Access

By Train

☐ From Tokyo (JR Tohoku Shinkansen): About 2 hours and 40 min.

☐ From Narita Airport via JR Ueno Station: About 3 hours and 20 min.

From Sendai (JR Tohoku Shinkansen): About 1 hour and 50 min.

From Aizu-Wakamatsu Sta. (by bus/taxi): About 10 min.

By Expressway Bus (to Aizu-Wakamatsu Station)

☐ From Busta Shinjuku (Shinjuku Station): About 4 hours and 20 min.

By Car

☐ From Tohoku Expressway Kawaguchi JCT: About 3 hours

☐ From Tohoku Expressway Sendai IC: About 2 hours

☐ From Jo-Ban Expressway Misato JCT: About 3 hours and 50 min.

□ From Ban-Etsu Expressway Niigata IC: About 1 hour and 40 min.

□ From Ban-Etsu Expressway Aizu-Wakamatsu IC (121+13): About 10 min.

Fukushima Airport

□ From Fukushima Airport (by expressway): About 1 hour and 50 min.



The University of Aizu

Tsuruga, Ikki-machi, Aizu-Wakamatsu City, Fukushima, 965-8580, Japan

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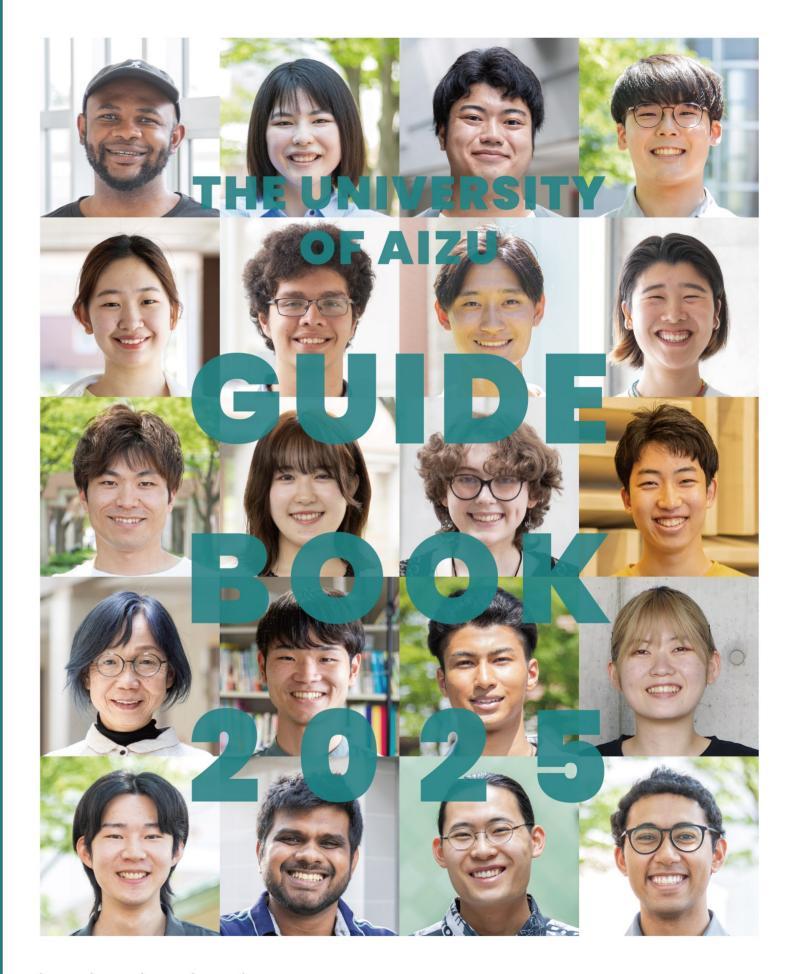
Planning and Tel: +81-242-37-2510 Fax: +81-242-37-2546 Collaboration Division E-mail:cl-planpr@u-aizu.ac.jp

https://u-aizu.ac.jp/en/

Mobile Site ▶









School of Computer Science and Engineering

Connecting Knowledge. Connecting People. Changing Society.

The University of Aizu aims to connect diverse knowledge and people through computer science and engineering, and to be a positive force for change in the local community and society at large.

To this end, we practice "top-down education," in which scientists and researchers from around the world engage in cutting-edge research and demonstrate the fruits of research to students.

Japanese and English are two official languages on campus. Students will naturally develop an international mindset in an environment promoting contact with diverse cultures and values.

As a public university, research results are also used to contribute to solving local issues. By participating in projects, students have the opportunity to acquire viable knowledge and skills through practice.

The learning experience at the University of Aizu will endow the students with the ability to "lead their own lives" and "contribute to others' happiness."

We believe that such interconnection of knowledge and people will be a positive force for change in society.











Contents	
Greetings from the President/ Admission Policy	03
Features of the University of Aizu from the viewpoint of numbers	05
International Activities	07
Flexible Programs	10
Competitions and Regional Contribution	12
Curriculum	13
Courses	15
Laboratory Introduction	17
Graduate School	27
Employment Information & Message	29
Accommodation Support	30
Campus Map	31







The University of Aizu Nurturing World

The University of Aizu was established in 1993 as a university specializing in computer science and engineering. During the Edo period, the Aizu clan, with its Nisshinkan school, was known for its dedication towards education. Continuing the tradition in this modern age, our university has substantially upgraded its educational and research contents based on the changing needs of society. From computer hardware and software technologies to the applied fields of information and communication technology (ICT), rapidly evolving AI, big data, IoT, semiconductors and integrated circuits, medical engineering, robotics, and space-related technologies, our education and research are flourishing.

At the undergraduate level, some 240 students per grade study ICT infrastructure technology, making them the largest student body among information science faculties in Japan. With some 110 faculty members today, each faculty member, on average, provides guidance on graduation thesis to two to three students, which means that adequate personal guidance is given to students. We take pride in the fact that as students study ICT infrastructure technology as well as have their own specializations, we are contributing to addressing the recent shortages of ICT engineers.

Our university stands out among other Japanese universities particularly in the area of internationalization. Since the opening of the university, we have had many non-Japanese faculty members (40% of the faculty today), which has contributed significantly to the internationalization of research. Many of our non-Japanese faculty members have their networks in their home countries and around the world, and routinely conduct international collaborative research. This has resulted in

-Class Specialists

one of the highest numbers of research papers with international co-authorship in Japan. We will continue to leverage these characteristics to create a university that is open to Japan and abroad.

Based on the founding principle of "to Advance Knowledge for Humanity," we will contribute to promoting learning, exploring knowledge, and addressing local and social issues through co-creation with various stakeholders.

We hope that you will study at the University of Aizu, connect with diverse knowledge and people across the world, and be a positive force for change in the local community and society at large.



Admission Policy

The University of Aizu is the first university in Japan solely dedicated to computer science and engineering (CSE). Without question, CSE— encompassing information and communications technology (ICT) has been a technological catalyst since the dawn of the digital age. Heralded as cutting-edge and with a bright outlook, CSE remains poised to bring about exciting new opportunities, and further unlock a new wealth of knowledge and applications with the potential to make the world more advanced and forward-looking than it is today. Founded on the principles "Act Locally, Think Globally" and "to Advance Knowledge for Humanity", since its beginning in 1993, the University of Aizu has conducted world-leading research and education in CSE, spearheaded by its own faculty comprised of highly accomplished researchers from all around the world. Partially owing to its unwavering commitment to global recruitment of faculty talent, the University of Aizu embraces an exceptionally culturally diverse academic environment: the level of success the University of Aizu enjoys today in that pursuit is unrivaled across the country

The University of Aizu specifically looks for the following qualities in student applicants: students who are eager to be guided by the University's mission "to Advance Knowledge for Humanity" while thriving in a field of CSE: students who are eager to have a global vision, aspirations and objectives while living in the Aizu area.

