NAIST

Nara Institute of Science and Technology

GUIDEBOOK 2023

About NAIST

Nara Institute of Science and Technology (NAIST) was founded as a unique Japanese national university consisting solely of graduate schools in the three areas of information science, biological sciences, and materials science to redefine graduate-level education. In 2018, to push forward the boundaries of advanced science and technology, the three graduate schools merged to create the Graduate School of Science and Technology with Education Programs in the original three research areas and two of their interdisciplinary areas. At present, over 1,200 students—roughly 25% from overseas—are supervised by approximately 200 NAIST faculty.

With its cutting-edge facilities and a high student-to-faculty ratio, NAIST's world-leading research and education are a direct result of its rich, global environment and supportive infrastructure. Moreover, NAIST's faculty and students' outstanding achievements are shared world-wide through patents, licenses, spin-off companies, and active international exchange. As a result, NAIST has quickly established itself as a world-class research and education center where young research scientists and engineers become tomorrow's global leaders.

From its establishment, NAIST has developed education programs and research that begin with NAIST and spread across research fields through our extensive global network of NAIST graduates and international partner institutions. This network is not only key to our research activities, which are undertaken spanning the globe to promote collaboration at the forefronts of science and technology, but a central part of NAIST's global education programming, allowing students to experience today's international trends and environments.

NAIST eagerly promotes admission of students from both Japan and overseas who have strong basic academic capabilities, regardless of their academic backgrounds, and actively admits researchers, engineers and others currently working in society with strong enthusiasm for advanced scientific research and clearly defined aspirations for the future.

President's Vision 2030

NAIST celebrated its 30th anniversary in 2021 and the newly appointed President, Dr. Kazuhiro Shiozaki, issued his vision of what NAIST should be in 2030. Upon the foundation laid by its prominent achievements over the past three decades, NAIST will build a campus community that strives for the new development in research and education through "co-creation" with diverse stakeholders. Please use the QR code to view the President's Vision 2030 and find out how NAIST will pursue co-creation to fulfill its mission as a national postgraduate institution.

NAIST Timeline

1991	NAIST established on October 1st (Graduate School of Information Science)
1992	Graduate School of Biological Sciences and Information Technology Center established
1993	Research and Education Center for Genetic Information established
1994	Research Center for Advanced Science and Technology established
1996	Graduate School of Materials Science established
1998	Research and Education Center for Materials Science established
2003	Intellectual Property Division established
2004	NAIST became a National University Corporation, Industry-Government-Academia Collaboration Group established
2009	Gender Equality Promotion Office and Center for International Relations established
2010	Information Initiative Center and Research Center for Advanced Science and Technology established
2013	Career Services Office and Institute of Research Initiatives established
2015	Center for Strategy and Planning, Institute for Educational Initiatives and Institute of Research Initiatives established
2017	Data Science Center established
2018	Three original graduate schools merged to create Graduate School of Science and Technology
2021	Center for Digital Green-innovation established

NAIST Numbers

NAIST is an institute focused solely on graduate school education based on its research achievements in the leading fields of science and technology.

NAIST Student Enrollment

Master's	Doctoral	Research students, etc.
758	366	101

Total: 1225 (International students: 25%)

(As of November 2022)

NAIST Faculty and Staff

Executive administration	Faculty	Staff
8	203	170

Total: 381 (International faculty and staff: 6%)

(As of November 2022)

High Percentage of External Revenue
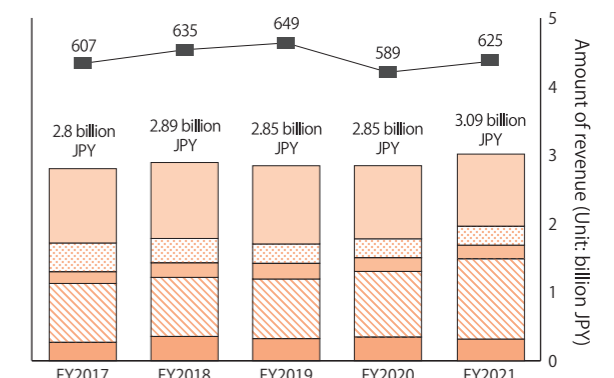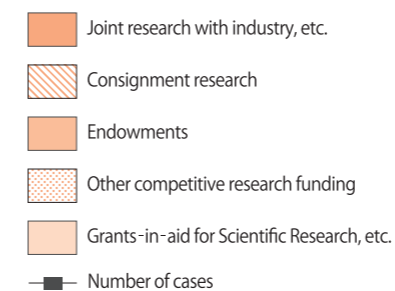
FY2021 Revenue: Total 10.5 billion (JPY)

- Tuition 5%
- Administrative Subsidy 54%
- External Revenue 33%
- Infrastructure, Other 8%
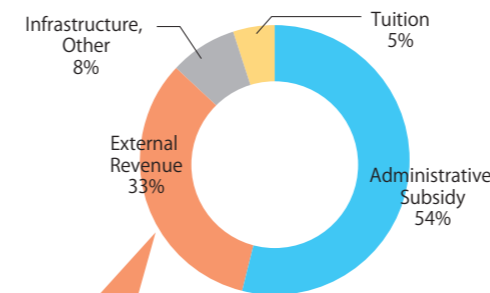
High Allocation of Educational Research Funding

FY2021 Expenses: Total 9.9 billion (JPY)

- Personnel 42%
- Educational Research Funding 46%
- Facilities, Etc. 12%
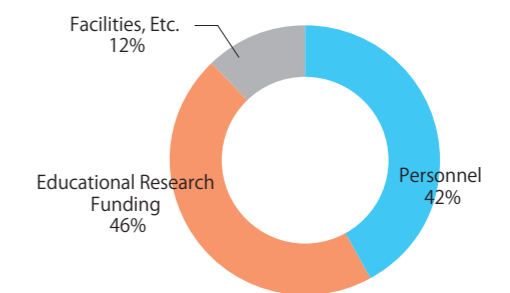
External Revenue Breakdown (Fiscal 2021)

- Joint research with industry, etc.
- Consignment research
- Endowments
- Other competitive research funding
- Grants-in-aid for Scientific Research, etc.
- Number of cases

|	FY2017	FY2018	FY2019	FY2020	FY2021
Number of cases	607	635	649	589	625
Amount	2.8 billion JPY	2.89 billion JPY	2.85 billion JPY	2.85 billion JPY	3.09 billion JPY

Amount of revenue (Unit: billion JPY)

Location

NAIST is located in Ikoma City, in Japan's historic Nara Prefecture. Home of the first official capital of Japan, Nara Prefecture has an incredibly rich history as a center for international trade and relations. In addition to its prolific ancient heritage, Nara Prefecture is also conveniently located in close proximity to Kyoto and Osaka, and just 60 minutes from Kansai International Airport.

- Sapporo
- Kyoto
- Osaka
- Nara
- Tokyo
- 30km
- 60km
- 100km

NAIST (located in Kansai Science City)
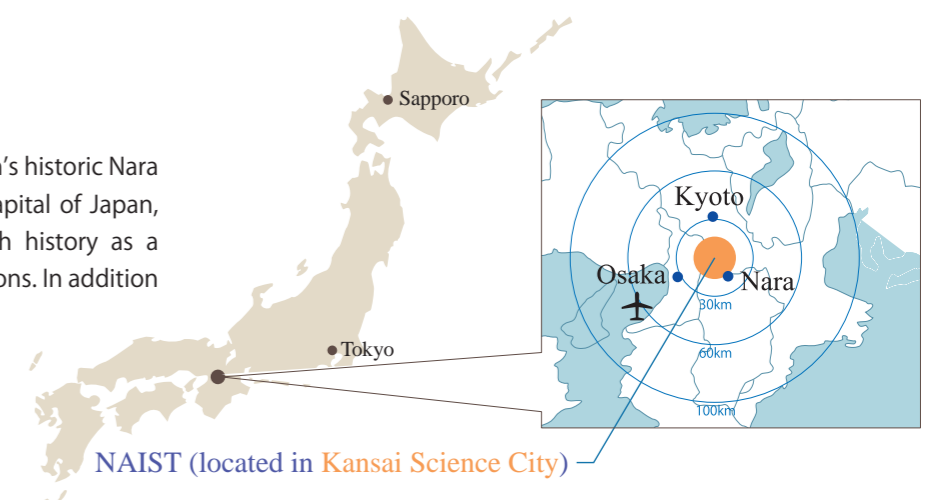
NAIST's Educational Structure
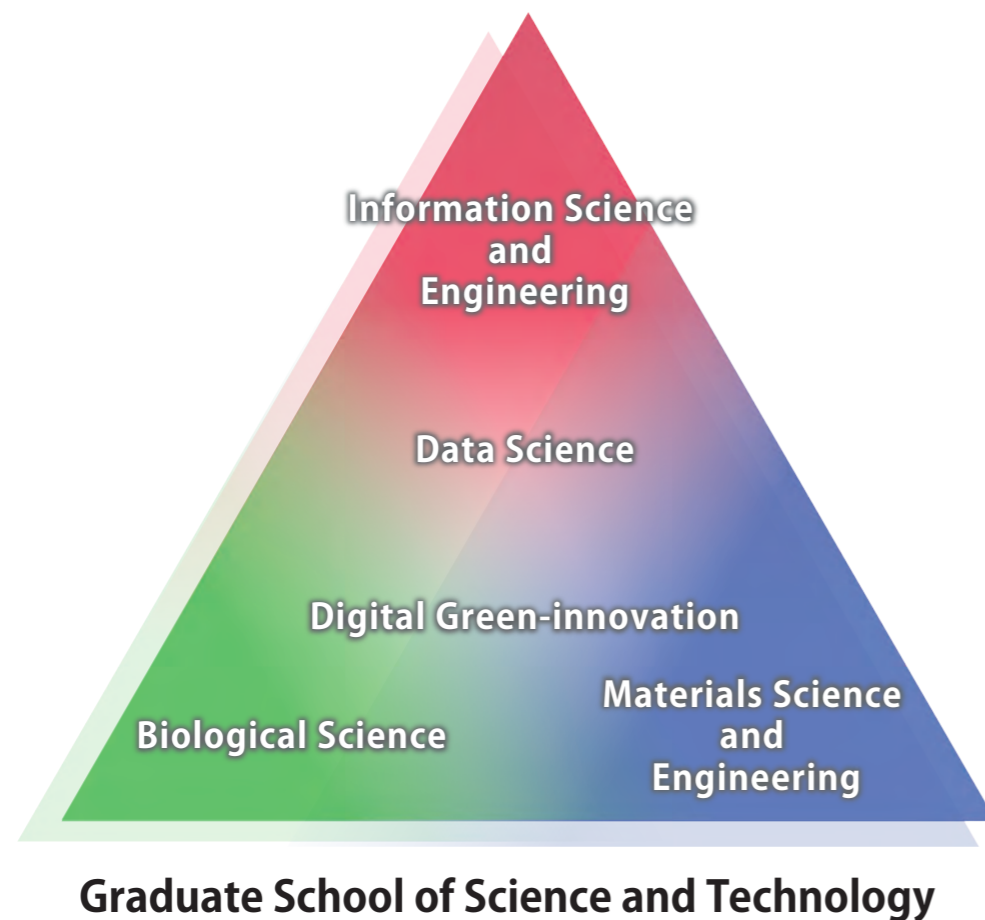
Graduate School of Science and Technology

The Graduate School of Science and Technology was established to remove existing barriers between academic fields to form a flexible educational structure where faculty from related areas come together to perform education at the forefronts science and technology and to introduce an educational system for basic and specialized knowledge to prepare students for studies in diverse areas, and to allow them to reach beyond their specializations utilizing the knowledge and skills they attained in their undergraduate education. Additionally, in order to meet the ever-changing needs of society and to achieve real-world application, project-based learning and other practical educational projects led by invited researchers and engineers from private industry, etc. are incorporated into the curriculum. The specific objectives for the graduate education programs are:

The master's course fosters graduates with specialized knowledge and training, a wide understanding of related interdisciplinary fields, and the ability to approach issues and phenomena holistically to lead the application and innovation of science and technology throughout society.

The doctoral course fosters international awareness, self-reliance, and independence and develops researchers and skilled engineers with high ambitions that will advance the boundaries of science and technology taking leading roles throughout global industry, academia and government.

Multidisciplinary-focused Education Programs

The five Education Programs of the Graduate School of Science and Technology span the three original fields of research at NAIST (information, biological and materials sciences) and include the developing interdisciplinary fields that emerge independent of traditional academic divisions to pursue current trends in science and technology. All laboratories belong to one or more Education Program and students choose the type of degree the will pursue depending on their studies and the focus of their research.

Information Science and Engineering

Data Science

Digital Green-innovation

Biological Science

Materials Science and Engineering

Graduate School of Science and Technology

Education Programs

Education Programs facilitating research in leading-edge science and technology

Information Science and Engineering
Degrees granted: Master's / Doctorate (engineering, science)

A focused program fostering students to support our dynamic advanced information society, implementing further achievements in diverse fields. This program cultivates specialized knowledge and skills in computer hardware/information network technology, computer/human interaction and media technology, and computer systems to utilize robotics.

