp.1344-1354, 2018.
2. T. Shoudai, Y. Yoshimura, Y. Suzuki, T. Uchida, and T. Miyahara, Polynomial Time Learnability of Graph Pattern Languages Defined by Cographs. IEICE Trans. Inf. & Syst., Vol.E101-D, No. 3, pp.582-592, 2018.
3. T. Shoudai and T. Yamada, A Polynomial Time Pattern Matching Algorithm on Graph Patterns of Bounded Treewidth, IEICE Trans. Fundamentals, Vol.E100-A, No. 9, pp.1764-1772, 2017.
4. T. Shoudai, S. Matsumoto, Y. Suzuki, Distributional Learning of Regular Formal Graph System of Bounded Degree, Proc. ILP2016, Springer, Lecture Notes in Artificial Intelligence, Vol.10326, pp.68-80, 2017.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">The International Conferences on Inductive Logic Programming (ILP), A Member of Program Committee, 2004, 2006-2008, 2010-2018.
The Best Paper Award, IIAI International Conference on Advanced Applied Informatics (IIAI AAI 2013)
Certificate of Merit for the 2009 IAENG International Conference on Computer Science, International MultiConference of Engineers and Computer Scientists</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Makoto FUKUMOTO</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Affective Computing, Soft Computing</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="3">Computer Science and Engineering</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="3">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>fukumoto@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~fukumoto</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">The main research themes are as follows;
(1) Creation of media content suited to the user's feelings,
(2) Interactive type of evolutionary computation with various algorithms,
(3) Investigating psycho-physiological effects of media content, including music pieces, sounds, taste of beverages, and fragrances.

The figure shows an Interactive Evolutionary Computation searching for delicious blended juices suited to the user's feelings [1]. The user evaluates the cup of created juice with user's feelings. Based on the repetitive evaluations, with Genetic Algorithm (GA), the system proceeds the search for more delicious juices for the users. In the case of creating music melodies [5, 6], GA individual contains information on the key of musical notes.
  </td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">[1] M. Fukumoto, Y. Hanada: Creation of Delicious Mixed Juices for Multiple Users based on Distributed Interactive Genetic Algorithm, Proc. IEEE Int. Conf. Systems, Man, and Cybernetics 2023, to appear, 2023.
[2] T. Thaiwong, M. Fukumoto: Effect of Combining Music and Animated Video on Heart Rate Variability and EEG Signals: Some Preliminary Findings, Proc. Comp. Info. Systems, Biometrics and Kansei Engineering 2023, to appear, 2023.
[3] T. Miyamoto, H. Gan, and M. Fukumoto: Making an English Speech Similar to the User's Voice using UTAU and Interactive Differential Evolution, Int. J. Affective Engineering, 22(2), in print, 2023.
[4] Z. Nan, M. Fukumoto: ASMR Sound Generation Simulating the Sounds Heard by a Fetus Using Interactive Evolutionary Computation, Proc. SCIS&ISIS2022, DOI: 10.1109/SCISISIS55246.2022.10001952, 2022.
[5] M. Fukumoto, Y. Hanada: Investigation of the Efficiency of Continuous Evaluation-based Interactive Evolutionary Computation for Composing Melody, IEEJ Trans. on Electrical and Electronic Engineering, 15(2), pp.235-241, 2020.
[6] G. Yamaguchi, M. Fukumoto: A Music Recommendation based on Melody Creation by Interactive Genetic Algorithm with User's Intervention, Proc. ISIS2019&ICBAKE2019, pp.146-151, 2019 (Best Paper Award).</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">(1) A director of Japan Society of Kansei Engineering
(2) An editor-in-chief of Transactions of Japan Society of Kansei Engineering</td></tr>
<tr><td>Remark / 備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Hiroyuki Yamauchi</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Ultra Low Energy Machine Learning for IoT-Edge AI Computing in AI Everywhere Era</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="3">Computer Science and Engineering</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="3">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>yamauchi@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~yamauchi</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">In this lab, the following research themes are being considered.
→URL: https://www.fit.ac.jp/~yamauchi/english/index.html
1) Study for Ultra Low Energy Machine Learning for IoT-Edge AI Computing in AI Everywhere Era,.
1-1) Binary Net (New-Net better than XNOR Net,)
1-2) Sparse & Compact Net (Dictionary & Sparse Learning)
1-3) Mobile-Net Like Model for YOLO and others
1-4) Hardware implementation, Rasberry Pi, Google Coral, etc)
2) In-Memory Computing Utilizing Dual Roles of Data Store and Arithmetic Operation)
2-1) CMOS SRAM-Based
2-2) Emerging Memory Based, RRAM, MRAM,and others
3) Stacking Model including LightGBM Explained by SHAP</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">Refereed Journal Papers: >50 and Refereed Proceeding Papers: >77
1) Relaxed Training for a Binary Neural Network, International Journal of Machine Learning and Computing (IJMLC), Vol.13,No.1,pp 1-10, Apr. 2023
2) A Dual-Split 6T SRAM based Computing-in-Memory Unit-Macro with Fully Parallel Product-Sum Operation for Binarized DNN Edge Processors, IEEE Transactions on Circuits and Systems I: Regular Papers,Vol.66,No.11,pp 4171-4185, Nov. 2019
3) A 28nm 320Kb TCAM Macro using Split-Controlled Single-Load 14T Cell and Triple Margin Voltage Sense Amplifier, IEEE Journal of Solid-State Circuits, Vol.54,No.10,pp 2743-2753, Oct. 2019</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Grant from Government and Industries since 2006
Total is about 400,000 USD
Program committee for the IEEE top-ranked international conferences:
(1) IEEE International Solid-State-Circuit Conference (2001-2010)
(2) IEEE Symposium on VLSI Circuits (1995-2000, 2010-2015)
(3) IEEE Asia- Solid-State-Circuit Conference (2009-2014)
Program committee chair for the international conferences:
(1) International Conference on Network and Computer Science (2014-2015)</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">I have over-20-years experiences as a R&D engineer and a director in Panasonic who has responsibility for developments of the fundamental circuits and device technologies for a leading edge process VLSI's for world-wide major electronic companies. I sincerely wish to express my gratitude for a variety of assisting in my research from the United States, Taiwan and a domestic companion. I will do my best on the research so that I can repay the kindness to the people as soon as possible.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