The University of Aizu is committed to educate:

- creative minds, cross-culturally competent aspiring researchers, IT leaders and entrepreneurs with a strong sense of ethical integrity, who are determined enough to make their mark in tech innovations.
- enthusiastic students aspiring to make a leap forward in cutting-edge CSE research for the benefit of society.
- 3. standard-bearers who are eager to salute the growth of Fukushima's local industries, give moral support to them, and uphold Fukushima's homegrown culture through education and research.

Taking into account the above, an ideal undergraduate student (incoming freshman) must possess the qualities as follows.



An Ideal Undergraduate Student (Incoming Freshman)

An ideal undergraduate student (incoming freshman) is one who can demonstrate mastery of basic academic skills, is ready to take on the intellectual challenges of college level coursework, is ready to study CSE fields with ease, and furthermore possesses either one or both of the following attributes:

- one who exhibits strong intellectual curiosity and passion, is ready to delve into the world of CSE, and recognizes the hallmark of the University of Aizu's unique undergraduate program well enough to list the University of Aizu as their first-choice school.
- one who aspires to make a difference to the world through applying their ICT knowledge and skills.

To select such talents, the University of Aizu has set the following policy.



Basic Admission Selection Policy

The University of Aizu administers a written exam as the means of identifying academically meritorious applicants who possess fundamental skills specifically in mathematics and English.

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An unparalleled computer environment, in-depth English education, top-level faculty from around the world...,the University of Aizu offers an exceptional environment for training professionals capable of playing active roles in the world. Education at the University of Aizu is attracting attention not only in Japan but also around the world.

Features of the University of Aizu from the viewpoint of numbers

The University of Aizu is ranked between 601st-800th (11th among Japanese universities) in THE World University Rankings 2024!

The University of Aizu was ranked 11th among Japanese universities in the THE World University Rankings 2024, published by the British magazine Times Higher Education (THE) on September 27, 2023. The ranking is based on analysis in five areas: teaching, research environment, research quality, international outlook, and industry income. The University of Aizu was ranked 1st among public universities in Japan.

A computer environment with about 3,000 computer terminals -2.5 computers per student!

The most notable features of the University of Aizu are its excellent computer education and research environment. A multimedia computer network has been established on campus to provide students with an ample number of computers and an environment for developing skills necessary for a broad range of cutting-edge research fields from basic research to applied research. For off-campus connection, the university uses SINET6, an academic information and communication network constructed and operated by the National Institute of Informatics (NII) as an academic backbone network for universities and research institutes all over Japan.

Terminals

Joint research with universities overseas!

Committed to internationalization of education and research ever since its founding, the university has exchange agreements with 109 universities and research institutes in 29 countries and regions around the world.



Computer science and engineering field

Computer science and engineering at the University of Aizu provides a gateway to different fields through computers. Which fields would you like to explore through computers? Find out at the University of Aizu.



For more about this field, see "VILLEGAS Julian's lab" on p 18.



For more about this field, see "WATANOBE Yutaka's lab" on p 21



For more about this field, see "JING Lei's lab" on p 19.



For more about this field, see "DEMURA Hirohide's lab" on p 24



"YOSHIOKA Rentaro's lab" on p 22



For more about this field, see "NARUSE Keitaro's lab" on p 25



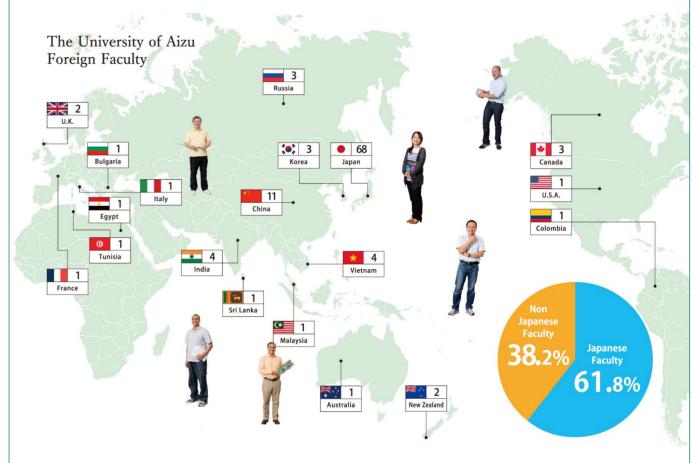
About 40% of the faculty are foreign teachers!

Because English and Japanese are the official languages at the University of Aizu, outstanding researchers gather at the university from all over the world. As a result, approximately 40% of all faculty members are from outside Japan.



English education with a focus on international awareness

Computer science and engineering are disciplines based mainly on English, so a high level of English proficiency is essential. Therefore, rather than having a curriculum for a second foreign language, the University of Aizu provides thorough English education, and students must achieve a certain TOEIC score in English proficiency to advance from the second year to the third year in undergraduate programs. All students must also prepare and present their graduation thesis in English, which is an aspect of our University's education that is attracting attention from computer-related companies



A teacher is always nearby!

The student-faculty ratio at the University of Aizu is 10 to 1, which is considerably lower than the national average of 20.3 to 1.* Many classes are organized for a small number of students, and teachers are always on hand, so students can receive attentive instruction. (*From Asahi Shimbun x Kawaijuku Joint Survey, "HIRAKU Japanese Universities," 2015)