Biological Science
Degrees granted: Master's / Doctorate (biological science)

A focused biological science program which fosters students who are able to contribute to the development of humankind and the conservation of the global environment through research and development related to the environment, energy, food and natural resources, and human health and longevity by equipping them with cutting-edge knowledge and skills in a wide range of fields, from the basic principles of life phenomena to the diversity of living organisms in animals, plants, and microorganisms.

Materials Science and Engineering
Degrees granted: Master's / Doctorate (engineering, science)

A focused program fostering students with foundational knowledge of materials science and advanced knowledge to fully utilize their expertise in a program spanning solid state physics, device engineering, molecular chemistry, polymeric materials and bionano-engineering, and undertake next generation science and technology to maintain affluent living and support societal development.

Data Science
Degrees granted: Master's / Doctorate (engineering, science, biological science)

An interdisciplinary program fostering students with a wide range of expertise in data- and AI-driven sciences in information, biological, and materials sciences, to find hidden 'value' and 'truth' through data processing, visualization, and analysis of huge amounts of data to contribute to science, technology, and societal development.

Digital Green-innovation
Degrees granted: Master's / Doctorate (engineering, science, biological science)

An information, biological, and materials sciences interdisciplinary program which fosters students with advanced expertise in these three fields which support society and the economy, as well as comprehensive backgrounds to understand the adjacent interdisciplinary research fields, especially the interdisciplinary fields that encompass green and digital fields. These students can approach issues from various perspectives throughout society and will lead the utilization of digital green science and technology, which continues to develop in the green and digital fields, and innovation in society.

Education Programs that can be selected for each Division

	Division		
	Information Science	Biological Science	Materials Science
Information Science and Engineering	○		
Biological Science		○	
Materials Science and Engineering			○
Data Science	○	○	○
Digital Green-innovation	○	○	○

Globalization at NAIST

The coordinated education and research activities necessary to produce researchers and engineers who push forward the boundaries of science and technology and are active participants in today's global society, and the extensive organized support to ensure their success.

Top Global University Project

In October 2014, NAIST was selected for the Top Global University Project funded by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). For a period of ten years, MEXT supports NAIST and other outstanding universities in their efforts to reform institutional governance and collaborate with top universities worldwide in order to strengthen international competitiveness. Through the Top Global University Project, NAIST has committed to enhancing its international graduate courses by creating a double degree scheme, developing a new model for graduate education based on world-class research, reforming institutional governance and strategic agility, creating a campus environment that supports trans-disciplinary education and cultural diversity, and merging its three graduate schools into a single entity to establish new, flexible research fields.

International collaborative research network

Overseas research laboratories

NAIST maintains two overseas research laboratories at partner institutions where our faculty reside to facilitate collaborative research and strengthen institutional ties.
▶Université Toulouse III - Paul Sabatier (France) ▶University of California Davis (USA)

On-campus international collaborative laboratories

There are two collaborative laboratories on campus where visiting faculty from international partner institutions lead research with young international researchers.
▶École Polytechnique (France) ▶University of British Columbia (Canada) ▶National Yang Ming Chiao Tung University (Taiwan)
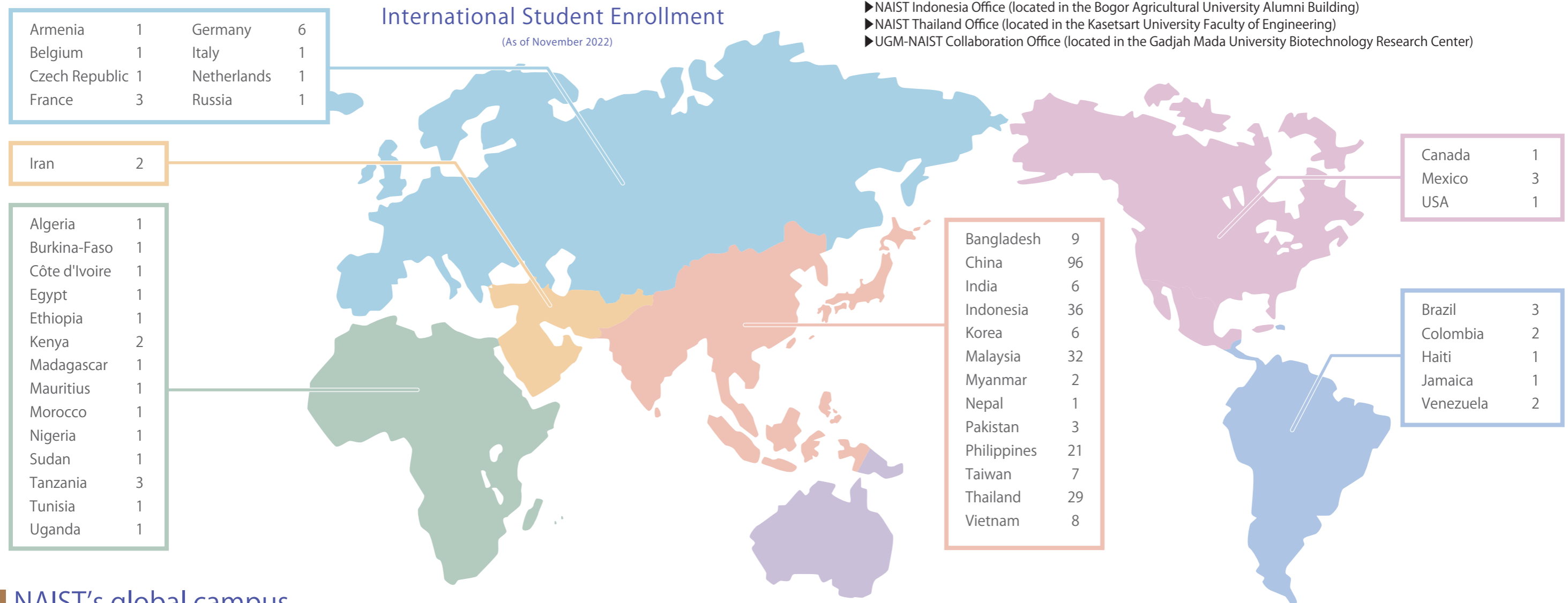
Overseas education and research collaboration offices

In Asia, NAIST has established two overseas offices in Thailand and Indonesia as hubs for education and research collaboration to support its growing network of graduates and partner institutions, and maintains an office to promote collaboration projects in Indonesia as well.
▶NAIST Indonesia Office (located in the Bogor Agricultural University Alumni Building)
▶NAIST Thailand Office (located in the Kasetsart University Faculty of Engineering)
▶UGM-NAIST Collaboration Office (located in the Gadjah Mada University Biotechnology Research Center)

International Student Enrollment

(As of November 2022)

Armenia	1	Germany	6
Belgium	1	Italy	1
Czech Republic	1	Netherlands	1
France	3	Russia	1

Iran	2

Algeria	1
Burkina-Faso	1
Côte d'Ivoire	1
Egypt	1
Ethiopia	1
Kenya	2
Madagascar	1
Mauritius	1
Morocco	1
Nigeria	1
Sudan	1
Tanzania	3
Tunisia	1
Uganda	1

Canada	1
Mexico	3
USA	1

Bangladesh	9
China	96
India	6
Indonesia	36
Korea	6
Malaysia	32
Myanmar	2
Nepal	1
Pakistan	3
Philippines	21
Taiwan	7
Thailand	29
Vietnam	8

Brazil	3
Colombia	2
Haiti	1
Jamaica	1
Venezuela	2

NAIST's global campus

At NAIST, in order to develop global leaders in science and technology, we have focused on the globalization of our campus, including academic environments and campus facilities, while also restructuring our education programming to respond to current global needs and trends in science and technology. These efforts have produced a truly unique on-campus community that is central to students' and researchers' experience at NAIST. With students from various cultures, fields and backgrounds studying and performing research under NAIST's diverse faculty, our campus has become an international hub for both education and research in science and technology and we are maintaining and actively expanding our network of domestic and international partners to further promote our activities globally.

Division for Global Education

The Division for Global Education plans and implements programs including agreements and activities with overseas institutions, double degree programs, studying abroad, overseas faculty and staff development programs, and overseas offices.

Agreements on Academic Exchange with 108 Overseas Institutions in 28 Countries/Regions

(As of January 2023)

NAIST's international network is centered upon our international partner institutions and the faculty and staff that continue to strengthen ties in both research and education. The academic agreements below are achieved through extensive collaboration and their contents cover areas including research collaboration, symposia, guest lectures, faculty and student exchange, and the sharing of scientific information and materials.

■ Institution Level Agreements

Asia

Bangladesh
Bangladesh University of Engineering and Technology

China
Institute of Genetics and Developmental Biology, Chinese Academy of Sciences
Tianjin University of Technology
Liaoning University
Northeast Normal University

India
KIIT College of Engineering
Indian Institute of Technology, Jodhpur
Indira Gandhi Delhi Technical University for Women

Indonesia
Gadjah Mada University
IPB University
University of Indonesia
Hasanuddin University
Bandung Institute of Technology
Jenderal Soedirman University
Electronic Engineering Polytechnic Institute of Surabaya
Faculty of Industrial Technology, Sepuluh Nopember Institute of Technology

Korea
Hanbat National University

Malaysia
University of Science, Malaysia
University of Malaya
University of Technology, Malaysia
Universiti Tunku Abdul Rahman
Universiti Kebangsaan Malaysia

Philippines
Ateneo de Manila University
University of the Philippines Diliman

Taiwan
National Yang Ming Chiao Tung University
The National Taiwan University of Science and Technology
National Cheng Kung University

Thailand
Mahidol University
Chulalongkorn University
Kasetsart University
Chiang Mai University
King Mongkut's University of Technology Thonburi

Vietnam
Hanoi University of Science, Vietnam National University
University of Engineering and Technology, Vietnam National University
Vietnam National University HCMC, University of Information Technology
Hue University of Sciences
University of Science and Technology of Hanoi
Posts and Telecommunications Institute of Technology HCMC Campus

Europe

Belgium
University of Louvain

France
Paul Sabatier University
Ecole Polytechnique
Ecole Normale Superieure Paris-Saclay
Science and Technology, University of Lille 1
Telecom Paris
Sorbonne University
University of Paris-Saclay
Universite de Rennes 1

ESIGELEC
Ecole Normale Superieure de Lyon
The University of Picardie Jules Verne
University Bourgogne Franche-Comté

Germany
RWTH Aachen University
Justus Liebig University Giessen
Karlsruhe Institute of Technology
University of Regensburg
Coburg University of Applied Sciences and Arts
DFKI (The German Research Center for Artificial Intelligence)

Italy
University of Cagliari
University of Trento

Russia
Peter the Great St. Petersburg Polytechnical University

Spain
University of Granada

UK
University of Edinburgh

North America

Canada
Queen's University at Kingston

USA
University of California Davis
University of Hawaii at Mānoa
University of California, San Diego
Mississippi State University
Lawrence Berkeley National Laboratory, Joint Genome Institute

South America

Brazil
Universidade Federal de São Paulo

Africa

Kenya
University of Nairobi

Senegal
Cheikh Anta Diop University

Oceania

Australia
University of Technology Sydney
The University of Newcastle
University of Adelaide

New Zealand
Unitec Institute of Technology

■ School/Department Level Agreements

■ Information Science

Asia

China
Department of Computer Science, City University of Hong Kong
School of Information Science and Engineering, Yunnan University

Korea
Graduate School of Electronics Engineering, Kyungpook National University

Vietnam
Faculty of Electronics and Telecommunications, HCMC University Of Science, Vietnam National University
Department of Electronic and Telecommunication Engineering, University of Science and Technology - The University of Danang, Vietnam

Europe

Finland
Faculty of Medicine, University of Turku

France
Telecom SudParis
École Supérieure d'Ingénieurs en Électrotechnique et Électronique Paris
École nationale supérieure d'ingénieurs de Caen

Germany
Faculty of Engineering and Computer Science, University of ULM
Department of Informatics, Technical University of Munich
Department of Electrical and Computer Engineering, Technical University of Munich
Faculty of Mathematics and Natural Sciences, Heinrich Heine University Düsseldorf

UK
Department of Statistical Science, University College London

South America

Brazil
Departments of the University of San Paulo

■ Biological Science

Asia

Bangladesh
School of Health and Life Sciences, North South University

China
College of Life Sciences, Nanjing Agricultural University
School of Life Sciences, Nanjing University

Vietnam
Institute of Biotechnology, Vietnam Academy of Science and Technology

North America

Canada
Faculty of Science, University of British Columbia

USA
Biotechnology Institute, University of Minnesota

■ Materials Science

Asia

China
School of Chemistry and Chemical Engineering, Nanjing University

India
Indian Institute of Science Education and Research, Thiruvananthapuram

Taiwan
Institute of Biophotonics, National Yang Ming Chiao Tung University

Vietnam
Institute of Materials Science, Vietnam Academy of Science and Technology

Europe

Austria
Institute of Solid State Physics, Graz University of Technology

Germany
Faculty of Engineering, RheinMain University of Applied Sciences

Netherlands
Faculty of Science, Leiden University
Faculty of Electrical Engineering, Mathematics and Computer Science, Delft University of Technology

Switzerland
Faculty of Science, University of Zurich

North America

USA
Macromolecular Science & Engineering Program, University of Michigan

Double Degree Programs

With the rapid progression of globalization, researchers able to guide international collaborative research bringing together human resources and emerging technologies to tackle the issues facing humankind regardless of borders, are being called for. The double degree program is designed to systematically develop human resources with an emphasis on the ability to conduct international joint research and to enhance international collaborative skills through education and research collaboration with international partner institutions.