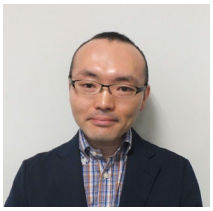
<table>
<tr><td>Name 氏名</td><td>Koji Toda</td><td>Title 職位</td><td>Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Software Engineering</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Engineering</td></tr>
<tr><td>e-mail</td><td>toda@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~toda/</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">My research area is effort estimation for software project management in software engineering.

In large project, schedule and cost management is indispensable, and estimation of the total development effort is the basis of such management. Therefore, high accuracy effort estimation (small difference between estimated and actual effort) is needed.

So, my research main topic is statistical model based estimation and software development data analysis using statistics as sub topic.</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">Yukasa Murakami, Masateru Tsunoda, and Koji Toda, ``An Empirical Evaluation of the Tobit Model on Software Defect Prediction," In Proc. of Applied Computing and Information Technology (ACIT 2016), pp.196-201, December 2016.<br>Kwabena E. Bennin, Koji Toda, Yasutaka Kamei, Jacky Keung, Akito Monden and Naoyasu Ubayashi, ``Empirical evaluation of cross-release effort-aware defect prediction models," In IEEE International Conference on Software Quality, Reliability and Security (QRS) pp.214-221 2016.
Masateru Tsunoda, Koji Toda, Kyohei Fushida, Yasutaka Kamei, Meiyappan Nagappan, and Naoyasu Ubayashi, ``Revisiting Software Development Effort Estimation Based on Early Phase Development Activities," In Proc. of Working Conference on Mining Software Repositories (MSR 2013), pp.429-438, May 2013.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Program committee member:
3rd IEEE/ACIS Int’l Conf. on Big Data, Cloud Comp., and Data Science Eng. (BCD), 2017-2018
4th Int’l Conf. on Applied Comp. & Information Technology (ACIT 2016)</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	Yutaka Yamaguti	Title 職位	Assistant Professor	
Major 専門分野	Computational Neuroscience/ Complex systems			
Master's Program 修士課程	Computer Science and Engineering			
Doctor's Program 博士課程				
e-mail	y-yamaguchi@fit.ac.jp	URL	www.fit.ac.jp/~y-yamaguchi	
Research introduction 研究紹介	Computational neuroscience is the theoretical study of the brain used to understand the principles and mechanism of information processing of the nervous systems. The progress of this research area has influenced the developments of artificial intelligence. We study computational neuroscience from the viewpoint of complex system study, such as theory of non-linear dynamical systems. Recent research topics are - Neural network model of functional differentiation in the brain - Analysis of brain signals - Computational modeling of hippocampus - Applications of reservoir computing - Pattern formation in tribology.			
Publication list 論文リスト	Ichiro Tsuda, Yutaka Yamaguti, Hiroshi Watanabe, Self-Organization with Constraints—A Mathematical Model for Functional Differentiation, Entropy, 18(3), 74 (2016) Yutaka Yamaguti, Ichiro Tsuda, Mathematical Modeling for Evolution of Heterogeneous Modules in the Brain, Neural Networks, 62, 3-10 (2015) Yutaka Yamaguti, Ichiro Tsuda, Yoichiro Takahashi, Information flow in heterogeneously interacting systems, Cognitive Neurodynamics, 8(1), pp 17-26 (2014) Hiromichi Tsukada, Yutaka Yamaguti, Ichiro Tsuda, Transitory memory retrieval in a biologically plausible neural network model, Cognitive Neurodynamics, 7:(5), pp. 409-416 (2013) Yutaka Yamaguti, Shigeru Kuroda, Yasuhiro Fukushima,Minoru Tsukada, and Ichiro Tsuda, A Mathematical Model for Cantor Coding in the Hippocampus, Neural Networks 24, 43-53 (2011)			
Other academic activities / その他の学術活動				
Remark / 備考				

