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Welcome to Embodiment Informatics

Professor Shigeki Sugano,
Department of Modern Mechanical Engineering, Graduate School of Creative Science and Engineering
Directorate for the Graduate Program for Embodiment Informatics

Japan’s monsoonek (manufacturing) technology is highly regarded around the world. It creates masses of tangible products from cars and trains to production equipment. Nevertheless, many world-leading innovations, such as Google, Apple, and KEIA, were first established in Europe and the U.S. Some believe that in the monsoonek field Japan lacks human resources with three abilities: foresight, the ability to identify possible areas for innovation; imagination, the ability to imagine advanced technology in a broad range of fields; and leadership and accomplishment abilities. In particular, foresight and imagination are essential in the fields of information and communications technology and mechanical systems to develop new medical, welfare, manufacturing, and social infrastructure. Development of human resources in these fields is a priority that researchers, educators, and entrepreneurs need to address.

Of importance here is how information and communications technology should be integrated with mechanical engineering. Both are core technologies in monsoonek; so many universities and research institutions have been working to combine them. Merely combining them, however, does not achieve technological innovation or integration. Those who are familiar with programming and networking in the field of information and communications technology need to learn mechanical design, while those who are familiar with mechanical design need to learn methodologies in the field of information and communications technology. In other words, there is a need for talented individuals who have completed a course of comprehensive study in a new academic and research field integrating these two technological fields.

For example, developing a surgery support system requires high precision robotic and human interface technologies. If methodologies from the information and communications field, such as networking and high-speed data processing, can be applied to such a system, this new surgery support system will be able to manage large amounts of medical data and can provide appropriate therapeutic procedures. This is a typical example of embodiment information.

If a student learns the core technologies in one of the fields of information, communication, or machinery, graduates from that department, and then goes on to graduate school to study that field, he or she will gain expertise in that field only. However, if a student goes on to graduate school to study embodiment informatics—a program that integrates these fields—rather than going on to graduate school to study each field individually, he or she can successfully develop foresight, imagination, and leadership and accomplishment abilities to achieve breakthroughs. Of course, the study environment is important. If students conduct their studies independently of each other, they cannot generate new ideas in embodiment informatics. For this reason, Waseda University has created an educational space called KOBO (Workshop), where all students come together to study and motivate each other. We strongly encourage motivated students to join the Graduate Program for Embodiment Informatics to exhibit how innovative and world-leading Japan’s monsoonek technology can be.

Targeting human resources and the key to their development

Learn from the past and live in the present

Forbears

Ability to read the trends of the times from an international perspective and identify challenges for innovation

Know the needs and meet them

Imagination

Ability to find systematic solutions to challenges by integrating advanced information, communications, and machinery technologies

Act as a leader with an understanding of what a leader should be like

Leadership and accomplishment abilities

Ability to implement plans to overcome challenges by making effective use of human and material resources

KOBO

Academically stimulating study space

Next-generation systems leader training scheme

Next-generation Systems Leaders

Graduate Program for Embodiment Informatics

Graduate Programs for Embodiment Informatics

### Work Hard in a Stimulating Academic Environment and Become a Next-Generation Systems Innovation Leader

As work continues apace on a global scale to create new technology, significant innovation is required to ensure this technology excels. In the field of information and communications technology, new industries are being created at a rapid pace. In the field of mechanical engineering, which embodies technology in tangible products, significant contributions are being made to Japan’s industrial competitiveness. The integration of these important fields is expected to create new industries and a strong demand for innovative and talented individuals. Our “Graduate Program for Embodiment Informatics” has been selected as part of the Ministry of Education, Culture, Sports, Science and Technology’s “Program for Leading Graduate Schools,” which aims to “advance the establishment of university graduate schools of the highest caliber by supporting the dramatic reform of their education programs in such a way that they will institute degree programs recognized as top quality around the world.”


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Graduate Program for Embodiment Informatics
The Workshop Study Space

Facility study in a shared workspace, which is independent of the laboratories of their academic supervisors, together with other students from different backgrounds. This enables the participants to develop their own ideas and to bring in different perspectives to their studies and broaden their research activities.