In the double degree program, students are enrolled at NAIST and one of our partner institutions, and upon completing the program, following research guidance from both institutions' faculty, receive degrees from both institutions. Currently, NAIST offers doctoral course double degree programs with 7 international partner institutions and a master's course double degree program with Kasetsart University.

Partner institution	Country/region	Faculties, colleges, and areas	Research areas at NAIST
Macquarie University	Australia	① Department of Biological Science ② Department of Molecular Science ③ Department of Chiropractic Science ④ Department of Computing ⑤ Department of Earth and Planetary Sciences ⑥ School of Engineering ⑦ Department of Envionmental Sciences ⑧ Department of Mathematics and Statistics ⑨ Department of Physics and Astronomy	All divisions
Université Toulouse III - Paul Sabatier	France	Physics, Chemistry and Materials Science	Materials Science
Université Paris-Saclay	France	① Biology, biochemistry and biotechnology ② Communication systems ③ Computer science and informatics ④ Earth sustainability/environment ⑤ Economics, etc.	All divisions
Sorbonne Université	France	Information science	Information Science
Ulm University	Germany	Computer science and Engineering Science	Information Science
National Yang Ming Chiao Tung University	Taiwan	① College of Science ② College of Electrical and Computer Engineering ③ College of Engineering	All divisions
Chulalongkorn University	Thailand	Biochemistry and Molecular Biology, Faculty of Science	Biological Science
Kasetsart University (Master's course)	Thailand	Faculty of Engineering	Materials Science

Student Support

❚ A supportive research environment for students

Rated top-class for research among Japanese national universities

In 2021, of all the respected national universities, NAIST was ranked extremely high for both Grant-in-aid for Scientific Research funding received and number of papers published (both of these are per individual faculty member), being ranked second in both areas. Also, in the MEXT Intermediate Evaluation of the 3rd Mid-term Target Period, NAIST was one of two institutions whose education and research were both evaluated highly as "having made significant progress." Furthermore, the average institutional research budget for each NAIST faculty member for the 2021 fiscal year was 6 million yen, far surpassing double the national average.

Personalized education and research advising for students

With a 5:1 student-to-faculty ratio (FY2021), half the 11:1 average ratio for Japanese national institutions, NAIST students are regularly able to take advantage of individual advising opportunities. In addition to the main supervising professor, students are also assigned at least one sub-supervising professor to allow for guidance from different fields and to facilitate a broad understanding of their research. Furthermore, NAIST's campus is physically compact and the educational structure is organized to encourage collaboration and developments in both education and research across traditional academic fields.

❚ Examination, enrollment and tuition fees

Enrollment type	Examination	Enrollment	Tuition
Master's and Doctoral Program Students	JPY 30,000	JPY 282,000	JPY 267,900/semester (JPY 535,800/year)
Research Students	JPY 9,800	JPY 84,600	JPY 29,700/month
Special Research Students* (Short-term Exchange Students) Undergraduate Internship Students	—	—	JPY 29,700/month

*Tuition may be waived for students from partner institutions.   (As of April 2023)

❚ A wide variety of financial support options

Japanese Ministry of Education, Culture, Sports, Science & Technology (MEXT) Scholarship

MEXT offers competitive, full scholarships to excellent overseas students and researchers to study in Japan and chosen students receive comprehensive support (Tuition and other fee exemption, monthly stipend, travel expenses) so they may focus on their studies and research. There are two types of MEXT scholarships, embassy and university recommendation. (International Priority Graduate Programs, etc.)

NAIST International Scholar Program

This program is offered to talented partner institution students to study at NAIST while being Research Assistants, gaining valuable, hands-on research experience. NAIST Scholars are exempted from tuition and other fee payment, and receive a research assistantship salary and receive a research assistantship salary and airfare to Japan.

Other government and private scholarships

Every year a select number of privately financed international students receive JASSO and other private scholarships exclusively for NAIST students. Additionally, multiple scholarships specifically for international students are offered by private companies and foundations.

Teaching and research assistantships

In addition to the NAIST International Scholar Program, NAIST actively supports exceptional students with teaching and research assistantships, where they receive a salary for taking on different roles in the lab and classroom.

Affordable on-campus housing

For international students studying in Japan, housing is an expensive and time-consuming issue. All full-time international students are eligible for on-campus housing with free internet access. Housing fees range from JPY 10,000 - JPY 15,000 for single, couple or family housing, which are about one third or less of average Japanese housing costs. A new apartment-style dormitory where Japanese and international students live together to foster cultural understanding opened in April 2021.

Apartment-style dormitory ▶

◀ Single housing

International Student Affairs Section (ISAS)

The International Student Affairs Section is the first office that international students deal with when they begin their procedures for studying at NAIST. Starting with admissions assistance and visa procedures, the International Student Affairs Section manages international student registration, offers administrative support for international students concerning their status in Japan and handles Japanese government and other scholarships. The experienced staff also offers advice to students as they live and study at NAIST. Additionally, the section works with a citizen group to maintain a Japanese language program and arranges Japanese cultural excursions every year.

Center for International Students and Researchers (CISS)

CISS was started as part of NAIST's commitment to supporting its growing international community, which consists not only of students, but also students' families, international researchers and faculty, and their families as well. CISS cooperates with administration offices across the campus to offer support in areas both on and off campus, while also working with local government offices to assure the international community in and around NAIST are able to make the most of their time at NAIST and in Japan.

Life at NAIST

Living off-campus

7:00 Workout/Japanese class
9:00 Family time
11:00 Classes & research
18:00 Family time
20:00 Assignments & research
21:00 Chores
21:30 Rest and relax

Life in Osaka

Living with my family in Osaka, we take advantage of the many areas for children to play and signed up for baby pool classes at our local municipal pool. That has allowed us to connect with other local and foreign families as well as with neighbors with babies. We usually walk a lot with a stroller, so it is nice to have safe-walking accessibility as well as parks nearby. We appreciate the easier access to supermarkets, baby goods stores and 24h combinis.

Arturo MARTINEZ PEGUERO

1st year master's student from Mexico & Canada studying in the Natural Language Processing Laboratory

On the weekends

More family time! Also exploring Osaka and the Kansai area, as well as meeting up with NAIST and family friends.

Living on-campus

Life in the dormitory

With shared washers and dryers on each floor and furnished rooms with a balcony, the dormitory has all the basics to start. Despite the limited space, there was still room for me to personalize my living space. The key is utilizing vertical space!

Riza Rae PINEDA

3rd year doctoral student from the Philippines studying in the Mathematical Informatics Laboratory

On the weekends

I love traveling! As a nature junkie, I usually spend weekends traveling around Japan with friends. Some of my favorite experiences are:
Skin diving in Ishigaki
Hiking in Mt. Ishizuchi
Cycling along the Shimanami-Kaido route
Strawberry picking in Shizuoka
Skiing in Hakuba, Nagano

My monthly budget

<Expenses>
Dormitory: JPY 10,000
Utilities: JPY 1,500-10,000
Mobile phone w/ data: 3,000
Food: 40,000
Hobbies: 30,000

Student comment

Don't be shy to use your broken Japanese. Locals are very kind and usually are really appreciative that you try your best to speak in Japanese. The best way to learn a language is to practice it!

Student activities and events

Indonesian students performing in the Ikoma International Friendship Festa

Mixed culture dance performers at the International Stage Event

International students learning how to make Japanese sweets

International Students taking home items from the Recycling Market

Students and their families enjoying the Sentan Nursery Room Baby/Young Children Hour

On-campus Yoga Lesson
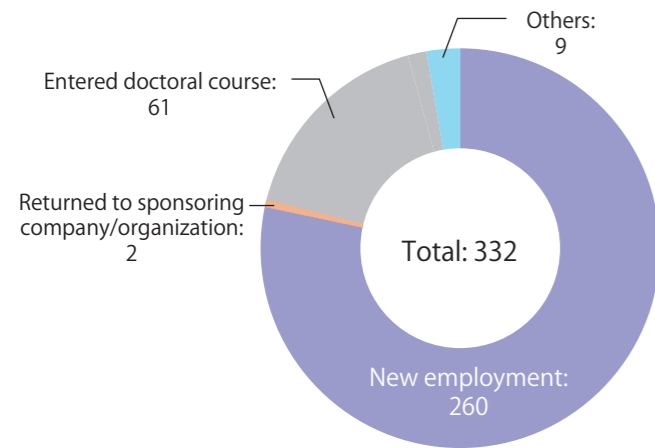
Rice Planting and Matcha Tea Time

International students and their masterpieces at the New Year's Calligraphy Event
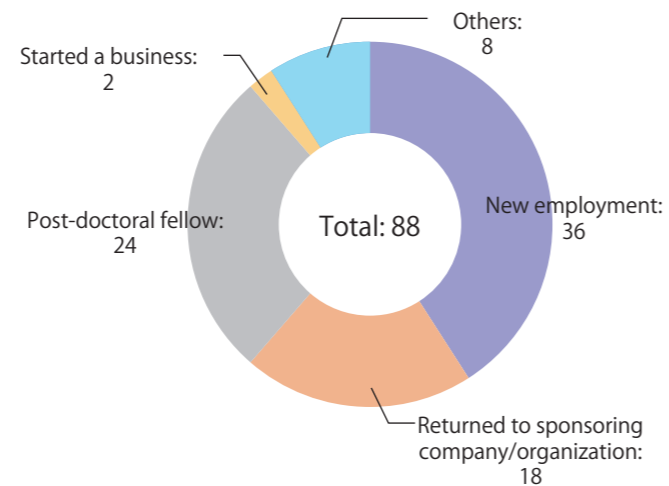
▌ Paths after Graduation

Master graduates in academic year 2021

Others: 9

Entered doctoral course: 61

Returned to sponsoring company/organization: 2

Total: 332

New employment: 260

Doctor graduates in academic year 2021

Started a business: 2

Others: 8

Post-doctoral fellow: 24

Total: 88

New employment: 36

Returned to sponsoring company/organization: 18

99% of graduates looking for employment found positions

Division for Career Development (DCD)

Established in 2013, DCD provides a wide variety of career support to NAIST students who seek non-academic careers in Japan. In particular, a University Education Administrator (UEA) is employed specifically to support international students as they maneuver the unique and difficult to understand Japanese job hunting customs and procedures.

▌ Career Support Programs for International Students

Career Guidance

Career guidance sessions to educate students on how to start and proceed with job hunting in Japan

Career Counseling

International student career consultation service available in English

Career Events

Career events for international students and HR/R&D divisions of Japanese companies with global vision

Reference materials for job hunting are available to read and borrow in our office. It is also possible to read the job-hunting reports of our alumni.

Life in Japan

Being fascinated by Japanese culture since childhood, coming and studying in Japan is always my dream. Besides my academic work, I got many opportunities to travel around Nara and Kansai cities, where the history spanning thousands of years is really amazing to me. Moreover, my daily life which was supported by the clean environment, safe food, and warmhearted staff and friends really touched me. By the way, Japanese "sushi" and "ramen" are my favorite.

My Experience at NAIST

From my academic and private experiences, in my mind, NAIST is no doubt the best place for research in Japan. NAIST gathers a group of energetic professors only conducting graduated courses, in other words, students have access to more research resources than normal universities. Besides that, NAIST supports students to visit abroad to exchange ideas with the world's scientists. In addition to this academic support, the low-cost dorm located on campus allowed me to concentrate on my research without worrying about commuting or rent. Furthermore, if you want to start your career in Japan, make sure to visit the NAIST Career Office, where you can obtain support and guidance throughout the job-hunting process. Here, I want to say that I could not have gotten my current position in Ritsumeikan University without the generous help of NAIST Career Office. In a word, NAIST is the perfect place to enjoy both your research and your life.

Chengyan ZHAO, Ph.D.
Assistant Professor
Ritsumeikan University
Graduated Division of
Information Science in 2021

Life in Japan

When I first arrived in Japan in 2017, I still remember the excitement because I was starting a new chapter of life in another foreign country. I am impressed that Japan has a safe environment and good public transportation which makes foreigners living easy and comfortably. Whenever I have troubles, the people here are friendly and kind to help out. In my current workplace, co-workers always share their knowledge and experience with me. They slowly guide me so that I can understand my job well and grow as a valuable person in society. Sometimes, they also bring me out to try local Japanese seafood such as Kinmedai (a fish commonly found in Izu Peninsula) which is new thing for me! I don't know how my future will unfold but the experience that I gained previously makes me feel glad to come to Japan for my studies and career.