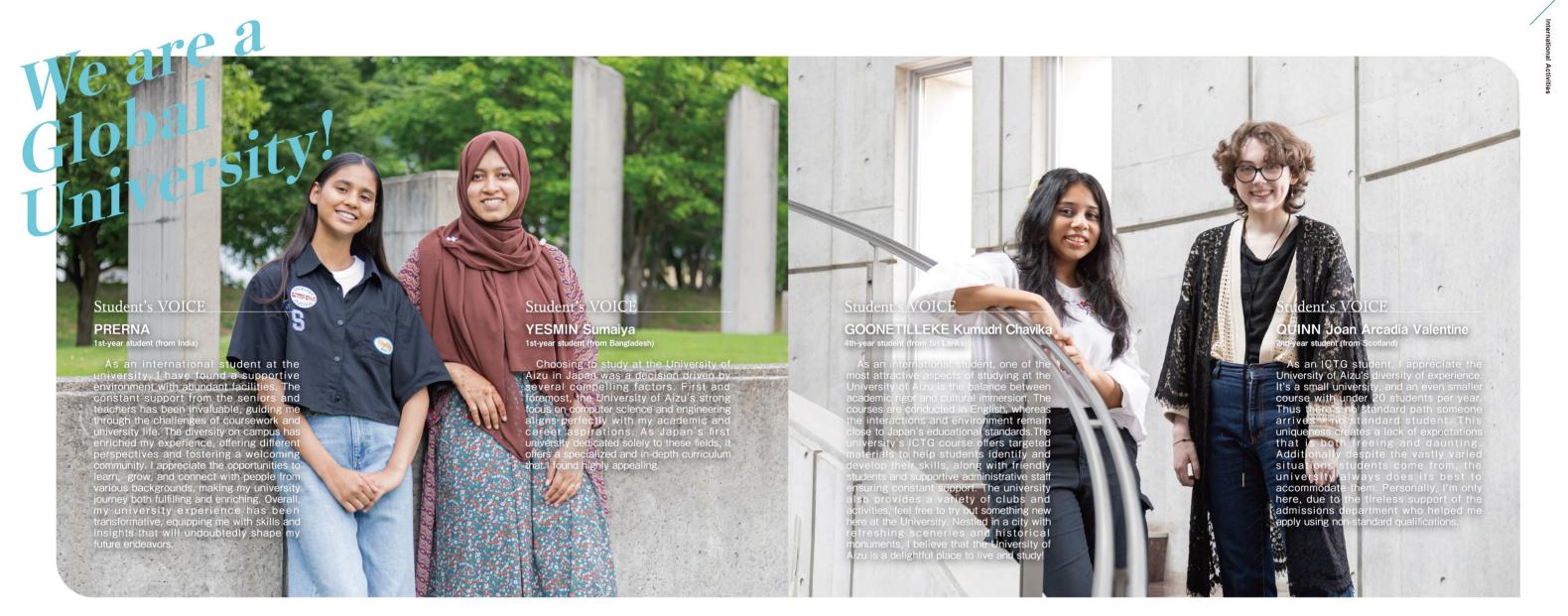


University of Aizu students come from all over Japan and the world!

More than half of the students enrolled are from outside the prefecture. There are many students from abroad as well. By studying together, students can expand their world by learning about differences in cultures and environments.

32%:68%





ICT Global All-English Program

From the first year of undergraduate study, the ICT Global All-English Program enables students to take general education and advanced courses entirely in English and graduate. Focusing on innovation and future possibilities of ICT, the program covers a wide range of computer science and engineering. Japanese language courses and experiences in Japanese cultural activities are also provided to instill in students understanding of the regional identity. The students can learn to apply that knowledge globally.

[Features of the Program]

©As with the university's general curriculum, the program is based on the ACM-IEEE Curriculum, a global educational standard in the field of computer science.

The program provides active learning in small groups, hands-on education, and workshops.
 Students are encouraged to do internships with a Japanese company or do internships or overseas training in a country other than their native countries.



Others

All academic activities are conducted entirely in English.

Japanese language lectures and cultural experiences are also provided.

	Application Guide for Admission
Eligibility	Individuals who have completed a 12-year school education equivalent to that of Japanese high school graduates
Requirements	Academic Proficiency: ACT, EJU, A-level, IB, AP, Gaokao (China), HKDSE (Hong Kong), Class XII examinations (India), STPM/UEC (Malaysia) /English Scores: TOEFL iBT, IELTS, TOEIC or EIKEN
Application Period	February - March
Tuition (JPY)	520,800, Payment in two installments of 260,400 each by the end of May and November

One-time Admission Fee (JPY)	
dmission Fee	564,000
surance Fee	9,380

Total 643,380

70,000

Collaboration with overseas partner universities and establishment of innovation hubs

To date, the University of Aizu has engaged in research and concluded academic exchanges with 104 universities and research institutes in 29 countries and regions. The university hosts domestic and international conferences every year. Overseas, the university has set up "innovation hubs" in Silicon Valley in the United States and Dalian and Shenzhen in China to learn about the world's most advanced technology and collect information. The University of Aizu also conducts overseas training programs and research presentations, and provides opportunities to interact with local engineers. The university itself also serves as a hub for gathering and disseminating information locally.







As a person who completed high school in English and did programming as a hobby, ICTG course was a perfect fit. The classes consist of global set of students and it has been such an intellectually stimulating experience that allowed me to get introduced to diverse cultures. Thanks to the support of passionate professors and motivating friends, I am having not just productive but enjoyable life in UoA.



Student's VOICE EINHEUSER Kiran 1st-year student (from Hong Kong)

As someone who is still learning the Japanese language, the ability to study here in Japan in the English language provides a comfortable environment for my skills and learning to develop while granting me the means to progress my Japanese language ability. The course has provided a strong foundation in computer systems and programming, as well as expanding on the mathematics learnt in high school.





Study Abroad and Internships

For students who are motivated to study and research overseas, the University of Aizu provides opportunities to study and train overseas by arranging various programs to suit the stage and objectives of each student's study. Students can obtain credits from the University of Aizu for short-term programs. The university also recognizes credits students earn during medium-term overseas study programs as credits of the University of Aizu.

Specialized research and education, technical skills

■ Internship

Development of prototypes related to IoT (Internet of Things), Al. etc., and visits to renowned universities and companies.



■ Internship

Training on international ICT husiness planning at Dalian Neusoft University of Information and an internship at a local company.



Overseas business development project

Training and planning an international virtual ICT business at the innovation creation facility of Dalian Neusoft University of Information in China.



Place Dalian, China

Medium-term study abroad progran

Overview: Study abroad for a period of 3 months to 1 year at a university with which the University of Aizu has signed an agreement.



ose-Hulman Institute of Technology (United States), Karlsruhe University of Applied Sciences (Germany), Ostbayerische Technische Hochschule Regensburg(Germany), or other university/research institutes with which the University sity of Aizu has an exchange agreement.

This is a program that students undertake research, participate in an internship and obtain credits. The University of Aizu provides a certain amount of financial support with travel and accition expenses necessary for overseas study. Students stay in student dormitories, etc.

students who have experienced study abroad and other programs from

Short-term/medium-term study abroad, English experience program for study abroad preparation, etc.



Overseas internship program/over seas business development project



Multicultural Campus and Globalization of the Local Community

The university offers an environment where international students from across the world and Japanese students study together, enhance international awareness, and form a strong international network that will continue after graduation. Extracurricular activities, such as club activities, exchange with local residents, and international cultural events, promote lively interaction between residents and students and support international relations on campus as well as in the local community.

■Global Lounge

This is a space where international students and Japanese students can deepen their understanding of different cultures and improve their language skills in a friendly, relaxed atmosphere. Students can learn languages and interact in "International Talk" during lunch time or have conversations about a wide range of topics in "EEE-Chat" (English) and "JJJ-Chat" (Japanese).

https://u-aizu.ac.jp/osip/en/abroad/gl.html



■Buddy Program

This is a program in which Japanese students provide support to international students who have just enrolled in the university in their classes and everyday lives. This also helps Japanese students improve their English communication



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■ International activities in the community

Japanese and international students engage together in activities to reinvigorate the local community and promote international and regional exchange.



nternational Exchange at the University of Aizu



■Aizu Geek Doio

Aizu Geek Dojo is a space with a seminar area and a workshop area containing equipment and manufacturing facilities. It is a place where students interested in a startup business and students who like technology get together and interact. Students

can give presentations and hold events in the seminar area, and in the workshop area, students can use equipment, work on electronics, and hold workshops.



Honors Program

The University of Aizu offers the following two programs for outstanding students and students with unique talents who plan to pursue independent activities: Integrated Undergraduate-Master's Program and Unique Talent Discovery Program

ntegrated Undergraduate-Master's Program

Students in this program complete an undergraduate and Master's degree in five years, during which time they may take up to one year's special leave for their Honors Year study.

Type A Graduate from an undergraduate program in 4 years → Complete Master's program in 1 year

Type B Graduate or withdrawal from an undergraduate program in 3 years → Complete Master's program in 2 years

Students accepted in an Integrated Undergraduate-Master's program may apply for a scholarship upon their admission to Graduate School.

Unique Talent Discovery Program

This is a program for discovering and nurturing the development of a unique talent. Students who qualify can receive various types of support.