HIBOA

HIBOA is a common area in the building, which has multiple functions, such as relaxation, reading, and other activities. Its design enables students to meet with their peers, participate in discussions, and engage in collaborative learning.

Lounges

This can be a social gathering area in which students can relax and interact with each other. The lounges are equipped with comfortable seating, coffee tables, and other amenities to create a welcoming and collaborative atmosphere.

Lab space

In this area, students can conduct experiments and work on their research projects. The lab space is equipped with the necessary equipment and tools to support their research activities.

Personal

Faculty members and students can interact and engage in casual discussions and social events, which foster a sense of community and support among the students and faculty.

Growing up to be a leading researcher both in academic and industry

Zhegong CHENG

Through the leading program, I have received excellent training, including various seminars, workshops, and practical experience. I have also had the opportunity to work on cutting-edge research projects in collaboration with experts from different fields.

In this area, students can work on their research projects and interact with their peers, fostering a collaborative and innovative research environment.

Future Leaders Studying at KOBO

Learning to be a leader thru collaborative works

Kei KASE

As an student of the Graduate Program of Embio-Different, I am currently working in a joint project with other students in the program. This project requires us to brainstorm and collaborate on various topics. Since we are the diversified group composed of students with different backgrounds, it is a great opportunity to share ideas and develop and improve the ideas concept. Collaboration between working with people who have different backgrounds leads to the innovations we have never even thought. Though the interaction level is already valuable in the society, I believe the experience of integration as a part of the program would be crucial for our future careers.

Faculty

We are proud to have a diverse and talented faculty, each contributing to the success of our program.

En руководителем

We also have a strong support system in place, including advisors, mentors, and other resources to help students succeed in their academic and professional careers.

We are committed to fostering a welcoming and inclusive environment where students can thrive and achieve their full potential.
## Integration of Embodiment with Information

### Professors and Lecturers

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Drugyoung Lee</td>
<td>Professor of Electrical Engineering and Computer Science</td>
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<tr>
<td>Young BKROS</td>
<td>Associate Professor of Mechanical Engineering</td>
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<tr>
<td>Yoonjung Yoon</td>
<td>Assistant Professor of Materials Science and Engineering</td>
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<tr>
<td>Taekyoung Kim</td>
<td>Associate Professor of Biomedical Engineering</td>
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<tr>
<td>Minyoung Park</td>
<td>Assistant Professor of Computer Science</td>
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<tr>
<td>Tsunehiro Ikenaga</td>
<td>Professor of Mechanical Engineering</td>
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<tr>
<td>Takeshi Tanaka</td>
<td>Professor of Electrical Engineering</td>
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<tr>
<td>Daisuke Inoue</td>
<td>Associate Professor of Information Engineering</td>
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<td>Tatsuya Kase</td>
<td>Assistant Professor of Mechanical Engineering</td>
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<td>Tatsuya Oiso</td>
<td>Assistant Professor of Mechanical Engineering</td>
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<td>Yoshimi Kato</td>
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<tr>
<td>Shinya Kono</td>
<td>Associate Professor of Information Engineering</td>
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<tr>
<td>Naoko Sugimoto</td>
<td>Associate Professor of Mechanical Engineering</td>
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### Five-Year Education System

The program offers a unique five-year curriculum leading to a Bachelor of Science degree in Information Engineering. The curriculum is designed to provide students with a solid foundation in information technology, mathematics, and engineering principles. Students will have the opportunity to specialize in one of the five core areas: Systems, Networking, Information Processing, Human-Computer Interaction, and Biomedical Engineering.

### Various Career Paths

- **Software Engineering:** Students can pursue careers in software development, system design, and project management.
- **Data Science:** Opportunities in big data analysis, machine learning, and artificial intelligence.
- **Biomedical Engineering:** Applications in healthcare technology and medical device development.
- **Information Security:** Roles in cybersecurity, risk management, and network defense.
- **Robotics:** Engaging in research and development in robotics and automation.

For more information or to explore specific career paths, please visit the program’s official website. For detailed program requirements and course descriptions, please consult the academic catalog.