東工大クロニクル

Tokyo Tech Chronicle

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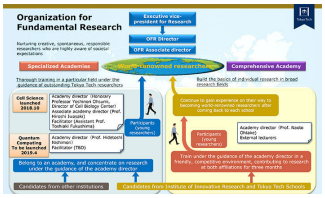


No. 526
November 2018

東京工業大学
Tokyo Institute of Technology

Tokyo Tech tuition to increase in AY2019

Annual tuition at Tokyo Tech for bachelor-level students enrolling in or after April 2019 and master's, professional master's, and doctoral students enrolling in or after September 2019 will increase from the current 535, 800 yen to 635, 400 yen.[1]

These changes will allow the Institute to continue enhancing its learning environment and curricula for all students while strengthening its financial base through other means, and to boost study abroad opportunities and other international exchanges and initiatives. Additionally, the Institute will establish a new scholarship system to ensure that all outstanding students have equal access to Tokyo Tech education.

1 Tuition for bachelor-level students who enrolled in or before academic year 2018 and for master's, professional master's, and doctoral students who enroll in or before April 2019 will remain at the current level until they complete or withdraw from their degree program. The revised fee, however, will apply to these students if/when they rejoin the same degree program or begin a new degree program.

Message from President Kazuya Masu

To all prospective students and parents

Tokyo Tech envisions itself as one of the world's leading research universities by 2030, one year shy of its 150th anniversary, and continues to evolve rapidly through innovative changes in education and research.

The Institute's graduates and high level of research are globally valued, and in academic year (AY) 2016, Tokyo Tech introduced a new education system to extend further the reach of this impact. This system aims to develop professionals with a strong sense of vision who are capable of acting as leaders in both Japan and the world stage. In addition to acquiring highly advanced, specialized knowledge and skills through cutting-edge research, Tokyo Tech students are encouraged to formulate a mindset of continuous learning. Curricula at all levels were updated to ensure that all Tokyo Tech students uncover their full potential and develop into active professionals who stimulate one another.

Over 90 percent of bachelor-level graduates progress to master's studies at the Institute. In AY2016, Tokyo Tech was the first educational institution in Japan to combine its undergraduate and graduate schools into six new Schools, promoting seamless transition from one level of study to the next. Today, all first-year bachelor-level students join the Frontiers of Science and Technology course soon after admission to expand their knowledge in the natural sciences through lectures provided by world-leading researchers and engineers. This allows students to think more deeply about the position of science in society, and to explore the relationship between their own specializations and the wider world.

AY2016 also witnessed the extension of Tokyo Tech's liberal arts component up through to the doctoral level, and the establishment of the Institute for Liberal Arts. Students who intend to lead society towards a brighter future must supplement their specialized skills with the ability to identify challenges and solutions proactively. This requires flexible thinking and a broad perspective, two characteristics that Tokyo Tech has traditionally nurtured through its emphasis on the liberal arts. This tradition continues through the efforts of faculty members — prominent scholars in the

humanities, social sciences, and culture — and is advocated through the promotion of active learning. Students at all levels interact with each other, boosting their communication skills and creating a buzzing hub where each can formulate his or her personal vision. News of this new system has been well received, both at home and abroad.

Tokyo Tech is also progressing with ambitious plans to make more lectures available in English, and is increasingly hiring highly qualified faculty members and researchers from abroad. Students are exposed to the joys of research from an early stage, and they can continue deepening their expertise through Tokyo Tech's unique path from one academic level to the next. The Institute is attracting attention as a model for engineering education because of these characteristics.

The combination of the above-mentioned efforts resulted in Tokyo Tech being selected as one of five designated national universities (DNU) by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in FY2018 to lead Japan into the future. More than ever, the Institute is expected to execute education and research activities on par with the world's leading universities, and to compete and collaborate with these institutions.

Against this backdrop, Tokyo Tech aims to develop further its learning environment and curricula, in 2019 and beyond, to ensure that its graduates continue as leaders in various sectors, both domestically and globally. This will include the development of state-of-the-art facilities for advanced research-based education, enhanced liberal arts education and stronger career support, and promotion of student exchanges at a purpose-built facility donated to Tokyo Tech by one of its alumni. In addition, the Institute is moving forward with:

- ●A rapid progress bachelor-to-doctor program that introduces students to a cutting-edge research environment from an early stage
- ● Provision of lectures by prominent technological and cultural contributors to bring about innovation through heightened awareness
- ●A more diverse Tokyo Tech, where international student numbers are already high, through English-language lectures at graduate level to enhance leadership abilities

To realize fully this unique Tokyo Tech model of education, the Institute has decided to revise its tuition. Annual tuition for bachelor-level students enrolling in or after April 2019 and master's, professional master's, and doctoral students enrolling in or after September 2019 will increase from 535, 800 yen to 635, 400 yen.