Student's VOICE

KOKUBUN Kota

Master's Student (from Fukushima Prefecture)

To set a goal in my otherwise rudderless university life. I started to think about the Honors Program. The program kept up my motivation for study and gave me invaluable experiences such as making a presentation at an international conference after moving on to graduate school. It helped me recognize early on and overcome my ignorance and to feel the joy of satisfying my immense curiosity. Though I may stumble along the way, I hope to put faith in the knowledge and the thought process honed through this experience, and go forward a step



Student's VOICE

ISHII Daichi

Master's Student (from Miyagi Prefecture)

I am now writing my international thesis, a requirement for completing my Honors Program. It is a difficult path because you have to complete in a short period of time what would normally take more than a year. But it's worth it. Nothing ventured, nothing gained, whether successful or not. In addition to the Honors Program, the University of Aizu offers an environment for those who are willing to take on challenges.

The University of Aizu offers a wide variety of subjects as well as Student Cooperative Class Projects and venture experience workshops to flexibly provide for the interests of students from their first and second years.

Student Cooperative Class Projects (SCCPs)

Student Cooperative Class Projects are classes where students select a research theme and engage in practical training and research from their first year. Of course, it is difficult to undertake research in full scale from the first year, so the program is designed to allow students to work on projects without special knowledge and skills. In addition, these classes give first-year students the opportunity to visit laboratories and seek advice on their studies and research. In that way, they can deepen their relationships with teachers and seniors.



The aim is to build applications and services that can be used on campus. *As of the first half of AY2024

CATEGORY

Total of 26 projects including the development of competition robots

Venture Experience Workshop

"Venture Experience Workshop" is the name given to courses taught using PBL (Project Based Learning: project-based problem-solving learning), a practical educational method that has been attracting educators' attention. Students identify issues relevant to the university, companies, or region, and work in teams to address a particular development theme and implement their solution. They can also receive advice directly from professional engineers, and experience starting-up a venture business and/or developing software under circumstances similar to those in the actual industrial world.





In this class, each student can work in his or her own fields of interest while maintaining a focus on bio-signal measurement and analysis. Each member can set his or her own theme, such as "Research and development of measurement devices and analysis algorithms for various biological signals such as ECG, PWV and EEG." Lecturers and TAs give advice for solving attempted problems. Through this course, students can attain knowledge and skills, mainly in biomedical engineering, and develop their problem-detection skills, problem-solving ability, and capacity for imagination.

CATEGORY

Basic Knowledge Course on starting up ventures Venture Experience Workshop (6 workshops in total)

Competitions and Regional Contribution

Hosting of Competitions

The University hosts "PC Koshien," an annual programming contest for high school and technical college students nationwide.

Participation in the International Collegiate Programming Contest (ICPC)

The International Collegiate Programming Contest (ICPC) is an international competition in which prominent universities around the world match wits in the field of computers. The University of Aizu team has passed through the domestic qualifiers and advanced to the Asian Regional Contest every year, and works hard to qualify for the World Championships. So far, the team has participated in Asian Regional Contests held in 8 countries including Japan, Korea, Taiwan, Thailand, Singapore, and Malaysia, and they have also participated in the World Championships in 2009, 2016, 2017, and 2020.



ACM-ICPC World Finals 2017 in Rapid City (USA)
(Placed a 56th out of 133 universities. It was the second time in eight years.)

https://u-aizu.ac.jp/circles/acpc/



Regional Contribution

One of the University of Aizu's founding principles was "contributing to the industry and culture of Fukushima Prefecture," and it has been working to promote activities that contribute to the region ever since. We proactively collaborate with local industries to create new industries centered around our research and technology in partnership with local companies.

University-Business Innovation Center (UBIC)

"The University-Business Innovation Center (UBIC)" was established on campus as a gateway and a hub for university-industry collaboration. UBIC creates innovative ideas and engages in collaborations with the local community as a means of sharing the UoA's research and educational achievements with industry and the region.



University-Business Innovation Center (UBIC

Reconstruction and Creation Support Center (RACS)

To contribute to the reconstruction of Fukushima Prefecture, we are engaging in various research projects in our advanced ICT laboratories equipped with data centers, promoting innovation through industry-academia collaboration in our "Aizu Open Innovation (AOI) Meetings," and making efforts to nurture the development of ICT human resources.

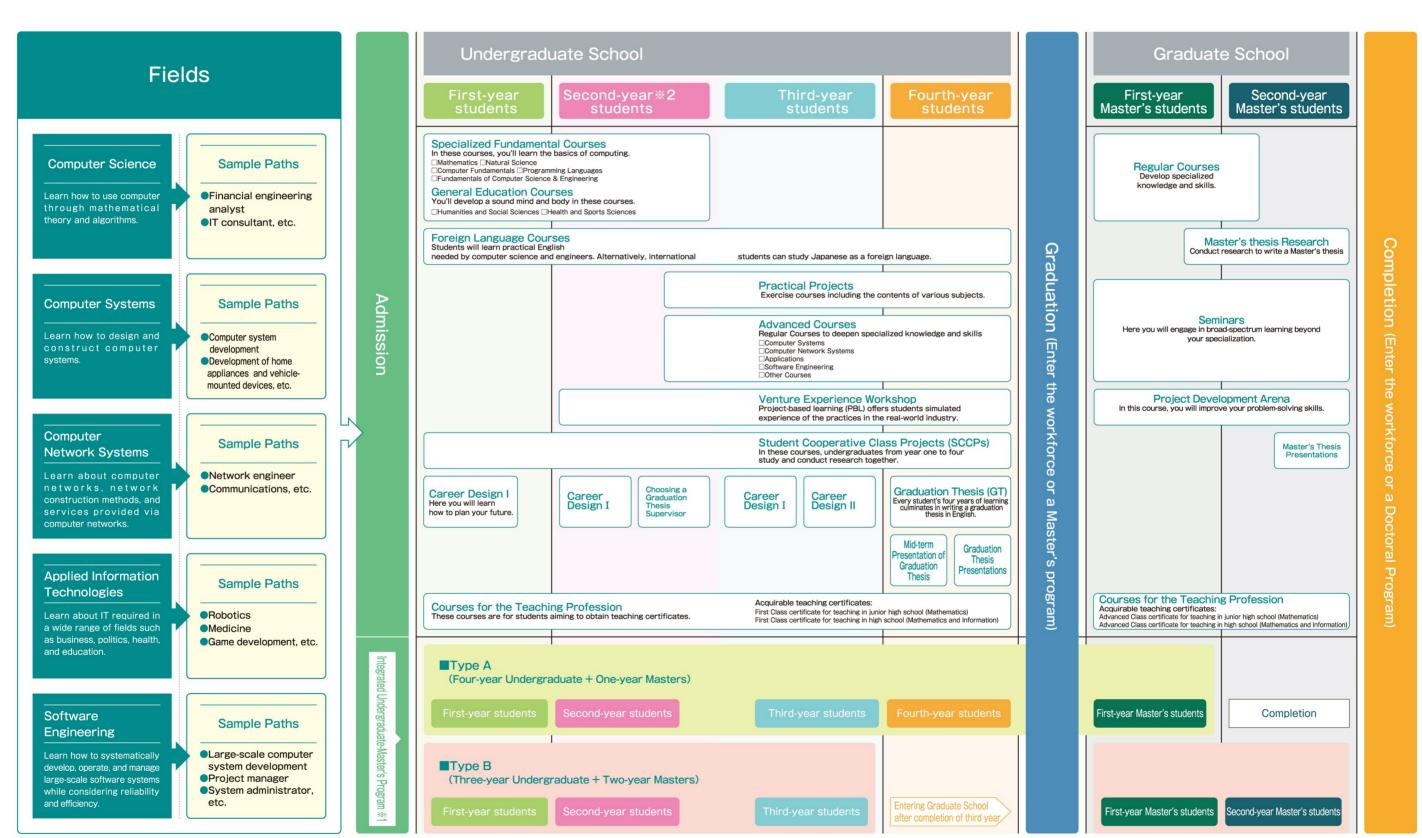


Reconstruction and Creation Support Center (RACS)



your chosen

The curriculum of the Undergraduate School comprises 5 fields. Studies in each field will satisfy students' diversified intellectual curiosity: "What are the fundamental principles of computers?" "I want to design computers." "How does the Internet work?" "I am interested in robotics and medical science." "I hope to develop a large-scale computing system." Under this curriculum, students can take courses in specialized fields corresponding to their plans for the future. But students do not need to make decisions about everything from the beginning of their study. Under the guidance of course advisors and graduation thesis supervisors, they decide on their particular field in their third year, but they are allowed to change it. The University of Aizu offers flexible support so that students can develop their talents and strengths more naturally and more fully.