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kensuke Baba</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Data Science</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Computer Science and Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">－</td></tr>
<tr><td>e-mail</td><td>k-baba@fit.ac.jp</td><td>URL</td><td>researchmap.jp/baba</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">Knowledge discovery from documents:
● Processing research papers for automatic survey [2]
● Detecting emotional or personal information from texts [3, 5]
Advanced search for documents:
● Search system for seeds in research institutes
● Plagiarism detection using vector representation of words [4, 7]
Interdisciplinary data science:
● Processing patent documents for economic studies [1]
● Named entity recognition for Islamic historical studies
Digital transformation (DX):
● Formalizing problems in office work [6]
● DX for local governments (collaboration with Koga-city)

Keywords: data science, machine learning, information retrieval, string processing, algorithm</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">[1] J. Jiang, K. Baba, Y. Zhao, J. Feng, and S. Kumagai, The dataset of Japanese patents and patents’ holding firms in green vehicle powertrains field, Data in Brief, vol. 44, pp. 108524, 2022.
[2] T. Baba, K. Baba, and D. Ikeda, Citation Count Prediction Using Abstracts, Journal of Web Engineering, vol. 18, no. 1-3, pp. 207-228, 2019.
[3] T. Baba, K. Baba, and D. Ikeda, Detecting Mental Health Illness Using Short Comments, Advances in Intelligent Systems and Computing, vol. 926, pp. 265-271, Springer, 2019.
[4] K. Baba, Filtering Documents for Plagiarism Detection, Lecture Notes in Artificial Intelligence, vol. 11198, pp. 361-372, Springer, 2018.
[5] T. Baba, K. Baba, and D. Ikeda, Predicting Author's Native Language Using Abstracts of Scholarly Papers, Lecture Notes in Artificial Intelligence, vol. 11177, pp. 448-453, Springer, 2018.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">[6] US11171880B2, Reservation managing method, and information processing device, and non-transitory computer-readable storage medium for storing reservation managing program, S. Fukuta, S. Okura, K. Baba, T. Noro, and T. Mohri, 2021/11/09.
[7] US11080480B2, Matrix generation program, matrix generation apparatus, and plagiarism detection program, K. Baba, 2021/08/03.</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Leonard Barolli</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Information Networking and Applications</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Information and Communication Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>barolli@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~barolli</td></tr>
<tr><td>Research Introduction
研究紹介</td><td colspan="4">Networks of today are going through a rapid evolution. Different kinds of networks with different characteristics are emerging and they are integrating in heterogeneous networks. For these reasons, there are many interconnection problems which may occur at different levels of the hardware and software design of communicating entities and communication networks. These kinds of networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources.
The success of all-IP networking and wireless technology has changed the ways of living for people around the world. The progress of electronic integration and wireless communications is going to pave the way to offer people the access to the wireless networks on the fly, based on which all electronic devices will be able to exchange the information with each other whenever necessary. Also, ubiquitous computing is an emerging field of research mainly in wireless communications, mobile computing, wireless sensor and actor networks, wireless mesh networks, P2P systems, vehicular networks and intelligent algorithms. These are also the research topics in my laboratory.</td></tr>
<tr><td>Publication List
論文リスト</td><td colspan="4">1. Phudit Ampririt, Seiji Ohara, Ermioni Qafzezi, Makoto Ikeda, Keita Matsuo, <u>Leonard Barolli</u>, “An Integrated Fuzzy-based Admission Control System (IFACS) for 5G Wireless Networks: Its Implementation and Performance Evaluation”, Internet Things, Volume 13, Article Number 100351, https://doi. org/10.1016/j.iot.2020.100351, March 2021.
2. Kevin Bylykbashi, Ermioni Qafzezi, Makoto Ikeda, Keita Matsuo, <u>Leonard Barolli</u>, “Fuzzy-based Driver Monitoring System (FDMS): Implementation of Two Intelligent FDMSs and a Testbed for Safe Driving in VANETs”, Future Generation Computer Systems, Vol 105, pp. 665-674, https://doi.org/10.1016/ j.future.2019.12.030, April 2020.
3. Shinji Sakamoto, Kosuke Ozera, Admir Barolli, Makoto Ikeda, <u>Leonard Barolli</u>, Makoto Takizawa, “Implementation of an Intelligent Hybrid Simulation System for WMNs based on Particle Swarm Optimization and Simulated Annealing: Performance Evaluation for Different Replacement Methods”, Soft Computing, Vol. 23, No. 9, pp, 3029-3035, 2019.
4. Miralda Cuka, Donald Elmazi, Kevin Bylykbashi, Evjola Spaho, Makoto Ikeda, <u>Leonard Barolli</u>, “Implementation and Performance Evaluation of Two Fuzzy-based Systems for Selection of IoT Devices in Opportunistic Networks”, Journal of Ambient Intelligence and Humanized Computing. Vol. 10, No. 2, pp. 519-529, 2019.
5. <u>Leonard Barolli</u>, Fatos Xhafa, “JXTA-OVERLAY: A P2P Platform for Distributed, Collaborative and Ubiquitous Computing”, IEEE Transactions on Industrial Electronics, Vol. 58, No. 6, pp. 2163-2172, 2011.
(More than 1200 Papers Published in Journals, Books and International Conference Proceedings)</td></tr>
<tr><td>Other Academic Activities /
その他の学術活動</td><td colspan="4">AINA, EIDWT, CISIS, IMIS, NBiS, INCoS, BWCCA and 3PGCIC International Conference Steering Committee Chair, International Workshops Organizer, International Journals Associate Editor</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">The students of my laboratory participate in many International Conferences.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	IKEDA Makoto	Title 職位	Professor	
Major 専門分野	Connectivity and Applications in Wireless Networks			
Master's Program 修士課程	Communication and Information Networking			
Doctor's Program 博士課程	Intelligent Information System Engineering			
e-mail	m-ikeda@fit.ac.jp	URL	http://ikdlab.ce.fit.ac.jp	