While implementing this change, the Institute continues with tireless efforts to strengthen its financial base through other means, including collaborations with industry and the utilization of existing resources. These efforts will combine to provide all outstanding students with fair access to Tokyo Tech education through a new scholarship system.

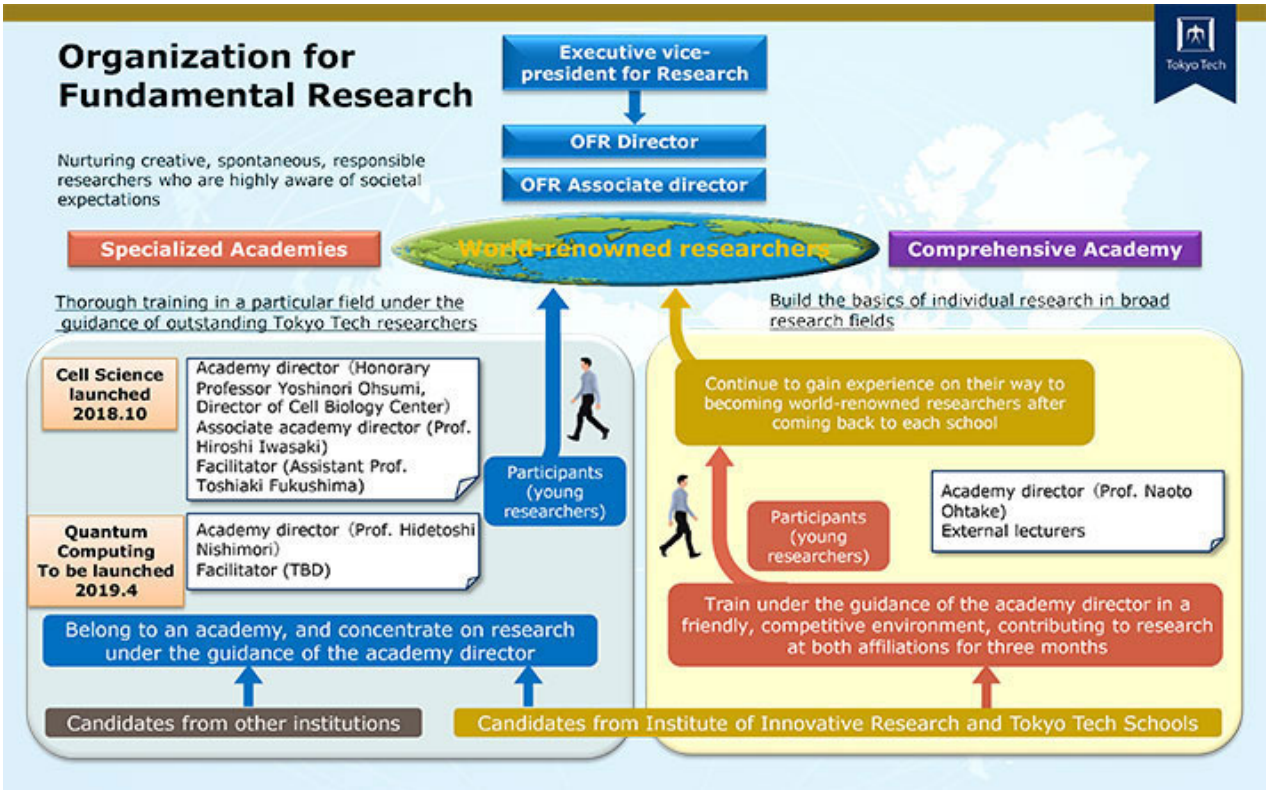
The effects of a Tokyo Tech education are already evident — recent graduates ranked 19th in the world in terms of employability.[2] The Institute's planned tuition revisions will translate to even greater success and achievements for its students, both now and in the future. Faculty and staff members at the Institute are united in supporting these achievements, and in working towards Tokyo Tech's recognition as one of the world's leading universities.