^{*1} Integrated Undergraduate-Master's Program: Type A (4 years Undergraduate + 1 year Master's). Type B (3 years Undergraduate + 2 years Master's). For example, integrated undergraduate and Master's students can obtain an Honor's Year (special leave of absence) up to a maximum of one year for their own study (such as overseas study or an internship) while enrolled at the graduate school.

^{*2.} Students must meet credit requirements and achieve a specified TOEIC score to advance from second to third year in undergraduate programs.

Specialized Fundamental Courses

Learn the basics

Specialized Fundamental Courses are categorized into five groups: Mathematics, Natural Sciences, Computer Literacy, Programming, and Fundamentals of Computer Science and Engineering. Students learn the basic computer knowledge they will need, before going on to advanced courses.

Introduction to Programming



Quite a few of the new students learn programming for the first time after their entrance to UoA. In this class, you start from the basics. learning the most popular programming language C. This course is aimed at helping you learn how fun programming can be, and faculty member and TAs give every possible help for you to learn.

Mathematics Computer Fundamentals

□Linear Algebra I·II ☐Introduction to Computer Science and Engineering
☐Introduction to Computer Systems
☐Information Security □Calculus I·II □Fourier Analysis □Complex Analysis
□Probability and Statistics

Information Ethics

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☐Mathematical Logic ☐Introduction to Topology Introduction to Multimedia Systems Applied Geometry and Topology Introduction to Computer Networking Applied Algebra Creativity Studio

CSF Exercise I-II Information and Occupations Fundamentals of System Development and Project Management

Programming Languages

□Introduction to Programming Thermodynamics and Statistics C Programming JAVA Programming I JAVA Programming I 1C++ Programming

Fundamentals of Computer Science & Engineering

□Algorithms and Data Structures I

Discrete Systems
Logic Circuit Design

Operating Systems Automata and Languages

Introduction to Data Management Algorithms and Data Structures II □Information Theory and Data Com

pression Computer Architecture

Language Processing Systems

Numerical Analysis ☐Introduction to Software Engineering

Advanced Courses

Deepening specialization

Advanced courses are categorized into five groups: Computer Systems, Computer Network Systems, Applications, Software Engineering, and Other Courses. These courses enable students to gain confidence as computer scientists and/or computer engineers as they acquire essential knowledge and skills for these professions.

Advanced Logic Circuit Design



Logic design refers to the two-valued (0-1) logic design of functions to be realized within the digital integrated circuits comprising the central processing unit (CPU) of a computer. In Advanced Logic Circuit Design, you will learn a hardware description language (HDL) actually used in design, and about design support tools and their usage.

C A T E G O R I E S

Computer Systems

□Embedded Systems
□Parallel Computer Systems
□VLSI Design
□Advanced Logic Circuit Design

Computer Network

□Network Security □Network Programming □Wireless Networks ☐Modeling and Simulation of Com-

Applications

Artificial Intelligence Computer Graphics
Image Processing
Robotics and Automatic Control
Human Interface and Virtual Reality Signal Processing and Linear Sound and Audio Processing Geometry for Visual Computing
Information Retrieval and Natural
Language Processing

Software Engineering

Web EngineeringAdvanced Software Engineering □Software Studio □Concurrent and Distributed Computing □Introduction to data science with □Introduction to big data analysis

Student's Voice



JALLOW Cherno Suwaidou 1st-year student (from Gambia)

Since joining Aizu University, I've come to deeply appreciate several aspects of the institution that have made my experience both positive and enriching. In particular, the support for international students is excellent. Initially, I was concerned about navigating the various processes, especially since I don't speak Japanese. However, the staff has made everything so much easier, guiding me through each step with great efficiency and care.

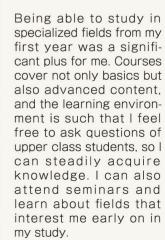
ANDO Lui 2nd-vear student (from Aichi Prefecture)

Many University of Aizu students earn all required credits by the end of third year so they can focus on research in the fourth year. The university also supports undergraduates considering studying at the graduate level by offering advanced courses and allowing them to register for one graduate course each semester.



PANDA Dwitipriya

3rd-vear student (from India)



Integrated Exercises

Natural Science

Electromagnetism

Quantum Mechanics

Semiconductor Devices

□Dynamics

Acquire comprehensive abilities

Students in these courses acquire knowledge and skills regarding computer systems and software through practical exercises that cover a range of subjects without concentrating too heavily on any particular ones.





*Driven researchers creating the future

"To Advance Knowledge for Humanity," we will make discoveries and inventions that will contribute to peace and prosperity for humankind. We have researchers with this vision of the University of Aizu in mind, who continue to take on challenges in the world from our local campus. Our researchers also do their utmost to support students who are eager to take up the "challenge" of creative research.



Al Research for More Enjoyment and Better Future Lives

Al can sometimes be so good as to beat shogi masters and world chess champions. This may make playing games with the computer unexciting, however. If so, the essential "fun" element of playing games would be lost, and no one would play games anymore. If the character you control in a game can move realistically like us humans, we can bond better with the character for a more immersive, enjoyable gaming experience.

Creating realistic characters requires studying and recording human behavior in detail and identifying commonalities. All makes it easier to create human-like characters. Our research has significant potential to benefit not only gaming, but also education and medicine. Our research on the use of Al to make gaming more enjoyable not only gives us better understanding of humans, but also contributes to making our future lives better.

Professor's Message



Senior Associate Professor

Underdeveloped Technology for Sound Communication Has Substantial Potential as a Research Field

We rely heavily on vision to gather information, especially through devices like televisions and smartphones. Smartphones are particularly convenient for tasks like internet searches and navigation. While sound surrounds us, its use for conveying information is often limited to specific instances, such as train announcements or pedestrian signals.

Because most information comes through screens, our vision is overloaded. For example, focusing on a smartphone can distract us from our surroundings, leading to accidents, especially in crowded cities. Texting while walking is especially dangerous. If some information could be conveyed through sound, like via loudspeakers or headphones, it could enhance safety and improve our lives.

Integrating vision and sound in various contexts could significantly improve communication and information delivery. While research in this area is challenging and underdeveloped, it offers many opportunities for technological innovation. If you're interested in sound, let's collarate and explore these possibilities.