Research introduction 研究紹介	Vehicular Delay/Disruption/Dissection Tolerant Networking (DTN) -Message Delivery Method for Vehicular DTN -Communication systems of V2V, V2P, and V2X -Testbed implementation for Vehicular DTN -Intelligent Transport Systems Intelligent Systems for SDGs -Intelligent Application Systems for Driver Safety Support -Application of DTNs, Wireless Sensor Networks -Application System Using Deep Neural Networks, Fuzzy Logic. -Implementation of Mobile Devices for Supporting Home Automation -Agricultural Information System -Intelligent Plant Growth Management
Publication list 論文リスト	[1] S. Uchimura, M. Azuma, Y. Tada, M. Ikeda, and L.Barolli, An Adaptive Anti-packet Recovery Method for Vehicular DTN Considering Message Possession Rate, Proc. of the 35th International Conference on AINA-2021, Vol. 1, pp. 92-101, May 2021. [2] M. Ikeda, N. Ruedeeniraman, L. Barolli, An Intelligenet VegeCareAI Tool for Next Generation Plant Growth Management, *Internet of Things*, Vol. 14, June 2021. (DOI:10.1016/j.iot.2021.100381) [3] M. D. Nguyen, M. Azuma, S. Uchimura, M. Ikeda, L. Barolli, A Hybrid Recovery Method for Vehicular DTN Considering Dynamic Timer and Anti-packet, Proc. of the 36th International Conference on AINA-2022, Vol.1, pp.217-225, April 2022. [4] M. Ikeda, S. Sako, M. Azuma, S. Uchimura, and L. Barolli, Performance Evaluation of a Drone-Based Data Replication Method in Urban Disaster Scenario, Proc. of the 16th International Conference on IMIS-2022, pp. 10-16, June 2022.
Other academic activities / その他の学術活動	Dr. Ikeda has widely published in peer reviewed international journals and international conferences proceedings. He has served as PC Members for many international conferences. He is a member of IEEE, ACM, IPSJ and IEICE. His research interests include wireless networks, mobile computing, mobile ad-hoc networks, wireless sensor networks and vehicular ad-hoc networks.
Remark / 備考	Equipment: Multiple licenses for the Scenargie Network Simulator (https://www.spacetime-eng.com/en/) *Proficiency in Linux techniques is preferred.