2 Times Higher Education Global University Employability Ranking 2017

(Tokyo Tech news published : Public Relations Section・September 18, 2018)

Newly launched Organization for Fundamental Research aims to encourage emerging researchers

In its efforts to open up new fields of cutting-edge research and advance the Institute's position as a world research hub, Tokyo Tech launched the Organization for Fundamental Research (OFR) in July 2018. OFR will function as a place to nurture creative, spontaneous, responsible emerging researchers who are highly aware of societal expectations.



Currently, OFR consists of two academies. The Comprehensive Academy, which all participants join for at least three months, lays the foundations for individual research, but does not focus on any specific field. The Specialized Academy, which focuses on cell science, is headed by Honarary Professor Yoshinori Ohsumi, a world-leading researcher and Nobel Prize laureate.

One of Tokyo Tech's assertions in its successful application to become one of Japan's designated national universities was to "adopt a long-term view on promoting an open research environment where emerging faculty members and researchers are encouraged and able to exercise divergent, creative thinking." The establishment of OFR, under the leadership of Director Fumio Koyama who also heads the Institute of Innovative Research (IIR), is an important step to realizing this commitment. An open lab space in the S2 Building on Suzukakedai Campus now functions as a key facility for OFR researchers.

●Comments from Professor Koyama

For Japan to continue developing and remain globally competitive, young researchers and engineers are expected to apply their technical expertise and creativity to generate heightened societal impact. Tokyo Tech, through the Organization for Fundamental Research, hopes to provide an environment where such researchers can openly explore new challenges that allow them innovate and sow the seeds of future industries.

Specialized Academy

Cell Science

Academy director

Honorary Professor Yoshinori Ohsumi, Director of Cell Biology Center

This Specialized Academy aims to nurture outstanding researchers who will take the lead in the field of cell science in the future. Young talents have a place to formulate and test their hypotheses in a calm yet stimulating environment, allowing them to focus on basic research and approach new research topics in cell science through their own original academic interests.

●Comments from Honorary Professor Ohsumi

The Organization for Fundamental Research is one important way to strengthening the research prowess of Tokyo Tech, and the Specialized Academy aims to prepare young talents for research success in the future. This academy, which concentrates on the study of cell science, includes 13 members — five assistant professors and six specially appointed assistant professors from the Cell Biology Center, and two assistant professors from the School of Life Science and Technology. As the facilitator, I hope we can create an environment where people actively collaborate and where young researchers can openly engage in research.

The launch of a second Specialized Academy, led by IIR Professor and Quantum Computing Unit leader Hidetoshi Nishimori, is planned for next year.

Comprehensive Academy

Academy director

Professor Naoto Ohtake, IIR

The Comprehensive Academy allows emerging researchers to spontaneously explore research topics not limited to any particular field based on their academic interests. It offers a place for researchers to understand the importance of research progress in view of societal expectations while strengthening Tokyo Tech's position as a research-focused university that trains highly skilled professionals.

●Comments from Professor Ohtake

For a researcher, having enough time to think critically about a research topic is extremely important. The Comprehensive Academy offers emerging researchers a place to consider carefully what they want to do, to imagine the challenges that await them, and to perceive the future of science and technology while drawing upon the achievements of past researchers. I welcome all students and emerging research talents to consider joining the Comprehensive Academy as it kicks off its activities in 2019.

Entrance ceremony and seminar of Specialized Academy for Cell Science
(with Koyama 6th, Ohsumi 7th, and Ohtake 8th from left in front row)

(Tokyo Tech news published : Public Relations Section・November 8, 2018)

Tokyo Tech Academy for Leadership holds opening workshop

Tokyo Tech's graduate-level students, faculty members, and staff celebrated the establishment of the Tokyo Tech Academy for Leadership (ToTAL) with a workshop on September266, brainstorming the aspirations of the program's inaugural participants and the direction of the newly founded academy.

Opening ceremony group photo

After a brief opening ceremony, an introduction of faculty and students, and an orientation session covering the offerings of the ToTAL program, the diverse group — representing seven countries and regions — dove straight into a bilingual speed dating-style discussion. Through eight two-minute rounds, participants shared thoughts on individual interests, leadership experiences, societal concerns, and future challenges, quickly developing rapport through open channels of communication.