Professor's Message



Senior Associate Professor

/17

Professor's Message



Senior Associate Professor

Acquiring Skills for Designing Sustainable Circuits in Aizu Where Manufacturing is Embedded in Its Culture

Mission-critical systems in infrastructure and healthcare call for hardware and software that offer quality, reliability, redundancy, and fault tolerance. Fault tolerance is essential particularly for AI, the failure of which could cause serious malfunctioning that could lead to human casualties. Application of existing fault-tolerant technologies to AI systems, however, significantly increases the integrated circuit size, power consumption, and cost. At our research lab, we try to establish integrated circuit design for fault-tolerant AI that will detect sudden failures and maintain sufficiently accurate fault recognition with low computational power and small integrated circuit size. This technology can be used in wearable medical

devices and in satellites. Our university offers an extensive curriculum for circuit and system design not available at other universities. Why not create something uniquely yours in Aizu, where the spirit of manufacturing is embedded in its culture?





SHILD alchi Master's Student (non-high) of Price Land CHALLENGE: Computer Science and Engineering for Speech Models CHALLENGE: Computer Science and Charlenge for Speech Models CHALLENGE: Charlenge for Speech Models CHAL

Professor's Message



Professor

Computers & Technology Open up a World of Audio Right Before Your Eyes

Welcome to the Phonetics Lab at the Center for Language Research (CLR)! We explore how sounds that make up a language are generated and recognized. We use our lab equipment to examine ultrasound images of the tongue moving during speech as one would view fetal movement, observing in real time how different parts of the tongue move as it produces different sounds. Computerized image processing is also used to compare tongue movements between different languages. Praat software is on hand for acoustic analysis. By recording and analyzing speech sounds, characteristics such as pitch and volume can be visualized, helping us understand the composition of speech sounds and how they change. Pho-

netics is useful not only for understanding the mechanism of speech, but also for improving our ability to communicate and studying the diversity of human languages. We look forward to welcoming you to the Phonetics Lab, which offers an attractive environment for you to enjoy exploring the science of speech!



Professor's Message



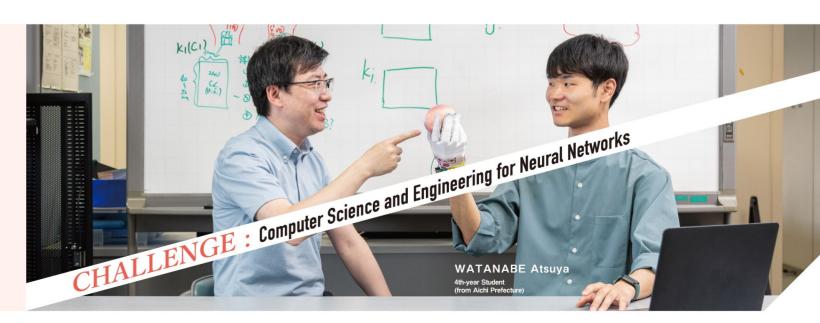
Senior Associate Professor

The Fusion of AI and Sensing Technology Changing the Future of Agriculture and Nursing Care

Recent advances in AI have had a significant impact on modern society. In addition to voice recognition, self-driving cars, and autonomous food delivery robots, AI can be integrated with sensing technology to be used in nursing care as well as agriculture which are beset by problems of ageing farmers and shortage of successors. For example, peaches and apples can be damaged and cannot be sold if too much pressure is applied on them while harvesting. Adjusting the pressure is difficult for inexperienced workers, but with gloves that correctly adjust the pressure, the fruits can be easily harvested, contributing to solving the problem of shortage of successors and the workforce. For those with walking difficulties and

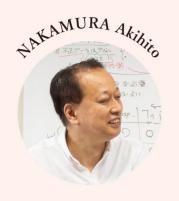
older people, pressure sensors can be attached to their shoes for analysis of pressure areas for rehabilitation and prevention of a fall. The University of Aizu has an environment for conducting research seamlessly on the programming of these solutions, developing the software for controlling the algorithms, and providing the hardware for actualizing the movements.





/19

Professor's Message



Professor

Advanced Security Necessary to Counter-Evolving Cyberattacks

Personal computers, smartphones, and smart speakers are integral to our lives today. Home appliances can be controlled via the Internet for our convenience. At the same time, there has been an increase in cyberattacks against businesses and cybercrimes against ordinary citizens. It is beyond human capacity to deal with the massive amount of server access logs during a cyberattack, but in recent years, Al has solved this impractical problem. Advances in Al have led to the development of technologies for detecting cyberattacks, analyzing system flaws and risks, and verifying security measures using simulated attacks. My research also addresses issues more familiar to the general public regarding Internet use, such as risk anal-

ysis of information disseminated across social media, measures against phishing scams, and online privacy protection. The University of Aizu is training professionals in the security field, which is growing in importance by the day.





PALLENGE: Computer Science and Chyprostophological Computer Science and Chyprostophological Chyprostopholo





Professor

Aspiring to Develop Software that Helps to Solve Local Issues

The accuracy and efficiency with which computers operate are only possible with the sophisticated "software" humans developed. The operating system is the software that runs the computer and it is also software that makes word processing, Internet browsing, and virus protection possible. Robots in car factories are run by software to consistently turn out automobiles of identical quality. In this age, humans and computers are expected to start to communicate with each other to solve intractable problems. To maximize computers' capabilities, humans need to understand the information and calculations posited by computers, support them in thinking and decision-making processes, and clearly communicate our intentions to computers. Software developers of tomorrow are expected to identify and solve social and community issues. At the same time, we need to develop

highly conscientious talents willing to solve problems using Al and IT. I hope you will use what you will learn at the University of Aizu to solve local issues.

Professor's Message



Senior Associate Professor

Learn the Foundational Skill of Programming and Aim to Become a Scientist-Engineer

 $\sqrt{21}$

In Society 5.0, software will become the mainstay in all spheres of society, with data-scientist AI at its core. At the heart of software are programs. Programming is a means to developing all kinds of systems and running calculations. Education in programming skills has become mandatory because they are essential for advancement of society and science. In my lab, we explore intelligent software engineering and develop AI-assisted programming technology and a smart system for supporting education. For example, the Aizu Online Judge (AOJ) we developed and operate has 150,000 registered users from Japan and abroad, and its services and educational data are used widely by educators and researchers around the world. Today's engineers need to be proficient in data science

and software development. Come and study at the University of Aizu and aspire to become a talent essential for advancement of modern society and science.





ARC-Space

Aizu Research
Center for Space
Informatics

CAIST

Research Center for Advanced Information Science and Technology

Dimorphos

Research Center for Advanced Information Science and Technology (CAIST) was established in April 2009 as an organization conducting advanced research based on computer science and engineering in collaboration with other institutions. It aims to use research results to promote local industries and create new industries. Many students are participating in research at CAIST. Currently, there are three priority research areas: the Robot Information Engineering Cluster, the IoT Cluster, and the Vision Cluster. ARC-Space designated the Center for Lunar and Planetary Exploration Archive Science by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in April 2019. This ARC-Space developed out of CAIST to become an independent center as a joint usage/research center for collaborative researchers in information science and space one.

ARC-Space and CAIST use research results directly connected with the needs of society to promote regional industries and create new industries. These are some of the ways in which ARC-Space and CAIST use research results directly connected with the needs of society to promote regional industries and create new industries.