My Experience at NAIST

As a top graduate university, NAIST places great emphasize on creating a diverse community and promotes value creation that benefits society through the advancement of science and technology. I believe that NAIST has one of the best environments for students to further their graduate studies in Japan. Students can build solid student-faculty relationships in NAIST because we are free to talk with professors in an exchange of ideas, information and perspectives. NAIST also provides opportunities to go abroad for research exchange. During my time at NAIST, I visited UC Davis in America and participated in some cutting-edge experiments. Moreover, students can also get tremendous support from International Student Affairs Section whenever they need counseling on student life such as dormitory and exchange events. Finally, please pay a visit to Division for Career Development (DCD) if you are interested in workimg in Japan after graduation. Through consultation with DCD staff, I have obtained a lot of information regarding job hunting and landed my first job in life after graduation. I feel that studying in NAIST has made a big impact on both my education and career development.

Yen Siang WONG, Ph.D.
Researcher
Sunstar Group
Graduated Division of
Biological Science in 2022

Life in Japan

When I first arrived in Japan as a graduate student, the only Japanese words I knew were greetings. Although it made me nervous at first, living in Japan is much easier than I expected. Being able to have a daily conversation is more than enough to comfortably settle down and enjoy day-to-day life. Japan is also one of the safest countries in the world. I am never worried even if I have to go out alone. The culture that is built on empathy and cutting-edge technology made me come to love Japan. I came to Japan with the intention of finishing my degree and returning to my home country, but I ended up falling in love with Japanese culture and decided to stay and work here.

My Experience at NAIST

The student support program at NAIST provides opportunities for students to develop their skills and encourages them to do so. During my time at NAIST, I had the opportunity to study English in the United States and work as an exchange researcher in Switzerland. I was able to complete research that was accepted by top-ranking conferences in my field and published in a well-known journal thanks to professors' advice and advanced laboratory facilities. Furthermore, the diversity of nationalities among students creates a pleasant environment for both international and Japanese students. I had a terrific time throughout my study, and hanging out with my Japanese and international friends also significantly improved my Japanese and English. Studying at NAIST provided me not just an education but also an opportunity for personal development.

Nattakarn WUTHIBENJAPHONCHAI, Ph.D.
Prototype Development Engineer
Sony Semiconductor Solutions Corporation
Graduated Division of
Materials Science in 2020

Areas of Research and Education

Information Science		**17-20** ▶
Biological Science		**21-23** ▶
Materials Science		**24-25** ▶

Information Science

Computer Science Laboratories

Computing Architecture

Prof. Yasuhiko Nakashima
Affiliate Prof. Matsumi Kimura
Assoc. Prof. Renyuan Zhang
Assist. Prof. Yirong Kan
Assist. Prof. Hoai Luan Pham

Our laboratory performs research and development of next-generation sustainable computing platforms for Society 5.0. In particular, devices, hardware, architecture, and software for image processing, scientific computing, AI computing platforms, and blockchain accelerators, by fusing limited Von Neumann and various promising non-Von Neumann computers.

Post-silicon devices, CGRAs, systolic arrays, near memory computing, neuromorphic systems, stochastic computing, high-efficiency blockchains, high-efficiency image processing, system architecture simulators, reconfigurable architectures, approximate computing, hardware design, digital/analog circuits, FPGA, VLSI, AI accelerators

Dependable System

Prof. Michiko Inoue
Adjunct Prof. Fukuhito Ooshita
Adjunct Assoc. Prof. Michihiro Shintani
Assist. Prof. Ryota Eguchi

Today's information society is supported by various levels of advanced technology such as applications, systems, computers and VLSIs. The Dependable System Laboratory is pursuing research on safe and secure systems including distributed systems with hundreds of computers and VLSIs with billions of transistors. Dependability is a concept from the user's point of view, when systems can be used reliably and securely.

Fault-tolerant distributed systems, wait-free distributed algorithms, self-stabilizing algorithms, mobile agent and robot algorithms, population protocols, distributed algorithms for shared memory systems, VLSI design for testability, machine-learning-based test optimization, dependability of emerging memory system, hardware Trojan detection

Ubiquitous Computing Systems

Prof. Keiichi Yasumoto
Assoc. Prof. Hirohiko Suwa
Assist. Prof. Yuki Matsuda
Assist. Prof. Tomokazu Matsui

Ubiquitous computing systems provide users with more useful services at lower costs than ever before by processing, aggregating, and analyzing real-world data sensed with various sensors and by recognizing the physical situations of the real space. Our laboratory performs research and education for realizing novel technologies based on ubiquitous computing systems.

Smart homes, smart life, smart cities, context recognition, par ticipatory/ social/ mobile sensing, behavior change, Internet of Things, sensor networks, data mining, cyber-physical systems, edge computing

Software Engineering

Prof. Kenichi Matsumoto
Affiliate Prof. Takashi Ishio
Affiliate Assoc. Prof. Hideaki Hata
Assist. Prof. Raula Gaikovina Kula
Assist. Prof. Kazumasa Shimari

Our laboratory performs research and education on the fundamentals and innovative technological trends of software engineering, including how contemporary software development teams make and maintain software, especially when using open source software. Topics include code analysis at the project level for automated tool support, empirical mining software artifacts to test assumptions, and human communication at both project and larger ecosystem levels. We strive to help build, use and maintain software to benefit society.

Program analysis, programming education, open source software, software ecosystems, empirical studies, artificial intelligence, mining software repositories, software libraries, software security

Software Design and Analysis

Prof. Hajimu Iida
Assoc. Prof. Kohei Ichikawa
Visiting Prof. Toshinori Takai
Visiting Prof. Yasushi Tanaka
Assist. Prof. Yutaro Kashiwa
Assist. Prof. Toshiki Hirao
Visiting Assist. Prof. Keichi Takahashi

We conduct research on the methods and technologies which support the design/development of software and cloud computing systems, focusing on the analysis/ improvement of the software development process. Software technology is increasingly present in our daily lives, including various software-embedded machinery and electronic devices for homes, mobile telephones, and social infrastructures represented by cloud computing systems.

Software development processes, repository mining, software design & verification, cloud infrastructure design, software defined networking (SDN)

Cyber Resilience

Prof. Youki Kadobayashi
Assoc. Prof. Yuzo Taenaka
Assist. Prof. Md. Delwar Hossain
Affiliate Prof. Hiroyuki Inoue
Affiliate Assoc. Prof. Daisuke Miyamoto

Our laboratory pursues resilience of ICT-based society together with lab members and colleagues around the world. Our research ranges from theoretical to practical, and spans across broad technical fields, from binary code, methodology, to even law. The pursuit of resilience (toughness) is an ongoing challenge and central to our motivation.

Cybersecurity, Internet technology, IoT/CPS, privacy, edge computing, applied machine learning, software defined technology, operating systems, distributed systems, Industrial control systems (ICS)

Information Security Engineering

Prof. Yuichi Hayashi
Assist. Prof. Daisuke Fujimoto
Assist. Prof. Shugo Kaji
Affiliate Assist. Prof. Youngwoo Kim

Our laboratory conducts research on methods to ensure hardware safety, which is the bedrock of system information security. We also research to ensure system-level security, including the upper layers. In addition to students from information science fields, we also accept students who majored in electrical and mechanical engineering that wish to study the information field.

Hardware security, cryptographic hardware, embedded systems, side-channel analysis, electromagnetic information security, hardware Trojans, cyber-physical system security, random number generators, electromagnetic compatibility, signal/power integrity

Internet Architecture and Systems

Prof. Kazutoshi Fujikawa
Assoc. Prof. Ismail Arai
Assist. Prof. Masatoshi Kakiuchi
Assist. Prof. Arata Endo
Affiliate Assoc. Prof. Shigeru Kashihara
Affiliate Assoc. Prof. Akira Yutani

Our research goal is to realize the next-generation ICT infrastructure technologies and services beyond current systems such as the Internet, Wi-Fi networks, and cloud systems, which can be used securely and conveniently. In order to achieve this, our research methods are not only computer simulations but also using actual systems and equipment operated in Information Initiative Center (ITC).

Pervasive computing, ubiquitous computing, Internet of Things, disaster relief computing/networking, data centers, network operation, cyber security, high-performance computing, software-defined networking

Media Informatics Laboratories

Natural Language Processing

Prof. Taro Watanabe
Assoc. Prof. Hidetaka Kamigaito
Reasearch Assoc. Prof. Hiroyuki Shindo
Assist. Prof. Hiroki Ouchi
Affiliate Assist. Prof. Shohei Higashiyama

We perform research on natural language processing, computational linguistics and machine learning. Our primary focuses are on the fundamental techniques for language analysis, language generation and information extraction, and on the end applications, such as machine translation, summarization, question answering and grammatical error correction. We also work for the language technologies intersected with other areas, e.g., geography and vision.

Natural language processing, computational linguistics, machine learning, syntactic analysis, semantic analysis, information extraction, language generation, language grounding, machine translation, summarization, geography and language, vision and language

Information Science

Information Science

Media Informatics Laboratories

Augmented Human Communication

Prof. Satoshi Nakamura
Assoc. Prof. Katsuhito Sudoh
Assist. Prof. Hiroki Tanaka
Assist. Prof. Seitaro Shinagawa
Affiliate Assoc. Prof. Sakriani Sakti
Affiliate Assoc. Prof. Keiji Yasuda

The AHC Laboratory pursues research to solve problems related to human communication based on speech and language, paralanguage, and non-verbal information. By applying various artificial intelligence technologies including deep learning, our lab is pursuing tasks that were previously not able to be solved.

Speech-to-speech translation, natural language processing, multi-lingual speech processing, dialog systems, brain analysis, information distillation

Social Computing

Prof. Eiji Aramaki
Assoc. Prof. Shoko Wakamiya
Assist. Prof. Shuntaro Yada
Assist. Prof. Wan Jou She
Assist. Prof. Lis Kanashiro
Affiliate Assoc. Prof. Kongmeng Liew

We are an interdisciplinary laboratory specializing in the usage of social media mining and natural language processing (NLP) technologies towards a wide spectrum social outcomes, ranging from medical informatics and mental health applications, to fake news detection on Twitter and AI-powered conversation.

Social computing, web engineering, artificial intelligence, machine learning, natural language processing, medical informatics, computational social science

Network Systems

Prof. Minoru Okada
Assoc. Prof. Takeshi Higashino
Assoc. Prof. Chen Na

The scope of our laboratory includes wireless technologies such as beyond 5G mobile communication systems, wireless power transfer systems, and radio sensors. We educate our students from theoretical and practical perspectives of wireless technologies to achieve our research goals.

Wireless communications, wireless power transfer, digital broadcasting, satellite communications, wireless sensors, multiple input multiple output, radio over fiber, dynamic charging, Intelligent reflection surfaces, electromagnetic theory, modulation and signal detection

Interactive Media Design

Prof. Hirokazu Kato
Assoc. Prof. Masayuki Kanbara
Assist. Prof. Yuichiro Fujimoto
Assist. Prof. Taishi Sawabe

Our vision is to introduce augmented reality, interactive robots, and comfortable self-driving cars into the everyday lives of everyone on this planet. We aim to develop truly practical methods and systems using these technologies in cooperation with experts in various fields, focusing on medicine, sports, and industry.

Augmented reality, virtual reality, human computer interaction, human robot interaction, computer vision, computer graphics, training systems, support systems, user interfaces, self-driving cars

Optical Media Interface

Prof. Yasuhiro Mukaigawa
Assoc. Prof. Takuya Funatomi
Assist. Prof. Yuki Fujimura
Assist. Prof. Kazuya Kitano

The research topics in our laboratory include computer vision to understand scenes from visual information obtained by a camera, and computer graphics to generate rich visual information for humans. We are aiming to realize new interfaces that enable humans and machines to interact through optical media based on our cutting-edge research.

Computer vision, computer graphics, computational photography, development of sensing systems, deep learning, optical measurement, unconventional cameras, image analysis, 3D shape reconstruction, digital fabrication

Cybernetics and Reality Engineering

Prof. Kiyoshi Kiyokawa
Assoc. Prof. Hideaki Uchiyama
Affiliate Assoc. Prof. Nobuchika Sakata
Affiliate Assoc. Prof. Naoya Isoyama
Assist. Prof. Monica Perusquía-Hernández
Assist. Prof. Yutaro Hirao

We conduct research to create the "tools of the future" to realize an inclusive society where all people can maximize their abilities and help each other. In particular, by manipulating various sensations such as vision, we aim to live more conveniently, more comfortably, or more securely by offering "personalized reality" which empathizes with each individual.

Virtual and augmented reality, human augmentation, wearable computing, affective computing, cognitive science, psychology, computer vision, human and environmental sensing, artificial intelligence, display hardware

Applied Informatics Laboratories

Human Robotics

Prof. Takahiro Wada
Affiliate Assoc. Prof. Gustavo Garcia
Assist. Prof. Yasuaki Orita
Assist. Prof. Hailong Liu
Affiliate Assist. Prof. Sung-Gwi Cho
Affiliate Assist. Prof. Yuki Sato

We conduct research studies on the intellectualization of robots, understanding human. perception-action loops based on information science, and human machine system/human robot collaboration by combining them. We are aiming to define the quality of operational feeling and motion comfort in intelligent mechanical systems that interact with humans. Research questions include "What determines easiness of walking with an artificial leg?"