Snapshots from workshop

Each participant then presented to the group the challenges he or she wanted to take on at ToTAL. These included:

- Creating networks to actively share aspirations
- Increasing understanding of cultural differences and communication styles
- Attracting people to the intersection of the humanities and sciences
- Executing global projects that create new value
- Advocating cross-border interactions
- Changing how people view science
- Writing policies that address social issues
- Nourishing symbiotic relationships
- Deepening knowledge of patents and marketing
- Promoting awareness and use of biomaterials
- Building consensus on nuclear waste disposal methods
- Producing unique output that promotes Tokyo Tech

Snapshots from workshop

At the welcome party that followed the workshop, participants continued to share ideas on approaches to leadership in different contexts.

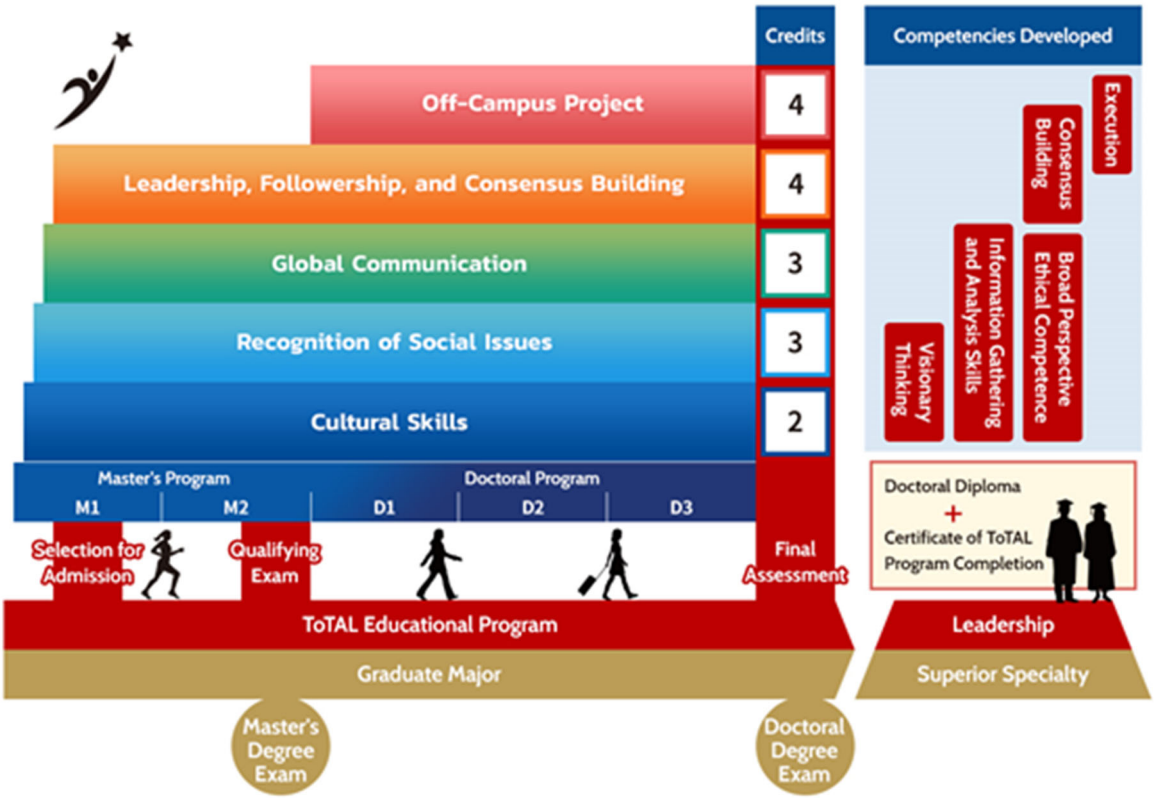
What is ToTAL leadership?

ToTAL, established in academic year 2018, is an institute-wide education center and platform through which students with different majors, nationalities, and cultural backgrounds learn to harness leadership skills in integrated master's and doctoral degree programs. Through interdisciplinary curricula that combine the humanities and sciences, students are encouraged to develop their leadership and interpersonal capabilities by planting and nurturing in themselves "three seeds."