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Shuichi
INOKUCHI</td><td>Title 職位</td><td colspan="2">Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="4">Theory and application of discrete transition systems in computer science</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="4">Systems Management Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="4">－</td></tr>
<tr><td>e-mail</td><td>inokuchi@fit.ac.jp</td><td>URL</td><td colspan="2">www.fit.ac.jp/~inokuchi</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="5">(1) Mathematical Analysis of Discrete Transition Systems.
I am interested in and researching properties of cellular automata on algebraic systems such as groups and monoids. In particular, we analyze the reversibility and continuity of the global transition function of cellular automata and the properties related to composition of cellular automata using relation theory, topological space theory, mathematical logic, and so on.
(2) Application of Cellular automata and Discrete Transition Systems.
● Simulation of natural and social phenomena
● Generation of similar patterns of natural and artificial ones</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="5">(1) Commutativity of Composition of some n-Dimensional Cellular Automata on Monoids,International Journal of Networking and Computing,Vol.12, No.1, pp.188-203(2022)
(2) Reversibility of CA-150 with Symmetry Local Structure,Bulletin of Informatics and Cybernetics,Vol.53, No.5, pp.1-7(2021)
(3) Propositional Logic and Cellular Automata on Monoids,Journal of Cellular Automata,Vol.12, No.1-2, pp.27-45(2017)
(4) Cellular Automata Associated with Σ-Algebras,IEICE Transactions on Information and Systems,E99.D, 3, pp.588-597(2016)
(5) A Formulation of Composition for Cellular Automata on Groups,IEICE transactions on Information and Systems,E97.D, 3, pp.448-454 (2014).</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="5"></td></tr>
<tr><td>Remark /
備考</td><td colspan="5"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>SONG, Yu</td><td>Title 職位</td><td colspan="2">Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="4">Operations Research</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="4">System Management</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="4">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>song@fit.ac.jp</td><td>URL</td><td colspan="2">www.fit.ac.jp/~song</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="5">Main research interest lies in the field of operations research and its application in business and social science for decision-making. Especially the following topics:
● Staff scheduling Problem
● Numerical Analysis and Optimization
● Quantum Annealing
● Supply Chain Management</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="5">✓ C. Wang and Y. Song, "An optimization model for vehicle routing in urban cold chain logistics", International Journal of Modeling and Optimization, Vol. 12, pp. 76-81, 2022.
✓ C. Li and Y. Song, "Predicting Direction of Individual Stock Price Movement Using a Hybrid Model", Journal of Economics, Business and Management, Vol. 7, pp. 60-64, 2019.
✓ M. Qiu and Y. Song, "Predicting the Direction of Stock Market Index Movement Using an Optimized Artificial Neural Network Model", PLos ONE, Vol. 11, No. 5, pp 1-11, 2016.
✓ J. Pi, Y. Song, S. Yang and F. Ju, "A Study of Influence upon Inflation Posed by Volatility of Housing Price", Journal of Advanced Computational Intelligence and Intelligent Informatics, Vol. 20, 2016.
✓ M. Qiu, Y. Song and F. Akagi, "Application of Artificial Neural Network for the Prediction of Stock Market Returns: The Case of the Japanese Stock Market", Chaos, Solitons & Fractals, Vol. 85, pp. 1-7, 2016.
✓ Y. Song and M. Hasama, "Some Observations on Resource Allocation in Assembly-like Queueing Networks via Simulation Approach", International Journal of Materials, Mechanics and Manufacturing, Vol. 2, 146-149, 2014.
✓ Y. Song, "The Optimal Service Policies in an M/G/1 Queue with Consecutive Vacations", International Journal of Modeling and Optimization, Vol. 4, 100-103, 2014.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="5"></td></tr>
<tr><td>Remark /
備考</td><td colspan="5"></td></tr>
</table>

Professor Information / 教員情報

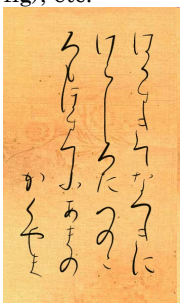
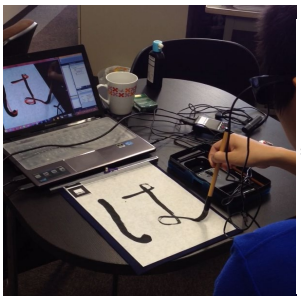
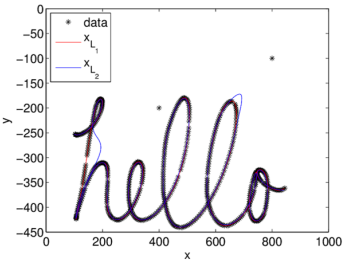
(Graduate School of Engineering / 工学研究科)