Robotics, human machine systems, human modelling, cooperative control, biological cybernetics, shared control, motion perception, motion sickness

Robot Learning

Prof. Takamitsu Matsubara
Assist. Prof. Kenta Hanada
Assist. Prof. Yoshihisa Tsurumine
Assist. Prof. Hikaru Sasaki
Assist. Prof. Yuhwan Kwon
Affiliate Assist. Prof. Takuya Kiyokawa

Our laboratory performs research and educates students in robot learning (machine learning for robot intelligence), an interdisciplinary field of various fields such as machine learning, artificial intelligence, robotics, control engineering, signal processing, optimization, mechatronics.

Reinforcement learning, imitation learning, deep learning, active perception, smart manufacturing, human-assistive technology (exoskeleton robots, EMG interface), industrial applications, vehicle autopiloting

Large-Scale Systems Management

Prof. Shoji Kasahara
Affiliate Prof. Masahiro Sasabe
Assist. Prof. Takanori Hara
Assist. Prof. Yu Nakahara

The Large-Scale Systems Management Laboratory research aims to develop mathematical modeling and simulation techniques for optimal design, control and architecture of large-scale systems such as computer/communication networks, with which the resulting systems achieve high performance, low vulnerability and high energy efficiency.

Queueing theory, game theory, machine learning, algorithms, graph theory, mathematical analytics, network optimization, blockchain, incentive mechanism design, data structure

Applied Informatics Laboratories

Mathematical Informatics

Prof. Kazushi Ikeda
Assoc. Prof. Takatomi Kubo
Assist. Prof. Chie Hieida
Assist. Prof. Renzo Roel Perez Tan
Affiliate Prof. Junichiro Yoshimoto
Affiliate Prof. Toshitaka Yamakawa
Affiliate Assoc. Prof. Tomoya Tamei

Our laboratory studies mathematical models in various fields such as computer science, mathematical biology, and engineering. Computer science includes machine learning and statistical science. Mathematical biology includes neuroscience, medical science, cognitive science, psychophysics and bioinformatics/multiomics. Engineering includes biomedical engineering, signal processing, computer vision and robotics. Mathematical models are everywhere!

Mathematical models, machine learning, mathematical biology, neuroscience, cognitive science, biomedical signal processing

Imaging-based Computational Biomedicine

Prof. Yoshinobu Sato
Assoc. Prof. Yoshito Otake
Assist. Prof. Soufi Mazen

We conduct research and education on "computational biomedicine, " which aims to develop mathematical models of the structure and function of the human body and other living organisms, and artificial intelligence for medical diagnosis and treatment, by integrating deep learning and biological simulation with analysis of biomedical images.

Medical image analysis, virtual human body, computational anatomy, machine learning, deep learning, artificial intelligence, medical big data, biological simulation, computer assited surgery, computer assisted diagnosis

Computational Systems Biology

Prof. Shigehiko Kanaya
Affiliate Prof. Hidehiro Iida
Assoc. Prof. MD. Altaf-Ul-Amin
Assoc. Prof. Naoaki Ono
Affiliate Assoc. Prof. Tetsuo Sato
Affiliate Assoc. Prof. Ming Huang

We are incorporating state-of-the-art data modeling/manipulating techniques such as deep learning techniques to better our understanding of the system biology of plants. In collaboration with medical hospitals and other academic institutions, we are developing various biomedical technologies based on information technology and deep learning techniques.

System biology, metabolic pathways, drug discovery, digital biomarkers, medical image processing, deep learning, computer aided diagnosis, proactive healthcare

Computational Behavioral Neuroscience

Assoc. Prof. Saori Tanaka
Affiliate Assist. Prof. Hiroyoshi Ogishima

To understand humans, we build behavioral models based on the information processing mechanism of the brain, investigate the principles of human behavior through verification using experimental and data-driven approaches, and conduct educational research on its application to society.

Decision-making, computational models, reinforcement learning, neuroimaging, cognitive science, neuroeconomics, computational psychiatry, databases

Collaborative Laboratories

Communication

Prof. Tomoharu Iwata
Assoc. Prof. Yusuke Tanaka

Our laboratory performs research on machine learning and data mining methods that extract valuable knowledge from various types of data. In particular, we are interested in developing methods that can learn from incomplete data, such as a small amount of data, data with many missing values, aggregated data, and noisy data.

Machine learning, data mining, deep learning, meta-learning, social network analysis, learning from aggregated data, spatio-temporal analysis

Computational Neuroscience

Prof. Motoaki Kawanabe
Assoc. Prof. Norikazu Sugimoto

We aim to understand the human brain and to achieve new machine intelligence (artificial intelligence) based on brain information processing functions. We conduct research and educate students on computational neuroscience, cutting-edge machine intelligence and neurotechnology at ATR, an internationally recognized computational neuroscience center.

Computational neuroscience, machine intelligence, robot learning, brain machine interface, cognitive function, neurofeedback, computational psychiatry, statistical modeling, multi-modal brain imaging, brain decoding

Humanware Engineering

Prof. Yoshikuni Sato
Assoc. Prof. Masashi Okada

Our laboratory performs research on Humanware, which essentially extends the abilities of humans and supports better human life by the combination of sensor data and knowledge processing. We explore new research areas such as smart houses and robotics combined with human, social, and physical sciences.

Artificial intelligence, biomedical engineering, machine learning

Symbiotic Systems

Prof. Rui Ishiyama
Assoc. Prof. Hiroyoshi Miyano

Our challenge is research and development of "symbiotic" systems that work in real applications to create social value. Currently we focus on the advanced image sensing and recognition technologies including "Fingerprint of Things" and object identification/authentication, which break through the limitation of existing AI technologies for real applications. We work on not only the algorithms but also additional methods and engineering for sensing, data collection and system usability design. Our final goal is to create social values by implementing and operating the new technologies with the real applications.

Symbiotic systems, image recognition, signal processing, Finger print of Things, pattern recognition, traceability, visual inspection, machine vision, robot vision

Optical and Vision Sensing

Prof. Masaki Suwa

Our laboratory performs research and educates students from both theoretical and practical perspectives, ranging from fundamental research to engineering. Our research results are applicable especially in the field of factory automation, healthcare, and social systems.

Physics-based vision, vision-based 3D measurement, sensor calibration, object detection/recognition, machine vision algorithms

Information Science

Collaborative Laboratories

Molecular Bioinformatics
Prof. Kazuhiko Fukui
Prof. Kentaro Tomii

We are developing bioinformatics methods and tools to explore the functions and mechanisms of biomolecules such as proteins. We aim to discover knowledge in the field of lifescience using information engineering techniques and to provide analysis methods that compensate for information deficiencies in experimental data.

Computational molecular biology, bioinformatics, omics, structural bioinformatics, genomics, data science, databases

Digital Human
Prof. Mitsunori Tada
Prof. Yukiyasu Domae
Prof. Akihiko Murai

Our laboratory researches both humans and robots for realizing inclusive systems where they can collaborate and co-evolve. Our research includes theoretical studies on human behavior and robot control, and empirical studies on practical social systems such as manufacturing factories and small stores where humans and robots co-exist.

Digital humans, robots, digital twins, motion analysis, motion synthesis, computer vision, pattern recognition, material handling, human-robot collaboration, human-robot co-evolution

Formal Verification
Prof. Reynald Affeldt
Assoc. Prof. Yusuke Kawamoto

Formal verification methods are mathematically rigorous techniques for checking the correct behavior of computer systems. We study the formal verification of software systems dealing with uncertainties, e.g., to guarantee the safety of cyber-physical systems and to rigorously verify and explain statistical programs and artificial intelligence.

Programming languages, formal verification, logic, type theory, proof assistants, Coq, algebra, analysis, probability, statistics

Network Orchestration
Prof. Kazumasa Kobayashi
Assoc. Prof. Eiji Kawai

The Network Orchestration Laboratory is a collaborative laboratory with the National Institute of Information and Communications Technology (NICT). In particular, we are developing the JGN network testbed, a nation-wide experimental network infrastructure founded by NICT. JGN also provides high-speed international connectivity to China, Singapore, and Thailand, forming part of a global R&E network infrastructure. Students find great opportunities to conduct research not only utilizing JGN facilities, but also applying their products to JGN.

Network operations and management, network security, network measurement, network virtualization, network failure analysis, self-configuration/healing/optimization/protection network

High Reliability Software System Verification
Prof. Naoki Ishihama

Our Laboratory is focused on research into software verification methodologies to achieve high reliability and safety in software that must function properly under extreme environmental conditions. The research outcome will be expected to apply to practical use for systems that require high reliability not only in space systems but also in social core infrastructures.

Highly reliable software systems, safety systems, verification methodology, safety assurance methodologies, reliability

Data-driven Knowledge Processing
Prof. Kentaro Torisawa
Assoc. Prof. Ryu Iida

We are conducting research and development on natural language processing technologies that use big data, aiming to develop natural language processing systems that can contribute to society. We are now developing WEKDA, a spoken dialog system that provides a wide variety of written knowledge from the Web, and MICSUS, a multimodal interactive care support system that chats with elderly people to check their health and lifestyle, as well as more basic technologies that support these systems.

Big data, natural language processing, deep learning, question answering systems, spoken dialog systems

Multilingual Knowledge Computing
Prof. Tomoya Iwakura
Assoc. Prof. Yuchang Cheng

Our laboratory belongs to Fujitsu Limited. Artificial Intelligence (AI) today uses vast amounts of data to make decisions. We are researching and developing such AI technologies including knowledge computing and its application that makes use of knowledge extracted from multilingual text with natural language processing. One of our principal objectives is to take AI to new levels and create new value for society and we are aiming to realize AI that will support greater business growth and efficiency for our customers.

Artificial Intelligence (AI), natural language processing, knowledge computing, knowledge graphs

Intelligent Robot Dialogue
Prof. Koichiro Yoshino
Assist. Prof. Seiya Kawano

We research dialogue functions and intelligent systems for communication robots, roughly divided into three categories: understanding, control, and generation. To realize dialogue robots working in the real world, multimodal situation understanding (grounding) using language, speech, and images is necessary. The generative system of the robot utilizes multimodal expressions such as text, speech, images, and robot movements. We also study dialogue control mechanisms; reasoning , decision making, and inference on the knowledge base.

Dialogue systems, dialogue robots, natural language processing, language understanding, multimodal processing, knowledge acquisition, inference, dialogue management, language generation, reinforcement learning

Multimodal Environment Recognition
Prof. Yasutomo Kawanishi
Assist. Prof. Motoharu Sonogashira

Our laboratory performs research and educates students by developing environment recognition for assistive robots and surveillance systems, and human activity understanding in daily life. We are collaborating with the Multimodal Data Recognition Research Team, a part of the RIKEN Guardian Robot Project, to realize the future in which humans and robots are in harmony.

Computer vision, pattern recognition, robot vision, surveillance, environment recognition, object recognition, person recognition, action recognition, activity understanding, neural networks

Biological Science

Plant Biology Laboratories

Plant Developmental Signaling
Prof. Keiji Nakajima
Assist. Prof. Tatsuaki Goh

We study molecular and genetic mechanisms of plant development and growth control in response to environmental factors using Arabidopsis and liverworts as model systems. We develop unique microscopic systems and image processing techniques to analyze dynamic changes in the growth and functions of plant organs.

Plant development, enviromental response, roots, sexual reproduction, evolution, Arabidopsis, liverwort, live imaging, computer vision

Plant Metabolic Regulation
Prof. Taku Demura
Assist. Prof. Tadashi Kunieda
Assist. Prof. Miyuki Nakata

We engage in research and education pertaining to the biotechnology needed to resolve the social issues, such as food, environment, and energy. Especially we are exploring the mechanisms of gene expression regulation for woody cell differentiation using omics technology and of plant mechanical optimization system to develop novel biotechnological tools.

Woody biomass, xylem, multi-omics, transcription factors, cell walls, atomic force microscopes (AFM), the 3D/4D structural analysis, micro X-ray CT, confocal microscopy, endomembrane trafficking

Plant Growth Regulation
Prof. Masaaki Umeda
Assist. Prof. Shiori Aki

Our laboratory aims to understand the mechanisms of DNA polyploidization, stress response and genome maintenance that support sustained plant growth under changing environments. Our studies will contribute to the development of technologies that increase plant biomass and food production, thereby solving global environmental issues.

Plant organ growth, cell cycle, DNA polyploidization, biomass, environmental stress, DNA damage response, genome maintenance, phytohormone, signal transduction, chromatin structure, epigenetics

Plant Stem Cell Regulation and Floral Pattering
Prof. Toshiro Ito
Assoc. Prof. Nobutoshi Yamaguchi
Assist. Prof. Makoto Shirakawa
Assist. Prof. Yuko Wada

We are interested in a holistic view of gene regulation in plant reproduction, which leads to developmental robustness and coordination. We explore signaling and epigenetic control in stem cell maintenance, environmental response and fertilization. Our students work at the frontiers of plant molecular genetics, developing their research, presentation and writing skills.

Flower development, transcription factors, epigenetics, histone modification, hormone signaling, transcriptomes, epigenomes, molecular breeding, chemical biology, synthetic biology

Plant Physiology
Prof. Motomu Endo
Assist. Prof. Akane Kubota-Namima
Assist. Prof. Nozomu Takahashi

Focusing on the circadian clock and photoperiodism, our laboratory conducts theoretical and experimental research and education on how, when and where plants perceive time and seasons, and how they use this information to control their responses.