1. Gain awareness of yourself in history and the world, and discover motivation from within yourself
2. Accept differences between yourself and others, develop mutual respect, and work together to build a better society
3. Enjoy the creativity in unexpected outcomes by cultivating a spirit of curiosity and sustained endeavor

ToTAL's three seeds of leadership

In addition to undertaking work required for standard Tokyo Tech master's and doctoral degrees, ToTAL students are expected to complete a rigorous five-year program that culminates in a three-month off-campus project. These projects — planned and organized by the students themselves — can be executed in Japan or abroad. While the current program is intended for Tokyo Tech students only, ToTAL expects to expand availability to graduate students of other universities in the future.



Framework for ToTAL curriculum

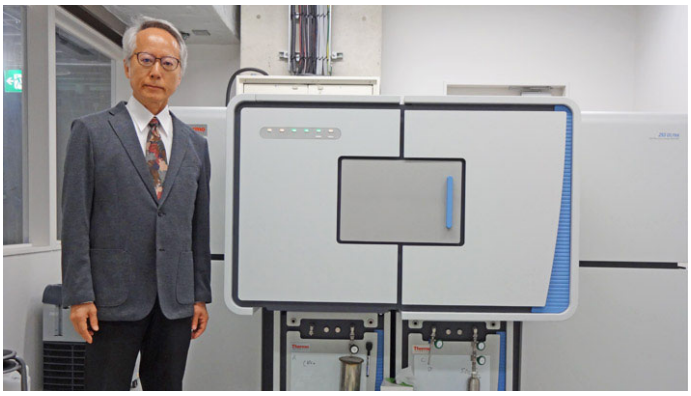
New program based on solid experience

While academic year 2018 marks the first year of the new Tokyo Tech Academy for Leadership, the Institute has been accumulating leadership program experiences for the past eight years. Components of the Academy for Global Leadership (AGL), which was established in 2011 and soon became a government-backed Program for Leading Graduate Schools, will be integrated into ToTAL together with expertise from the Institute for Liberal Arts.

(Tokyo Tech news published : Tokyo Tech Academy for Leadership (ToTAL) ・October 29, 2018)

Naohiro Yoshida elected an AGU Fellow

Dr. Naohiro Yoshida, professor at the Department of Chemical Science and Engineering and principal investigator at the Earth-Life Science Institute (ELSI), has been elected a 2018 American Geophysical Union (AGU) Fellow.



Yoshida with HR-IRMS at ELSI

AGU, established in 1919, is an international non-profit scientific association for the promotion of Earth and space science with approximately 60, 000 members in 137 countries. Headquartered in Washington, D.C., it is the largest international association in its field.

Established in 1962, the Fellows program recognizes less than 0. 1 percent of AGU members who have made exceptional contributions to Earth and space science as valued by their peers and vetted by a committee of Fellows. Yoshida will give a talk at the Plenary Honors Ceremony held in December at the 2018 AGU Fall Meeting in Washington, D.C., which will be attended by some 30, 000 members.

Yoshida was elected for being the world's leading biogeochemist and atmospheric chemist studying bio-element cycles through innovative isotope exchanged molecule tracers. He will be the third professor at ELSI to be recognized as an AGU Fellow after Professor Kei Hirose, director of ELSI, and Specially Appointed Professor George Helffrich.

Comments from Professor Naohiro Yoshida

It is an honor to be recognized for our developments of molecular analyses and their application to Earth and space science. While a number of isotope exchanged species (isotopomers and/or isotopologues) were expected to exist in each molecular species, they were until recently difficult to measure quantitatively. We have developed measurement methodologies for this. In other words, we have enhanced analyses of molecules from black-and-white to colorful, and improved the "color" resolutions of molecular species. In doing so, the origin and cycle of molecules can now be analyzed more accurately.

I have been developing this fundamental research idea since I was a university student. I sincerely appreciate the support provided by my supervisors, lab members, domestic and international collaborators, students, and governmental funding agencies. I also would like to thank Tokyo Tech for encouraging me to carry out this work as a professor for the past 20 years.

When I was a principal investigator of a Japan Science and Technology Agency CREST-funded isotopomer project that began in 1996, we tried to construct a high-resolution isotope ratio mass spectrometer (HR-IRMS). It is a wonderful coincidence that, after receiving my second Grant-in-Aid for Scientific Research(S) last year, I am now conducting research at ELSI using a German-made HR-IRMS (pictured) that shares the fundamental design of our spectrometer from two decades ago.