Name 氏名	Takuya Tajima	Title 職位	Professor	
Major 専門分野	Industrial Engineering and Sensor Application			
Master's Program 修士課程	Systems Management Engineering一			
Doctor's Program 博士課程	Electrical Engineering and Computer Science			
e-mail	t-tajima @fit.ac.jp	URL	www.fit.ac.jp/~t-tajima	

Research introduction 研究紹介	(1) Attribute Classification Method for Pedestrians Using Plantar Pressure Value This study aims to develop and improve an attribute classification method for pedestrians using plantar pressure value. Now, many retail businesses use some methods for collecting customers' information. However, these methods have some problems. One of the problems is instability for collecting data of customers' information. The member's card can not cover all customers. Moreover, manual classification includes dispersion by individual difference. Using pressure sensors has advantages. One of the advantages is that the pressure sensor does not occur a violation of object person's privacy, because pressure values from the sensors can not identify individual from a large indefinite number. (2) Interior Behavior Identification System Using Pressure Distribution Sensors This study aims to develop an indefinite complaint detection support system using pressure distribution sensors. In this study, the system detects the indefinite complaint by everyday physical movement states in a person's house.
Publication list 論文リスト	(1) Junjirou Hasegawa, Takuya Tajima, Takehiko Abe, Haruhiko Kimura: Development Age Groups Estimation Method Using Pressure Sensors Array, Information Technology Convergence, Vol253 No.2 pp.847-854 (2013). (2) Takuya Tajima, Takehiko Abe, Haruhiko Kimura: Development of Interior Behavior Identification System Using Pressure Distribution Sensors, The Japan Society for Welfare Engineering, Vol.14 No.1 pp.13-21 (2012) (3) Takuya Tajima, Takehiko Abe, Haruhiko Kimura: POS Data Analysis and Considerations for Improvement of Sales: Japan Society for Production Management, Vol.19 No.2 pp.91-98 (2013)
Other academic activities / その他の学術活動	
Remark / 備考	

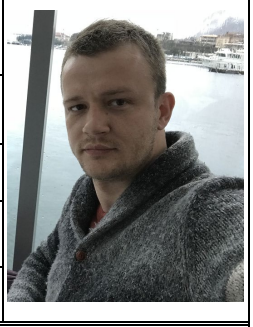
Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Hiroyuki Fujioka</td><td>Title 職位</td><td>Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Control Theory and Its Applications to Information Technology</td></tr>
<tr><td>Master's Program 修士課程</td><td colspan="3">Systems Management Engineering</td></tr>
<tr><td>Doctor's Program 博士課程</td><td colspan="3">Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>fujioka@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~fujioka</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">In our laboratory, we mainly have studied problems of optimally designing curves and surfaces. Such a basic problem is to design a curve (or surface) that passes through or near the given points, while the curve is smooth as much as possible. For such problems, we have developed effective design methods as well as the computational algorithms from mathematical and control theoretic viewpoints.
Moreover, we have applied the design method of curves and surfaces to various applications in the field of information technology. Such applications include the construction of cursive characters (left fig), human calligraphic learning using augment reality (AR) (middle fig) and data compression of digital font which have been used in many electronic device e.g. tablet pc (right fig), etc.
    </td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">● H. Fujioka, H. Kano, and C. F. Martin
Constrained Smoothing and Interpolating Spline Surfaces using Normalized Uniform B-splines, appeared to Communications in Information and Systems.
● H. Fujioka and H. Kano
Compression of Digital-Ink with Pen Slip Using Optimal L1 Smoothing Splines, to be published in the Proceedings of 44th ISCIE International Symposium on Stochastic Systems Theory and Its Applications, Okinawa, Japan, Nov. 1-2, 2013.
● H. Fujioka, H. Kano, H. Nakata and H. Shinoda
Constructing and Reconstructing Characters, Words and Sentences by Synthesizing Writing Motions, IEEE Trans. Systems, Man and Cybernetics, Part A, Vol.36, No.4, pp.661-670, 2006.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">● Grants-in-Aid for Scientific Research for Young Researchers (B), Apr. 2013-Mar.2016
● Joint Research with a Japanese company, project was on trajectory planning of large-size robot, Sept. 2010-Aug.2013</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">We now have 3 master course students (2 Japanese + 1 Thailand persons). From this September, a Thailand master course student will be come in. Moreover, an undergraduate Chinese student in our lab is going to master course from April, 2015.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Kulla Elis</td><td>Title 職位</td><td>Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">IoT-based Data Forwarding, Collection and Applications</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Systems Management Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">－Intelligent Information System Engineering</td></tr>
<tr><td>e-mail</td><td>kulla@fit.ac.jp</td><td>URL</td><td>www.fit.ac.jp/~kulla/</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">My research is focused on wireless sensor networks (WSN) in terrestrial environment and delay-tolerant networks (DTN) in underwater environment. Recent network applications, such as IoT, connected cars, and MaaS generate, collect, and process a larger amount of data (Big Data). By combining a lightweight and power-saving protocol such as MQTT (Message Queueing Telemetry Transport), we can forward these data to entities which can consume them in real-time (IoT), or save them for future analysis and intelligent model training.