Circadian clock, photoperiodism, flowering, inter-organ/tissue/cellular communication, circadian rhythm, chronobiology, Arabidopsis, plants, plant physiology

Plant Immunity
Prof. Yusuke Saijo
Assist. Prof. Shigetaka Yasuda

Our laboratory performs research and educates students in the areas of plant-microbe interactions, with a focus on immune receptor signaling, signal integration between biotic and abiotic stress responses, plant-infecting microbes and plant-associated microbiomes. We wish to elucidate the underlying molecular principles in model plants and crops, and apply the obtained knowledge to promoting sustainable agriculture.

Plant immunity, plant-microbe interactions, pattern recognition receptors, damage sensing, systemic signaling, microbiomes, symbiosis, plant pathology, abiotic stress, environments

Plant Symbiosis
Prof. Satoko Yoshida
Assist. Prof. Mina Ohtsu
Assist. Prof. Shoko Inaba

Our laboratory focuses on research of parasitic plants, especially Orobanchaceae parasitic plants that cause severe agricultural damage in Africa. We use molecular biology, genetics, microscopy, and bioinformatic techniques to elucidate the mechanisms of plant parasitism. We also work on the other plant-organism relationships, including plant-nematode interaction, hervivory by the golden apple snail on rice, plant and arbuscular mycorrhizal fungi interaction.

Parasitic plants, Striga, haustorium formation, molecular genetics, microscopy, transcriptome, genome analysis, evolution, chemical biology

Plant Secondary Metabolism
Assoc. Prof. Takayuki Tohge
Assist. Prof. Shinichiro Komaki

Our laboratory focuses on the study of chemical diversity and metabolic polymorphism of plant secondary (specialized) metabolism by translational analysis of genomics, transcriptomics and mass spectrometry-based metabolomics, as well as functional annotation of key genes corresponding to the production of active phytoprotectants moderating environmental stress in plants.

Plant metabolism, chemical diversity, metabolic polymorphism, environmental adaptation, integrative omics approaches, comparative omics, cross-species comparison, genomic synteny, metabolic engineering, model plant to crop

Plant Regeneration and Morphogenesis
Assoc. Prof. Momoko Ikeuchi

Why can plants readily regenerate their bodies upon injury? We pursue the secrets of plants' regenerative capacity using molecular genetics, live imaging and single cell transcriptome analyses. Uncovering the secrets of plants' regenerative capacity will potentially benefit human life by improving various aspects of agricultural biotechnology including grafting and tissue culture.

Regeneration, cellular pluripotency, developmental plasticity, tissue cultures, grafting, imaging, transcriptomes, epigenetics, Arabidopsis thaliana

Biological Science

Biological Science

Biological Science Laboratories

Functional Genomics and Medicine

Assoc. Prof. Yasumasa Ishida
Assist. Prof. Chio Oka
Assist. Prof. Eishou Matsuda

All the faculty members in our laboratory, Ishida, Oka, and Matsuda, were educated and trained in medical schools. Therefore, as we focus on human diseases, we investigate the molecular mechanisms involved in their development and novel therapeutic strategies to treat them.

PD-1, self-nonself discrimination, cancer immunotherapy, HtrA1, age-related macular degeneration, CIBZ, methylated DNA-binding proteins

Tumor Cell Biology

Prof. Jun-ya Kato
Assoc. Prof. Noriko Yoneda-Kato

Focusing on molecular mechanisms controlling mammalian cell proliferation, differentiation, and death, we conduct research on the regulation of the G1 phase of the cell cycle and carcinogenesis, and on hematopoietic stem and blood cell differentiation, proliferation, and tumorigenesis. Experimental systems used include (1) in vitro cell cultures of mouse and human cell lines, (2) in vitro induction of differentiation using ES cells, and (3) in vivo mouse models using knockout and transgenic mice.

Cell cycle, G1 progression, tumorigenesis, hematopoiesis, leukemogenesis, cancer research, cancer metabolism, ROS regulation, lipid metabolism

Molecular Immunobiology

Prof. Taro Kawai
Assist. Prof. Daisuke Ori

The innate immune system is the first line of host defense that detects invading pathogens. However, aberrant activation of innate immune responses is closely associated with exacerbation of inflammatory diseases. Our aim is to uncover mechanisms that control innate immune responses using tools of molecular and cell biology, bioinformatics and genetically modified mice.

Innate immunity, inflammation, vaccines, adjuvant, autoimmunity, macrophages, dendritic cells, cell death, cancer, gene targeting

Molecular Medicine and Cell Biology

Prof. Shiro Suetsugu
Assist. Prof. Tamako Nishimura

Each type of cells has specific shape that is determined by the plasma membrane. Our lab will focus on the mechanisms connecting the membrane to the cytoskeleton for varieties of cellular functions including migration, proliferation, and various events associated with morphological changes. We will integrate cell biology, molecular biology, biochemistry, biophysics, and machine learning.

Cell biology, molecular biology, biochemistry, biophysics, machine learning

RNA Molecular Medicine

Prof. Katsutomo Okamura
Assist. Prof. Ren Shimamoto
Assist. Prof. Masami Shiimori

Our laboratory studies biogenesis and functions of regulatory small non-coding RNAs and tries to understand how they contribute to human health. We conduct bioinformatics analysis to extract important information from large amounts of sequencing data and perform biochemical experiments using cultured cells and model organisms to test hypotheses.

MicroRNA, regulation of miRNA processing, transcriptomes, siRNA, Argonaute, RNA-dependent RNA polymerase

Stem Cell Technologies

Prof. Akira Kurisaki
Assist. Prof. Hitomi Takada
Assist. Prof. Atsushi Intoh

Our goal is to understand the mechanisms of tissue development from the viewpoint of stem cell differentiation. We are also interested in the tissue regeneration process because the tissue stem cells are activated and initiate differentiation upon damage.

Stem cells, differentiation, development, gastrointestinal tissue, lungs, adipose tissue, transcription factors, gene expression, growth factors, signaling pathway analysis

Developmental Biomedical Science

Assoc. Prof. Noriaki Sasai
Assist. Prof. Takuma Shinozuka

Our laboratory is interested in developmental biology, and is focusing on the mechanisms by which the central nervous system is formed. In addition, we investigate how the established nervous system is maintained, and seek for new therapeutic methods for neurodegenerative diseases.

Developmental biology, molecular biology, cell biology, central nervous systems, neurodegenerative disease, chicks, mice, embryonic stem cells, sonic hedgehog

Organ Developmental Engineering

Assoc. Prof. Ayako Isotani
Assist. Prof. Shunsuke Yuri

We are researching the formation of organs using interspecies chimeric animals in which mouse and rat cells coexist in one body. Through this research, we investigate the essential factors for organ development and the correct function of organs.

Chimeric animals, organ formation, developmental engineering, embryomanipulation, genome editing, animal experiments, stem cells, regenerative medicine, reproductive biology, mammalian development

Systems Biology Laboratories

Microbial Molecular Genetics

Prof. Shosuke Yoshida
Assoc. Prof. Masahiro Akiyama
Assist. Prof. Kazuo Kobayashi

At our research group, we have been studying (1) how genomic instability is caused when an antimicrobial reagent induces replication inhibition and cell death, and (2) how microbial biofilms that hamper drug treatments of microbial infection are formed and disassembled. We also put strong emphasis on the international education of young students who are highly interested in these research themes.

Genomic instability, mutations, DNA replication, DNA repair, biofilm formation, molecular biology, microbiology, cell biology

Microbial Interaction

Assoc. Prof. Daisuke Watanabe
Assoc. Prof. Yukio Kimata
Assist. Prof. Akira Nishimura
Assist. Prof. Yuichi Morozumi
Assist. Prof. Yukiko Nakase

We study yeasts and other unicellular organisms familiar to humans at the molecular, metabolic, cellular, and ecological levels to deepen understanding of diversity in the microscopic world.

Microbial ecology, microbial interaction, protein-protein interaction, signal transduction, TOR signaling, environmental response, ER stress response, food fermentation, biomanufacturing, yeast

Environmental Microbiology

Prof. Shosuke Yoshida

We study the unique metabolic capabilities of microorganisms at the cellular and molecular levels. Furthermore, we aim to develop technologies that contribute to solving environmental problems and the realization of a sustainable society by utilizing microbial functions. A recent focus is poly(ethylene terephthalate) biodegradation.

Microbiology, metabolic engineering, genomics, transcriptomics, enzymology, imaging, genetic engineering, microbial breeding, microbial evolution, microbial screening

Structural Life Science

Prof. Tomoya Tsukazaki
Assist. Prof. Ryoji Miyazaki
Assist. Prof. Ken Kitano

In cells, various proteins are involved in a variety of fundamental biological phenomena. To unveil such mechanisms coupled with dynamic interactions and structural changes of biomolecules, including proteins, we conduct basic research through structural biologic analyses in combination with other newly developed methods.

Protein science, structural life science, structural biology, protein structure, protein interaction, protein complexes, protein transport, molecular dynamics, molecular mechanisms, crystallography

Gene Regulation Research

Prof. Yasumasa Bessho
Assoc. Prof. Takaaki Matsui
Assist. Prof. Ryutaro Akiyama
Assist. Prof. Norihiro Kitagawa
Assist. Prof. Yasuko Inaba

We are clarifying the principles of animal development and growth using mice and zebrafish as model systems. We bring together various technologies, including genetics, molecular biology, bioimaging technology, pharmacology, bioinformatics, mathematical modeling, and nanotechnology to tackle the mystery of life.

Developmental biology, mice, zebrafish, live imaging, gene editing, body plans, transcription factors, biological clocks, collective behavior, regeneration

Systems Neurobiology and Medicine

Prof. Naoyuki Inagaki
Assist. Prof. Kentaro Baba
Assist. Prof. Takunori Minegishi

The development of neuronal networks in the brain relies on multiple steps, including neuronal migration, polarity formation, axon guidance, synapse formation and synaptic plasticity. Our laboratory investigates the molecular mechanisms for these processes. We are also analyzing the mechanisms of cell migration, memory formation and cancer metastasis.

Neuronal network formation, cell migration, axon guidance, synaptic plasticity, actin waves, cancer metastasis, biochemistry, molecular biology, cell biology, mechanobiology

Bioengineering

Prof. Ko Kato
Assist. Prof. Shotaro Yamasaki
Assist. Prof. Tomomi Wakabayashi
Assist. Prof. Takehide Kato

In our laboratory, we are performing research and education on the development of basic technology for efficiently producing useful materials such as biopharmaceuticals in plants and the elucidation of the mechanismss controlling the phenotype of plants in order to contribute to society through biotechnology.

Regulation of gene expression, production of useful materials in plants, bioinformatics, next-generation sequencers, gene sequence optimization, machine learning, analysis tool development

Data-Driven Biology

Prof. Yuichi Sakumura
Assist. Prof. Toshiya Kokaji

Our laboratory analyzes experimental biological data to build quantitative mathematical models and provide feedback for experimental design. We work to preprocess the data using domain knowledge, and then use machine learning and mathematical models to extract novel knowledge.

Cell migration, morphogenesis, tissue formation, trans-omics, disease diagnosis by exhaled breath, machine learning, quantitative modeling, mechanobiology, image analysis software development

Collaborative Laboratories

Molecular Microbiology and Genetics

Visiting Prof. Masayuki Inui

Basic research and education activities focus on the development of a biorefinery, a facility that integrates biomass conversion and environmentfriendly production of fuels and other useful chemicals. To achieve this, integrated omics analysis and metabolic conversion techniques are employed to develop new microbial functions. (Affiliation: Research Institute of Innovative Technology for the Earth (RITE))

Microbiology, molecular biology, genome engineering, culture engineering, metabolomic analysis, metabolic engineering, systems biology, high-efficiency bioprocesses

Materials Science

Core Laboratories

Bio-Process Engineering

Prof. Yoichiroh Hosokawa
Assoc. Prof. Yalikun Yaxiaer
Assist. Prof. Yuka Tsuri
Assist. Prof. Naomi Tanga

Our laboratory promotes developmental research on high-precision and fast manipulation methodologies for biological materials, in which state-of-the-art laser technology is combined with microscope technologies. We have the world's top activities on cell manipulation and processing by femtosecond laser and have attracted attention as a pioneer of laser applications for biotechnology.

Femtosecond lasers, atomic force microscopy, micro-fluidic devices, cell manipulation, cell processing, laser-induced shockwaves, bio-applications, cell sorters, fluorescence imaging, photoporation, laser-induced crystallization

Solid-state Information Physics

Prof. Tomohiro Matsushita
Assoc. Prof. Ken Hattori
Assist. Prof. Sakura Takeda
Assist. Prof. Yusuke Hashimoto
Assist. Prof. Takanobu Jujo
Assist. Prof. Yuta Yamamoto

Our aim is to clarify the physical properties of atomically-controlled bulks, surfaces, interfaces, and complex systems, creating novel functionalities, from atomic and electronic viewpoints. Our research targets are active sites such as dopants, three-dimensional structure surfaces, surface electronic states such as subbands, luminescence, magnetism, and electronic molecule-reactions.