(Tokyo Tech news published : Naohiro Yoshida・October 10, 2018))

Fumio Koyama to receive 27th Okawa Prize

Tokyo Tech's Dr. Fumio Koyama, director-general of the Institute of Innovative Research and professor at the Laboratory for Future Interdisciplinary Research of Science and Technology, has been selected to receive the 2018 Okawa Prize "for seminal contributions to VCSEL photonics in proposing high speed modulation and beam steering capability toward advanced optical communications and optical sensing."

The Okawa Prize, which pays tribute to persons who have made outstanding international contributions to research, technological development, and business in the information and telecommunications fields, is presented to one or two recipients each year by the Okawa Foundation for Information and Telecommunications. In 2018, Dr. Constance Chang-Hasnain, who is Associate Dean for Strategic Alliances, College of Engineering and the John R. Whinnery Distinguished Chair Professor of Electrical Engineering and Computer Sciences at University of California, Berkeley, also received the prize.

Comments from Prof. Fumio Koyama

I am honored to be considered by the Okawa Foundation as a recipient of this very prestigious prize. It has been over 40 years since Professor Emeritus Kenichi Iga invented the VCSEL as a new type of semiconductor laser. Since then, VCSELs have been widely used for various applications such as datacenter networks, high-resolution laser printers, and 3D optical sensing in smartphones.

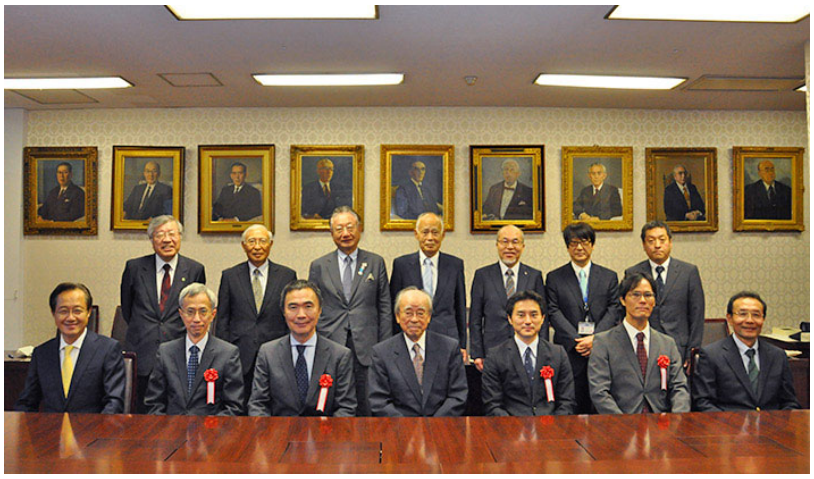
These fields have made a great impact on the Internet of Things, and will continue to develop rapidly. I would like to thank my mentors — Yasuharu Suematsu and Kenichi Iga — and all my fellow researchers, my graduate students, and all those who contributed to this achievement. This recognition will further stimulate and invigorate my research efforts in the field. Finally, I am delighted to hear that my friend of many years, Dr. Chang-Hasnain from University of California, Berkeley, has also been selected to receive this prize in 2018.

The 2018 awards ceremony will take place in Tokyo on November 7. Koyama will be the fourth Tokyo Tech member to receive the Okawa Prize. Professor Emeriti Taizo Iijima, Yasuharu Suematsu, and Honorary Professor Sadaoki Furui received the award in 2002, 2006, and 2012 respectively.

(Tokyo Tech news published : Fumio Koyama・September 19, 2018)

Young faculty receive new Suematsu Digital Technology Award

Tetsuo Kodera, Ryohei Banno, and Norihisa Kawashima were selected as the first-ever recipients of the Suematsu Digital Technology Award by a panel of judges from both inside and outside the Institute on September 12.



Memorial photo of the ceremony

Tokyo Tech established the Suematsu Award "Fundamentals and Developments of Digital Technology" in 2018 to encourage young researchers interested in developing digital technology that will serve as foundational technology of the future. The award provides a broad range of support for researchers focusing on areas such as computers, robotics, and networks, and for research into applications of digital technology.

The award is funded by the Suematsu Fund, which was created within the Tokyo Institute of Technology Fund. In commemoration of the award's establishment, Special Awards for Remarkable Achievement were also presented to two other recipients.