Professor's Message



Professor

Inheriting the Spirit of Space Exploration, Expertise, and Participating in the world's cutting-edge Projects

You may have heard about the asteroid explorers Hayabusa and Hayabusa2. The onboard communications equipment, the impactor for reaching deep under the asteroid's surface, and the parachute in the sample capsule returning to the Earth were all developed and manufactured by companies and factories in Fukushima Prefecture. Furthermore, University of Aizu students took part in research into analytical methods, development of onboard observation instruments and software, sharing of data products, and disclosure of analytical know-how. Most space technology development projects, especially global ones, take from several years to close to a decade to complete. Each successive generation of students at the university has continued to make improvements through research, and passes on their expertise, sense of purpose, and dreams to the next generation of students. Most universities rarely offer students the chance to be part of such cutting-edge projects. Dream big and without bounds! We invite you to join us in lunar, Martian, and asteroid space development projects.

Professor's Message



Professor

AI-Generated Software Expanding Possibilities of Robots

Robots need all of their movements programmed. For example, a robot opens a door by (1) finding the door knob with a camera (object recognition), (2) understanding the knob's location, orientation, and shape (shape and orientation estimation), (3) deciding on its arm movement (motion planning), and (4) executing its movement (motion control). Until now, humans did all of this programming. With the development of AI and robot simulators, however, it is now possible to run millions of simulations on the robot's movements in virtual lifelike space, resulting in safe and more natural movements by the robot. On the other hand, replicating soft and flexible movement in robots and adjusting how hard or soft the robot might apply pressure on objects have been a challenge. But even this can be overcome one day by combining AI with sensor and robot control technology. Why don't you join us at the University of Aizu to pursue the possibilities of robotics that AI is now expanding.





Professor's Message



Professor

Leveraging Gesture Recognition Research in Medical Field and Improving QOL

In my lab, we do research on human-computer interaction as well as pattern processing and recognition based on signal and image analysis, including for character recognition, signature verification, font generation, and human identification. Nowadays, we often use our fingers to input information from the touch screen on our smartphones and pen tablets. Instructions to computers can also be given by voice or line of sight. Extending our research on pen tablets and on gesture recognition in human-computer interaction to the medical field, we are conducting joint research with other universities on "diagnosis of Parkinson's disease based on handwritten characters," "diagnosis of severity of Parkinson's disease based on hand gestures," and "identification of developmental disorders in children based on handwritten characters." We also conduct research for improving people's quality of life (QOL), including "detection of fall by the elderly based on deep learning" and "abnormality detection from surveillance cameras."

Graduate School Graduate School of Computer Science and Engineering

The University of Aizu Graduate School has a diverse faculty and an outstanding educational environment. It aims to provide diverse courses and nurture creativity in students in response to recommendations from Japan's business sector. To develop problem-solving skills in a global environment, classes are basically taught in English.

Master's Program

Developing practical skills

The curriculum of the Master's Program is designed to provide students with specialized knowledge and skills on the basics and application of computer science and engineering, preparing them to solve practical problems in ICT and related industries. Students learn research methods on the structure and function of information systems.

Expertise development

"Regular Courses" include Core Courses dealing with the basics in each specialization and more sophisticated Advanced Courses. Because the Master's Program curriculum is aligned with the fields in the university's undergraduate curriculum, students can make their course plans across both undergraduate and graduate, and develop their expertise systematically,

Knowledge output

"Seminar Courses" give students opportunities to scrutinize their independent ly led studies from multiple angles and from a wider perspective than their area of specialization. Students deliver presentations in English, contribute research papers to journals, and participate in problem-based learning so that they can learn and hone their presentation techniques and skills.

©Graduate Department of Computer and Information Systems

Based on computer science and engineering and using computer systems to solve real-world problems, students study the structure and function of "information" processed by computer systems. The two-year Thesis Research

External Presentation/Publication Seminar Course, a required course that

Creative Factory Seminar culminates in a master's thesis, is primarily designed for students to lead their own problem-based research. Thirty credits are required for completion.

Regular Courses (16 credits)

□Fundamental Core Courses □ Application Core Courses

□Advanced Courses

Seminars (8 credits)

□Research Seminar I ☐Research Seminar II

Research Paper Writing I

□ICT Global Venture Laboratory Effective Academic Research Presentation Seminar

Thesis Research Course (6 credits)

theme, conduct independently led research under the guidance of a faculty advisor, and finally write and present their master's theses.

OGraduate Department of Information Technologies and Project Management

(curriculum change from AY 2023)

Students are educated to solve practical problems in the ICT industry. The aim is to cultivate internationally educated, cutting-edge information technology professionals who are able to work in teams on a variety of projects and foster leadership and initiative both in collaboration with others and as individuals. Forty credits are required for completion.

Regular Courses (16 credits) □Fundamental Core Courses □ Application Core Courses

☐Advanced Courses

Seminars (10 credits)

□PM Research Seminar

□Educational Seminar Conference Presentation Seminar

□Tea Seminar

□ Contest

□Creative Factory Seminar

Research Paper Writing I

□ICT Global Venture Laboratory ☐ Effective Academic Research Presentation Seminar

roject Development Arena (14 credits)

Students collaborate in team projects and write a technica

Creative Factory Seminar



Students have the opportunity to pursue development and other creative activities. Working with researchers from companies and other universities, students gain an accurate understanding of needs in society, actively engage with society, and return the fruits of research to society



Project Development Arena



With guidance and advice from faculty members and coaches from companies, students partake in research and development projects, identifying concrete requirements of users and customers to fulfill social needs. Students develop their communication, leadership, and management skills through practical experiences gained from the projects.



Presentation at academic conferences



The quality of research papers by the University of Aizu graduate students is well-recognized internationally, and many awards have been presented to our students. In an effort to develop talents who can play an active role on the international stage, the graduate school encourages students to present their research at international conferences and cultivate skills in writing and presenting their research papers. A travel subsidy program provides students with ample financial support to participate in international conferences.

Doctoral Program

Developing creativity

©Graduate Department of Computer and Information Systems

In the Doctoral Program, students use a broad range of highly specialized knowledge and techniques to solve various problems in computer science and engineering and related fields, and study the structure and function of information systems. They acquire knowledge on trends in their research field, research ethics. and intellectual property rights. They learn to write theses in English and validate their hypotheses, and promote independently led research based on these competencies. Ten credits are required for completion.

The research assistant program is designed to develop the research skills of young researchers. It also provides financial support by providing remuneration to young researchers for their research assistance work.

Master's Student's Voice



Why did you choose to study at the University of Aizu?
I didn't feel confident going into society with the capability I had then. I wanted to be sufficiently ready for job hunting

I normally engage in research and study what interests me. I put efforts into learning English because we have more opportunities using English at the graduate level than undergraduate level. My future goal is to be able to execute

What are you doing research on?

My research theme is "use of machine learning in existing image processing pipelines for guiding and controlling robots and its assessment." As an undergraduate, I was involved in detection and tracking of the tip of wind turbine

What about after graduation I would like to participate in the development of applications that can be used by a wide range of users

Doctoral Student's Voice



To build and develop my skills and knowledge through hands-on activities in recent advancements in artificial intelligence

Perceptual quality assessment for learning. With the boom of generative AI, this involves evaluating the quality of AI-generated esearch includes investigating whether large multimodal models (LMMs) perceive illusions in the same way humans do. OHow is your life in Aizu

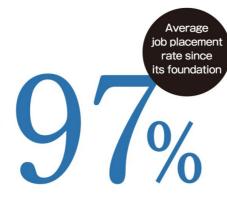
Aizu is the most peaceful and quiet city I have ever lived in. The environment is conducive to learning, and the residents are

What would you like to do after graduation?

After graduation, I aim to pursue a postdoctoral or associate professorship position, or a role in R&D for industry in Japan, to further develop my expertise and contribute to advancements in these areas.