Synchrotron radiation, angle resolved photoelectron spectroscopy, photoelectron holography, atomic resolved holography, electron diffraction, reciprocal space mapping, scanning tunneling microscopy, quadrupole mass spectrometry, cathode luminescence, density functional theory

Quantum Photo-Science

Assoc. Prof. Hiroyuki Katsuki
Assist. Prof. Hitoshi Mizuno

We develop techniques to manipulate the quantum properties of various target systems, such as strongly-coupled cavity systems composed of confined photons and molecules, and size-selective organic nanoparticles. We utilize various optics-based experimental approaches to clarify material properties from the viewpoint of quantum physics.

Coherent control, ultrafast spectroscopy, vibrational polariton, reaction control, wave packet interferometry, photo-induced phase transition, organic electronics, molecular photonics, nanoparticles, quantum effects

Quantum Materials Science

Prof. Shun Hirota
Assist. Prof. Atsushi Yamashita

This laboratory is working on optical functionality of nanostructured materials such as environment-conscious nanoparticles and impurity-doped nanoparticles.

Nanoparticles, fluorescence, energy transfer

Photonic Device Science

Prof. Jun Ohta
Assoc. Prof. Kiyotaka Sasagawa
Assist. Prof. Hironari Takehara

In our laboratory, we are conducting cross-disciplinary research, from the design of original optoelectronic devices based on microelectronics technology to their applications. Specifically, we are developing novel photonic devices and systems such as retinal prosthesis, implantable functional brain imaging devices, near-infrared color imaging, and visualization of high-frequency electric fields.

Smart CMOS image sensors, implantable devices, retinal prosthesis, optogenetics, near-infrared imaging, lensless imaging, high frequency electric field imaging

Information Device Science

Prof. Yukiharu Uraoka
Assoc. Prof. Mutsunori Uenuma
Assist. Prof. Juan Paolo Bermundo
Assist. Prof. Itaru Raifuku

In our laboratory, we are developing semiconductor materials and studying semiconductor processes and devices. We are also developing various semiconductor devices such as LSIs, TFTs, and solar cells with the aim of creating AI and energy that enrich our lives. Additionally, we are also working on higher performance using data science and materials informatics technologies.

AI (Artificial Intelligence), LSIs, thin film transistors, solar cell, thermal transducers, semiconductor devices, data science, material informatics

Applied Quantum Physics

Prof. Takayuki Yanagida
Assoc. Prof. Noriaki Kawaguchi
Assoc. Prof. Daisuke Nakauchi
Assist. Prof. Takumi Kato

Our laboratory studies scintillators and storage phosphors for solid state ionizing radiation detectors, and the coverage is synthesis of materials (single crystal, transparent ceramic, glass, organic-inorganic perovskite, and powder), photophysics and radiation detector properties.

Scintillators, scintillation detectors, dosimeters, thermally stimulated luminescence (TSL), optically stimulated luminescence (OSL), radiophotoluminescence (RPL), radiation detectors, phosphor, photoluminescence

Organic Electronics

Prof. Masakazu Nakamura
Assoc. Prof. Hiroaki Benten
Assist. Prof. Manish Pandey

Our laboratory pursues the development of novel electronic devices using organic materials based on applied physics and chemistry. Our research is unique in that we develop original research tools to characterize organic thin films and low-dimensional materials, and realize entirely new fabrication methods and structures of devices which are distinctive from conventional ones.

Organic electronics, energy harvesting, thermoelectric generators, solar cells, thin-film transistors, molecular orientation, Seebeck effect, thermal management, scanning probe microscopy, CNT, proteins, polymer semiconductors, hybrid perovskite

Core Laboratories (Cooperative)

Mesoscopic Materials Science

Adjunct Prof. Yasuyuki Naito
Adjunct Prof. Hiroyuki Tanaka
Adjunct Assoc. Prof. Hiromasa Tamaki

Our laboratory performs research and educates on exotic devices utilizing new physical phenomena in the mesoscopic region that take advantage of thin-film technology and computational science. Specifically, we are conducting research on novel semiconductor devices and materials for energy conversion and carbon neutrality including photovoltaic cells and high-performance transistors.

Mesoscopic, nano-technology, thin-film, energy conversion materials, transition metal oxide, perovskite, photovoltaic cells, power semiconductors, computational science, material informatics

Sensory Materials and Devices

Visiting Prof. Keishi Kitamura
Visiting Prof. Masaki Kanai
Visiting Assoc. Prof. Tetsuo Furumiya

We are advancing our research on sensor and device-related fund amental technologies such as microfabrication, biomaterials, image sensor systems to be applied in the medical diagnosis field, as well as working on the integration of these technologies to realize highly functional ultra micro chemical analysis systems (μ TAS: Micro Total Analysis Systems).

Microchemical analysis systems, microreactors and micropumps, biomaterial for tissue engineering, positron emission tomography, x-ray imaging systems, optical Imaging systems

Core Laboratories

Photonic and Reactive Molecular Science

Prof. Tsuyoshi Kawai
Assoc. Prof. Tsumoru Morimoto
Assist. Prof. Mihoko Yamada
Assist. Prof. Marine Louis

Our group investigates light/matter interactions to tackle innovative chemistry, promoting social progress and protecting the environment. We aim to cultivate students by developing creative, critical minds to shape tomorrow's molecular technology. Our focus encompasses innovative molecules for remote-controlled photo-induced stereo/enantio-selective catalysis, conversion of light information as well as light-energy with molecular photo-response. For this, we conduct advanced scientific research on synthetic organic chemistry, molecular photochemistry, fluorescence and phosphorescent materials and chiral light emitting molecules. Furthermore, from the perspective of organic reaction chemistry, our goal is the realization of green chemistry on the basis of carbon neutral.

Photochromes, photo-triggered reactions, chirality, stereo/enantio-selective catalyses, circularly polarized luminescence, transition metal catalyst, future displays, light emitting devices, lanthanides, fluorine chemistry, carbon neutral, green chemistry

---

Materials Science

Core Laboratories

Functional Organic Chemistry

Assoc. Prof. Naoki Aratani
Assist. Prof. Kyohei Matsuo

We focus on the development of functional organic materials including organic semiconductors, highly fluorescent dyes, near-infrared (NIR) dyes, and carbon nanomaterials. In particular, we are fascinated by beautiful and huge organic structures with high symmetry. We are also interested in the control of self-assembled structures to achieve their synergistic performances.

Functional organic materials, polycyclic aromatic hydrocarbons, carbon nanomaterials, aromaticity, supramolecular chemistry, main group elements, photochemistry, organic electronics, NIR absorption and emission

Biomimetic and Technomimetic Molecular Science

Prof. Gwenael Rapenne
Assoc. Prof. Kazuma Yasuhara
Assist. Prof. Toshio Nishino

We are designing and synthesizing molecules which can act as machines at the nanoscale, including motors, gears and nanocars. Thanks to the injection of energy (light or electron) these molecular machines can produce a controllable motion. We are also developing biologically-active molecules by mimicking natural molecular machines.

Molecular machines, organic chemistry, coordination chemistry, gears, nanocars, bioactive molecules, polymer chemistry, artificial membranes, interface chemistry, amphiphiles

Core Laboratories (Cooperative)

Functional Polymer Science

Visiting Prof. Takahiro Honda
Visiting Prof. Komei Okabe
Visiting Assoc. Prof. Kazuhiro Kudo

Our laboratory performs research and educates students through drug discovery and formulation design for medical drugs. Especially, we are now exploring the innovative DDS platform to penetrate target ocular tissues efficiently by using synthesized new material or functional polymers, etc.

DDS, drug delivery, formulation design, medical drugs, chemical synthesis, functional polymers, cell penetrating peptides

Ecomaterial Science (with Research Institute of Innovative Technology for the Earth)

Adjunct Prof. Katsunori Yogo
Adjunct Prof. Junichiro Kugai
Adjunct Assoc. Prof. Tomohiro Kinoshita

The Ecomaterial Science Laboratory, staffed by researchers of the Research Institute of Innovative Technology for the Earth (RITE), provides research and education on fundamental technologies to solve global warming issues. We endeavor to develop advanced materials for CO2 capture and H2 energy production, such as zeolite, amine-based materials.

Global warming, CO2 capture, CCUS, zeolites, amine-based materials, mesoporous materials, polymeric materials, metal organic frameworks (MOF), inorganic membranes

Advanced Functional Materials

Adjunct Prof. Masanari Takahashi
Adjunct Prof. Joji Kadota
Adjunct Assoc. Prof. Mari Yamamoto

We focus on the nanostructure control of materials to realize next generation products. An important challenge is the development of environmental-conscious material processing technology for all solid-state batteries and biodegradable polymers. Our laboratory is located in the Osaka Research Institute of Industrial Science and Technology, Morinomiya Center in Osaka city and conducts intimate collaboration with private industry engineers, leading to rapid application of the developed materials into practical devices.

All solid state batteries, lithium ion secondary batteries, inorganic polymers, porous materials, nano-fibers, biodegradable polymers, polylactic acid, accurate polymerization

Core Laboratories (Cooperative)

Functional Supramolecular Chemistry

Prof. Shun Hirota
Assoc. Prof. Takashi Matsuo
Assist. Prof. Naoya Kobayashi
Assist. Prof. Tsuyoshi Mashima

We are performing new interdisciplinary research in chemistry and biology. Based on the chemical knowledge of the functions and structures of biomolecules at molecular level, our laboratory focuses on the elucidation of protein mechanisms and design/application of bio-supramolecules using various analytical methods, protein engineering techniques, and organic syntheses.

Supramolecule, protein, metalloprotein, function control, enzymatic reaction, chemical modification, genetic mutation, analytical methods, organic synthesis, computer-based protein design

Complex Molecular Systems

Prof. Hironari Kamikubo
Assoc. Prof. Sachiko Toma-Fukai
Assist. Prof. Yoichi Yamazaki
Assist. Prof. Kento Yonezawa

Our laboratory focuses on the autonomous assembly-disassembly phenomena exhibited by complex molecular systems of proteins. Based on protein science and biophysics, we conduct research and education on the understanding of protein-molecule complex systems as potential targets for drug discovery and the development of next-generation protein-molecule complex materials.

Protein science, biophysics, structural biology, protein design engineering, x-ray solution scattering, x-ray & neutron crystallography, spectroscopy, recombinant DNA technology, structural proteins, protein transport systems, signal transduction systems

Nanomaterials and Polymer Chemistry

Prof. Hiroharu Ajiro
Assoc. Prof. Tsuyoshi Ando
Assist. Prof. Nalinthip Chanthaset
Assist. Prof. Hiroaki Yoshida

Based on the concepts of "molecular technology" and "precise polymerization", we prepare various polymer structures and create new polymer materials by controlling molecular design, polymer synthesis and polymer-polymer interactions. The target of their application is biocompatible materials, energy related materials, and environmentally friendly materials.

Biomaterial, degradable polymers, environmentally friendly material, energy related material, polymer synthesis, molecular design, nano structure, stimuli responsive property, gels, films

Materials Informatics

Prof. Mikiya Fujii
Assoc. Prof. Tomoaki Takayama
Assist. Prof. Yosuke Harashima
Assist. Prof. Shogo Takasuga

In our laboratory, we study materials informatics. Our goal is to develop informatics analysis methods and their applications to improve material properties. In material science, experiments and theories have developed by interacting with each other. We are particularly interested in the technology that integrates and utilizes them.

Materials informatics, machine learning, conditional generative adversarial networks, data assimilation, computational quantum chemistry, first-principles calculation, photocatalysts

Core Laboratories (Collaborative)

Data Driven Chemistry

Prof. Yukiharu Uraoka
Assoc. Prof. Tomoyuki Miyao
Assist. Prof. Jasial Swarit

Chemoinformatics is a research area where chemical problems are tackled using tools coming from informatics. Our primary mission is to develop useful data analysis methodologies for experimental chemists/ biologists by incorporating theory and data. The methods developed by our group have a wide range of applications from drug discovery to process control in chemical plants.

Chemoinformatics, data-driven chemistry, virtual screening, soft sensors, chemical plant operation, drug discovery, in-silico modeling, machine learning, data analysis, process informatics

Campus Map & Facilities

NAIST's campus is a compact area constructed to facilitate campus-wide research, education and interaction, where students, faculty and staff connect with each other daily. In addition to the on-campus housing for students, faculty, and staff, NAIST's secluded campus was created to assist students in focusing on their academic goals by offering support in a variety of areas. The campus's location close to Kyoto and Osaka allows for easy domestic and international travel.