Specifically, we are considering the following topics in my laboratory.
(1) Implementing an experimental environment for wireless multi-hop communication, where we can develop and evaluate different protocols
(2) Develop a publish / subscription system for large-scale IoT data, using MQTT protocol.
(3) Develop a combined Mobility as a Service (MaaS), blockchain integrator system that can manage transactions, identity and smart contracts</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">1. Elis Kulla, Makoto Ikeda, Tetsuya Oda, Leonard Barolli, Fatos Xhafa and Aleksander Biberaj, “Experimental results from a MANET testbed in outdoor bridge environment considering BATMAN routing protocol”, Computing, Vol. 95, No. 10-11, pp. 1073-1086, May 2012.
2. E. Kulla, “Evaluating the effect of static components in MANET by simulations”, Journal of High Speed Networks, Vol. 21, No. 4, pp. 273-284, 2015.
3. E. Kulla, “Destination-Aware Focused Beam Routing (D-FBR): A Routing Protocol for Underwater Wireless Sensor Networks”, Journal of High Speed Networks, Vol. 28, No. 1, pp. 1-11, March 2022.
4. E. Kulla, “A Deep Q-Network with Experience Optimization (DQN-EO) for Atari’s Space Invaders and Its Performance Evaluation”, International Journal of Distributed Systems Technologies, Vol. 13, No. 1, pp. 1-13, March 2022.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Actively take part and organize International Conferences, all over the world.</td></tr>
<tr><td>Remark /
備考</td><td colspan="4">I arrived in FIT in April 2022, so my laboratory is relatively new.</td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

Name 氏名	Minoru Kobayashi	Title 職位	Associate Professor	
Major 専門分野	Production Management and Industrial Engineering			
Master's Program 修士課程	Systems Management Engineering			
Doctor's Program 博士課程				
e-mail	kobayashi@fit.ac.jp	URL	www.fit.ac.jp/~kobayashi/	

Research introduction 研究紹介	Our laboratory have studied problems related to production management and/or business management especially production scheduling. Present main research interest is accelerating of computation for the Lagrangian Decomposition and Coordination Method for a Multi-Item Multi-Process Dynamic Lot size Scheduling Problem. Key words: large scale optimization, LDC method, mathematical programming, business informatics, data analysis, management engineering
Publication list 論文リスト	[1] Kenji Muramatsu, Aditya Warman, Minoru Kobayashi, A Near-Optimal Solution Method of Multi-Item Multi-Process Dynamic Lot Size Scheduling Problem, JSME Int. J. Ser. C-Mech. Syst. Mach. Elem. Manuf., Vol. 46, No. 1, pp.46-53, March 2003. [2] Minoru Kobayashi, Kenji Muramatsu, An Extension of Job Shop Scheduling Problem, Journal of Japan Industrial Management Association, Vol. 56, No. 4, pp.246-255, October 2005. [3] Minoru Kobayashi, Kenji Muramatsu, A Scheduling Benchmarking Problem that Reflects Today's Production Environments, Journal of Japan Industrial Management Association, Vol. 64, No. 3, pp. 409-419, October 2013. [4] Minoru Kobayashi, Suppression of Oscillations in Solution on Lagrangian Decomposition and Coordination Method -A Case of a Multi-Item Single-Process Unrelated Multi-Machine Dynamic Lot Size Scheduling Problem-, International Journal of Japan Society for Production Management, Vol. 6, No. 1, pp. 5-12, November 2018.
Other academic activities / その他の学術活動	Grants-in-Aid for Scientific Research (C) (KAKENHI), Apr. 2017- Mar. 2020. Director, The Japan Society for Production Management (2008-) Director, Scheduling Society of Japan (2011-2015, 2019-)
Remark / 備考	