High Employment Rate of UoA Graduates

Ever since the University's establishment, employment rates for our graduates have continuously averaged 97% for the undergraduate school and 100% for the graduate school.



Example Employers of International Students

MANUFACTURING	Eyes Japan
Alps Alpine	ICHIKOH INDUSTRIES
DENSO TEN	Information System Engineering
TERAOKA	KAYAC
INFORMATION AND COMMUNICATIONS	Mercari
ACCESS	Rakuten Group
Artiza Networks	RISO KAGAKU CORPORATION
CyberAgent	Sun Asterisk
E-BUSINESS	Suntory System Technology

Eyes Japan	
ICHIKOH INDUSTRIES	
Information System Engineering	
KAYAC	
Mercari	
Bakutan Group	

SERVICES
Accenture
EDUCATION, LEARNING SUPPOR
KYUSHU UNIVERSITY
Muroran Institute of Technology
Nara Institute of Science and Technology
The University of Aizu
-

The University of Aizu is a university where you can acquire the necessary knowledge and skills to become an engineer who can play an active role in your field internationally.

Software Engineer Mercari, Inc.

Chun Yin MOK

(2021 graduate of the ICT Global All-English Program Undergraduate Course) From Hong Kong (People's Republic of China)



Q. Why did you decide to study at the University of Aizu?

I was particularly attracted to the vision of a university that was established to educate human resources in computer-related fields at an advanced level. The conditions for entry were also another major consideration. There was no requirement to be proficient in Japanese and I could be accepted on the basis of my score in the Hong Kong University Entrance Exam.

Q. What kind of research did you do at the university?

I was involved in the development of a planetarium app in a research lab that works with computer graphics (CG). The app was to be used by teachers in schools as a learning tool for teaching students about space and could be viewed on smartphones. We had to learn a lot of new knowledge and worked hard on the app's development through trial and error until completion.

Q. How were you hired for your current job and what kind of work you do?

I started as an intern in an internship program. The

atmosphere of the workplace was open, the employees trusted each other, and I felt attracted to the positive environment where people encouraged me to take on new challenges. Even interns like me were able to express ideas without hesitation - even ideas that might have little chance of being adopted. I felt that this was a company where I could grow not only as a software engineer but also as a person. An environment where both Japanese and non-Japanese worked together was also something that I really wanted. It was similar to the environment at the University of Aizu where I enjoyed my life as a student. I always find interacting with people of diverse cultural backgrounds very stimulating.

Q. How has what you learned at university been useful in

Going to Silicon Valley as part of the university's overseas internship program made a particularly strong impression on me. Speaking directly to engineers there enabled me to deepen my understanding of software engineering. I also

believe that living with people of various cultural backgrounds in the tranquil environment of Aizu as a student made me reflect on my own life and become more aware of who I am.

Q. What advice do you have for your juniors?

First of all, university life is not just about studying. I believe that having an environment where you can come into contact with different cultures and ways of thinking is extremely important. At the University of Aizu, which offers such an environment. I encourage new students to discover other enjoyable activities besides studying. Although having computer knowledge and skills are said to be advantageous for your future. I would advise you not to make decisions about your future just because such knowledge and skills may be useful in getting a job. I recommend that you think about what you really want to do. Even if you are not sure about what you want to do but think you would like to take on new challenges, I recommend the University of Aizu. Life there is full of adventures!

University of Aizu Study Support **Accommodation Facility Somei House**

On the university campus, students from all over the country and around the world learn about being social and cooperative through communal living and communal use of facilities. University accommodation at Somei House is also available in order to support improved ambition to study and a harmonious student lifestyle.





Each unit has 10 rooms, each with a bed. closet, desk, air conditioning and intercom. *2 people can also share a room with a bunk



Each unit comes equipped with two washing machines and two drvers.



Each unit has an open living room (shared space). You can cook in the kitchen, study together, talk or watch TV. It is a place for the tenants to relax.



Each unit has two shower rooms. There are shampoo-dresser wash basins in the washrooms for female students. Male student washrooms only have wash basins

Monthly living expenses		
In Somei House	(Yen)	
Rent	19,000	
Utilities	10,000	
Food	25,000	
Other	20,000	
Total	74,000	

*For one person living alone at Somei House

In Apartment	(Yen)
Rent	25,000
Utilities	8,500
Food	25,000
Other	6,900
Total	65,400
*This is an average !-	

*This is an example

Aizu-Wakamatsu City Housing Information

□ Apartments, Boarding Houses, Rental Rooms

Housing information is posted on the university website for those looking for an apartment. (The university, however, does not serve as a real estate broker.)

Approx. 30,000 yen ~ 50,000 yen (with kitchen, bath and toilet) Approx. 50,000 yen ~ 70,000 yen (with shared kitchen, bath and toilet) Approx. 15,000 yen ~ 25,000 yen (with shared kitchen, bath and toilet)

□International Student Dormitory

"International Student House (Male only)"

This is a dormitory for students at the University of Aizu, managed and operated by Student Life Support (SLS), which was established for the purpose of supporting student life. (with shared toilet, shower rooms, kichen and wash

Capacity	11 persons
	8,000 yen~15,000 yen
Utilities	5,000 yen (April - September)
	8,000 yen (October - March)

Facilities Well-designed to Support Learning

Our large campus has a variety of spacious health and welfare facilities to help students lead fulfilling campus lives full of sports and cultural activities. For example, the indoor swimming pool is available for year-round use and the Study and Research Living Unit (SRLU), which is equipped with fitness machines is accessible around the clock.



5 Aizu Geek Doio

Aizu Geek Dojo

Athletic Field

"Otaku" means geek. This is the Aizu Otaku Doio. It is a workshop equipped with various machine tools that enable creative manufacturing.



6 SRLU(Study & Research Living Unit)

Training and fitness equipment is available.



7 Athletic Field

Spreading out in front of Mt. Bandai, our sports field accommodates a variety of outdoor sports, such as football.





Auditorium

This multipurpose auditorium accommodates variable seating (maximum of 460 seats). The auditorium is used for campus events and is open to the local community. Symposiums and lectures are frequently held, and contribute to cultural activities for the local community. Entrance and degree conferment ceremonies are also held here.



2 Cafeteria

The cafeteria serves nutritionally-balanced satisfying lunches, a wide variety of freshly-made dishes, and carefully-prepared homely meals



3 Community Space KIYARE

Community space with homey, wooden interior decorated with traditional crafts such as Aizu lacquerware and Aizu cotton. "Kiyare," in Aizu dialect, means "Please



Waterside Park

Gymnasium

Cafeteria KIYARE

Martial Arts Hall

Indoor Swimming Pool

Library

Auditorium

4 Library

Our university library houses approximately 130,000 library materials. A large number of academic journals and foreign books related to computers are available.



11 Indoor Swimming Pool

Our heated swimming pool is available for use year-round. The building has a unique wooden ceiling.





8 LICTIA

Opened on October 1, 2015 as a center of advanced ICT in Fukushima prefecture. LICTiA provides a research environment for companies as the hub for university-industry cooperation, as well as free space for students, researchers, and companies to communicate freely with each



9 Somei House (Dormitory)

Students from Japan and all over the world live together here.



(10) Gymnasium

People enthusiastically enjoy indoor sports in the comfort of our wooden gym.



12 Martial Arts Hall

This hall is used for martial arts such as kendo and aikido (art of weaponless self-defense). Martial arts have long flourished in



(13) Waterside Park

The park is a popular place of relaxation and refreshment for students and locals