① Administration Bureau
② Library
③ University Union / Health Care Center / Convenience Store
④ Interdisciplinary Frontier Research Complex No. 2
⑤ Millennium Hall
⑥ Guesthouse Sentan
⑦ Information Science Complex /
   Information Initiative Center
⑧ Biological Science Complex /
   Research and Education Center for Genetic Information
⑨ Animal Experimentation Facility
⑩ Botanical Greenhouses
⑪ Materials Science Complex /
   Research and Education Center for Materials Science
⑫ Bio Nano Process Laboratory
⑬ Interdisciplinary Frontier Research Complex No. 1
⑭ Student Dormitories
⑮ Staff Residences
⑯ Administration Bureau Annex
⑰ Sports facilities
⑱ NAIST One-way Carsharing System
⑲ Rooms for childcare and reproductive health

Takayama Science Plaza
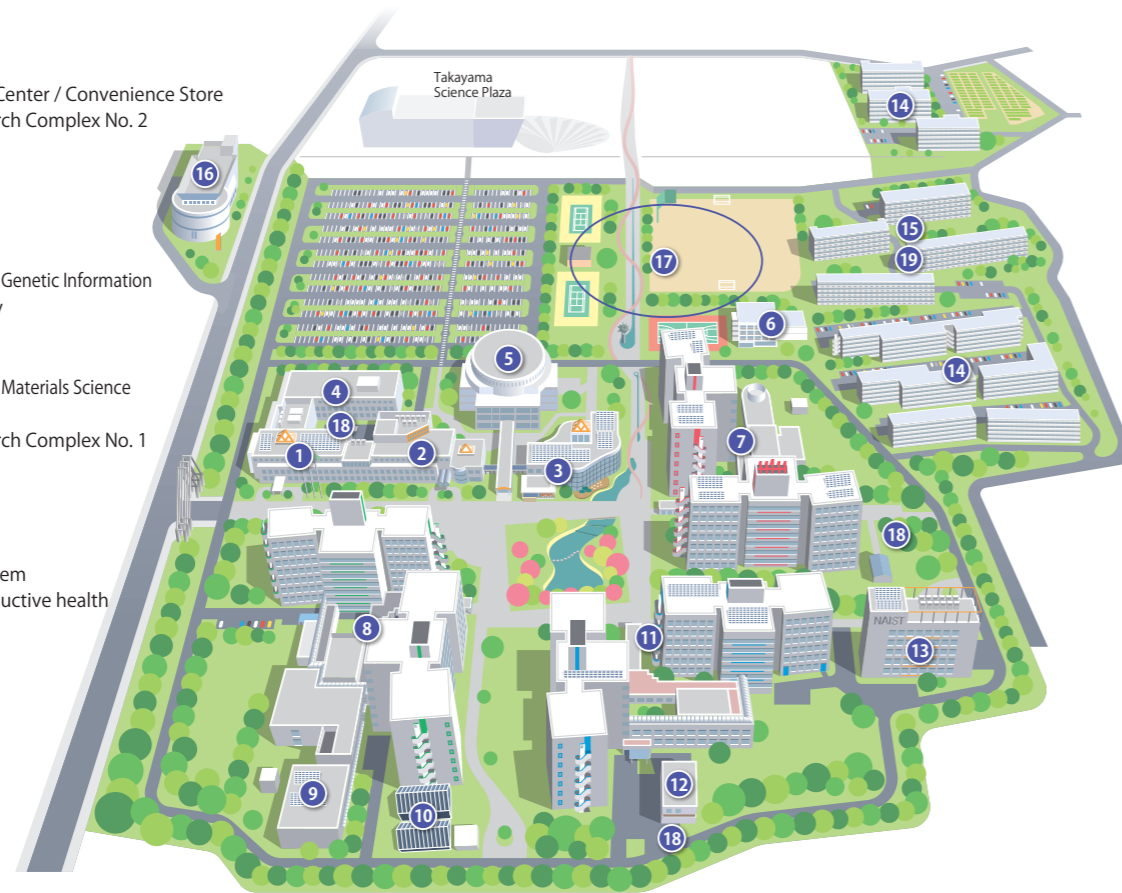
NAIST Library ❷
As Japan's first full-scale digital library, the NAIST Library is available online 24 hours-a-day throughout the year and the physical library is open 24 hours-a-day as well offering reference materials, study space, etc.

Health Care Center ❸
The Health Care Center staff includes a doctor, nurses and counselors, and they offer medical examinations and assistance, health guidance and mental health counseling for students, faculty and staff.

Cafeteria ❸
The NAIST cafeteria offers a variety of inexpensive meal options for both lunch and dinner. Dishes range from traditional Japanese foods to western dishes such as spaghetti and curry.

Convenience store ❸
The on-campus convenience store is open seven days a week and, in addition to foods and beverages, stocks daily amenities and offers utility and other payment services.

Millennium Hall ❺
The Millennium Hall, the largest hall on campus, is open for events such as entrance and graduation ceremonies, international conferences, community events, and industry-related events.

Guesthouse Sentan ❻
The guesthouse offers reasonable short-term on-campus accommodations for visiting students, researchers, etc. to facilitate collaboration with both international and domestic partners.

Sports facilities ❼
NAIST maintains tennis courts, a basketball/volleyball court, a field for soccer/baseball and a room for table tennis, and the administrative offices offer rental equipment to students, faculty and staff.
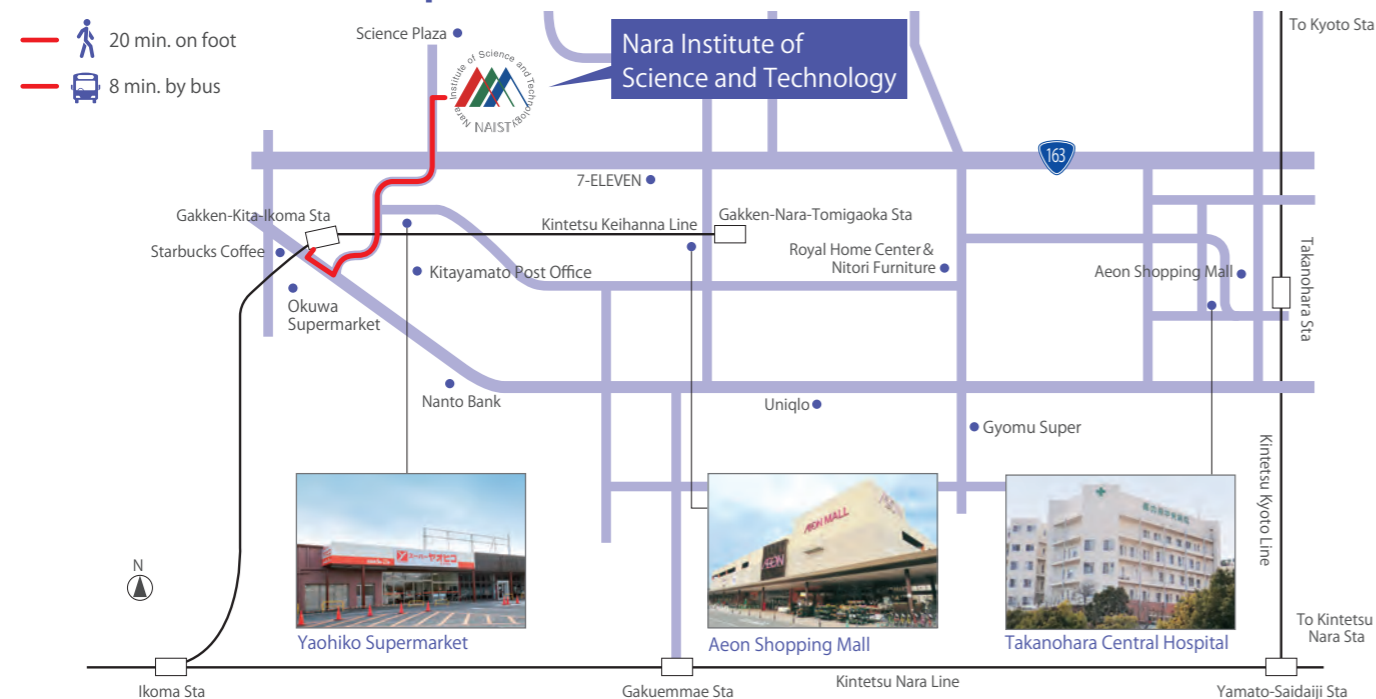
NAIST One-way Carsharing System ❽
As part of research being performed at NAIST, a carshare system featuring electric vehicles with 3 charging stations on campus which utilizes cryptocurrency has been established to assist the mobility of faculty, staff and students.
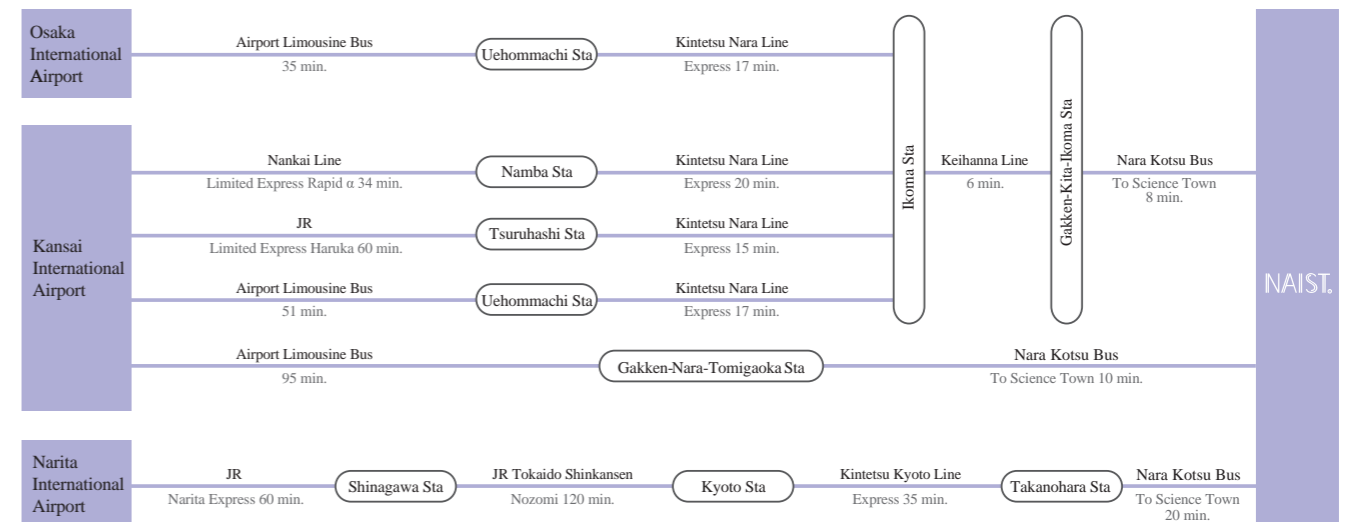
Rooms for childcare and reproductive health ❾
These rooms have been established along with various child and family care support programs as part of NAIST's efforts to support female faculty and employees' work-life balance.

Around Campus

— 🚶 20 min. on foot
— 🚌 8 min. by bus

Nara Institute of Science and Technology

Science Plaza
To Kyoto Sta
7-ELEVEN
Gakken-Kita-Ikoma Sta
Kintetsu Keihanna Line
Gakken-Nara-Tomigaoka Sta
Starbucks Coffee
Kitayamato Post Office
Royal Home Center & Nitori Furniture
Aeon Shopping Mall
Takanohara Sta
Okuwa Supermarket
Nanto Bank
Uniqlo
Gyomu Super
Kintetsu Kyoto Line
To Kintetsu Nara Sta
N
Yaohiko Supermarket
Aeon Shopping Mall
Takanohara Central Hospital
Ikoma Sta
Gakuemmae Sta
Kintetsu Nara Line
Yamato-Saidaiji Sta

Reaching NAIST from Domestic Airports

NAIST is only 1.5 hours away from the Osaka International Airport and the Kansai International Airport

Osaka International Airport	Airport Limousine Bus 35 min.	Uehommachi Sta	Kintetsu Nara Line Express 17 min.				
Kansai International Airport	Nankai Line Limited Express Rapid α 34 min.	Namba Sta	Kintetsu Nara Line Express 20 min.	Ikoma Sta	Keihanna Line 6 min.	Gakken-Kita-Ikoma Sta	Nara Kotsu Bus To Science Town 8 min.
	JR Limited Express Haruka 60 min.	Tsuruhashi Sta	Kintetsu Nara Line Express 15 min.				NAIST
	Airport Limousine Bus 51 min.	Uehommachi Sta	Kintetsu Nara Line Express 17 min.				
	Airport Limousine Bus 95 min.	Gakken-Nara-Tomigaoka Sta				Nara Kotsu Bus To Science Town 10 min.	
Narita International Airport	JR Narita Express 60 min.	Shinagawa Sta	JR Tokaido Shinkansen Nozomi 120 min.	Kyoto Sta	Kintetsu Kyoto Line Express 35 min.	Takanohara Sta	Nara Kotsu Bus To Science Town 20 min.

Nara Institute of Science and Technology
8916-5 Takayama-cho, Ikoma, Nara 630-0192 JAPAN

NAIST Website

**Division of
Information Science**

**Division of
Biological Science**

**Division of
Materials Science**

Contact information

For inquiries concerning:

Graduate Studies for International Students

International Student Affairs Section, International Affairs Division
Email: ryugaku@ad.naist.jp   Phone: 0743-72-5087

International Researchers and Scholars

International Affairs Section, International Affairs Division
Email: kokusai@ad.naist.jp   Phone: 0743-72-6246

International Partnerships

Division for Global Education, Institute for Educational Initiatives
Email: dge@ad.naist.jp   Phone: 0743-72-6243