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Jing Fu</td><td>Title 職位</td><td>Associate Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Game Theory and Operations Research</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">System Management Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3">N/A</td></tr>
<tr><td>e-mail</td><td>j.fu@fit.ac.jp</td><td>URL</td><td></td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">Main research interest lies in the field of game theory and operations research together with its application in economics and social science. Especially the following topics:
● Discounted Stochastic Game
● Network Formation Game
● Systemic Risk
● Data Envelopment Analysis (Game)</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">1. Fu, J. and H. Fujii (2023). “Sustainable development of rural regions: metafrontier data envelopment analysis of hometown tax in municipality K”, Asia-Pacific Journal of Regional Science.
1. Fu, J. and F. Page (2023). “A fixed point theorem for measurable selection valued correspondences induced by upper Caratheodory correspondences”. Journal of Fixed Point Theory and Applications, vol. 25, No. 2, 19 pages.
2. Fu, J., F. Page and J-P Zigrand (2022). “Layered networks, equilibrium dynamics, and stable coalitions”, Dynamic Games and Applications, vol. 13, pp. 636-668.
3. Fu, J., H. Fujii and Y. Song (2022). “Existence of pure Nash equilibria in 2-player information diffusion games with strict public preferences”. Central European Journal of Operations Research.
4. Fujii, H., J. Fu and R. Kobayashi (2021). “A proposal for hometown tax strategy by data envelopment analysis – case study of the hometown tax in K City-”. Journal of Japan Industrial Management Association, vol. 71, pp. 149-172.
5. Page, F. and J. Fu (2020). “K-Correspondences, USCOs, and fixed point problems arising in discounted stochastic games”. Fixed Point Theory and Applications, vol. 2020, No. 14, 28 pages.
6. Fu, J., F. Page and J-P Zigrand (2019). “Spheres of influence, tipping points, and endogenous systemic risk in dynamic network formation games”. Proceedings of Asian Conference of Management Science & Applications, vol. 2019, pp. 34-46.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4">Research Associates in Systemic Risk Centre, London School of Economics and Political Science</td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
</table>

Professor Information / 教員情報

(Graduate School of Engineering / 工学研究科)

<table>
<tr><td>Name 氏名</td><td>Hiroshi Takenouchi</td><td>Title 職位</td><td>Assistant Professor</td><td rowspan="5">  </td></tr>
<tr><td>Major 専門分野</td><td colspan="3">Affective information processing</td></tr>
<tr><td>Master’s Program 修士課程</td><td colspan="3">Systems Management Engineering</td></tr>
<tr><td>Doctor’s Program 博士課程</td><td colspan="3"></td></tr>
<tr><td>e-mail</td><td>h-takenouchi@fit.ac.jp</td><td>URL</td><td>http://www.fit.ac.jp/~h-takenouchi/e_index.html</td></tr>
<tr><td>Research introduction
研究紹介</td><td colspan="4">We develop systems that enables people to enrich their daily life by analyzing and understanding human affective (Kansei, 感性) information. Our research fields include various areas and techniques such as evolutionary computation, neural network, fuzzy logic, human interface, preference analysis and so on. We are striving to research daily, with the goal of developing a human-friendly computer system.
Examples of our research themes are as follows:
1) Interactive evolutionary computation systems
This system creates objects that user preferred with user affective information and evolutionary computation technique dynamically [1].

2) Kansei retrieval agents model
This model learns user preferences with fuzzy rules and membership functions in fuzzy reasoning [2–5].

For more detail information of our research, please visit our laboratory website in English (http://www.fit.ac.jp/~h-takenouchi/e_index.html).</td></tr>
<tr><td>Publication list
論文リスト</td><td colspan="4">[1] H. Takenouchi, M. Tokumaru, “Interactive Evolutionary Computation with Artificial Bee Colony Method for Multimodal Preferences Retrieval,” International Journal of Affective Engineering, Vol.22, No.1, pp.1–10, 2023.
[2] Y. Nishimura, H. Takenouchi, M. Tokumaru, “Extracting Preference Rules Using Kansei Retrieval Agents with Fuzzy Inference,” International Journal of Affective Engineering, Vol.21, No.3, pp.181–190, 2022.
[3] H. Takenouchi, A. Hattori, M. Tokumaru, “Music Recommendation System Considering Musical Score Features using Kansei Retrieval Agents with Fuzzy Inference,” International Symposium on Affective Science and Engineering 2022 (ISASE2022), PM-2A-05, 2022.
[4] H. Takenouchi, M. Tokumaru, “Character Design Generation System Using Multiple Users’ Gaze Information,” IEICE Transactions on Information and System, Vol.E104-D, No.9, pp.1459–1466, 2021.
[5] Y. Nishimura, H. Takenouchi, M. Tokumaru, “Preference Similarity Analysis of User preference Rules using a Character Coordination System”, HCI International 2020 - Posters Communications in Computer and Information Science, Vol.1224, pp.167-172, 2020.</td></tr>
<tr><td>Other academic activities /
その他の学術活動</td><td colspan="4"></td></tr>
<tr><td>Remark /
備考</td><td colspan="4"></td></tr>
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