2018 winners of the Suematsu Digital Technology Award

Name	Title	Affiliation	Research
Tetsuo Kodera	Associate Professor	School of Engineering	Development of fundamental technologies toward semiconductor quantum computers
Ryohei Banno	Research Staff	School of Computing	Coexisting load distribution and low latency in pub/sub messaging
Norihisa Kawashima	Assistant Professor	School of Environment and Society	Development of low-cost system with computational simulation, sensor monitoring, and networking technologies for nudging energy-saving behavior in buildings using passive design strategies

Tetsuo Kodera with award certificate

(from left) President Kazuya Masu, awardee Kawashima, Executive Vice President for Research Osamu Watanabe

Award-winning Ryohei Banno giving presentation

2018 **winners of the Special Award for Remarkable Achievement**

Name	Title	Affiliation
Satoshi Matsuoka	Specially Appointed Professor	School of Computing
Hidetoshi Nishimori	Professor	Quantum Computing Unit, Institute of Innovative Research

Hidetoshi Nishimori (right) receiving Special Award for Remarkable Achievement

Thank-you speech by Satoshi Matsuoka

Background to the award

Former Tokyo Tech President and Honorary Professor Yasuharu Suematsu was awarded the Japan Prize in 2014 for his contributions to the development of high-capacity, long-distance optical fiber communications through his research at the Institute, particularly his groundbreaking research related to dynamic single-mode lasers. He donated a portion of the prize money to Tokyo Tech in hopes of encouraging young scientists and engineers to pursue research in diverse fields, develop new technology systems, and delve into the unexplored domains of science.

Suematsu hopes to create a rising tide of activities that will reveal the now-hidden shape of the future. The Tokyo Institute of Technology Fund created the Suematsu Fund to promote research in line with Suematsu's wishes. President and Representative Director Hisao Taki of Gurunavi Inc., a Tokyo Tech alumnus and supporter of the Tokyo Institute of Technology Fund since its inception, also donated a significant additional sum, making the creation of this award possible.

(Tokyo Tech news published : Research Planning Division・October 1, 2018)

2018 Tokyo Tech Challenging Research Award

Eleven Tokyo Tech researchers were awarded the 2018 Tokyo Tech Challenging Research Award at a ceremony held on September 12. Three researchers were also granted the Challenging Research President's Honorary Award.

Commemorative photo of ceremony participants

Snapshot of the ceremony

Award-winning Asst. Prof. Kiyoshi Kanazawa giving presentation

Award-winning Asst. Prof. Takayuki Ishizaki giving presentation

Award-winning Asst. Prof. Tetsuya Kadonosono giving presentation

Each year, the Tokyo Tech Challenging Research Award is given to young faculty members who undertake bold and original research, promote advancement in cutting-edge fields, and develop innovative solutions to key issues. This award is also designed to provide support for research expenses, and many recipients go on to earn other commendations and prizes from the Ministry of Education, Culture, Sports, Science and Technology. This year marked the 17th time Tokyo Tech granted its promising researchers this award.

Congratulations to all of the 2018 recipients!

2018 Tokyo Tech Challenging Research Award recipients

Name	Title	Affiliation	Research topic
Alexis Gilbert	Department of Earth and Planetary Sciences, School of Science	Specially Appointed Assistant Professor	Natural gas generation model from isotopologue measurement
Takayuki Ishizaki*	Department of Systems and Control Engineering, School of Engineering	Assistant Professor	Design Theory for System of Systems Towards Future Smart Grid Development
Hiroya Sugimoto	Department of Electrical and Electronic Engineering, School of Materials and Chemical Technology	Assistant Professor	Novel Bearingless Machines With High Efficiency in the Super Smart Society

Toshiki Sawada	Department of Chemical Science and Engineering, School of Materials and Chemical Technology	Assistant Professor	Development of heat-conductive materials composed of hierarchically assembled filamentous viruses
Ryota Shimizu	Department of Chemical Science and Engineering, School of Materials and Chemical Technology	Assistant Professor	High-temperature superconductivity achieved by hydride-ion battery with interface engineering
Masahito Ohue	Department of Computer Science, School of Computing	Assistant Professor	Computational middle molecule drug design for intracellular PPI inhibition
Tetsuya Kadonosono*	Department of Life Science and Technology, School of Life Science and Technology	Assistant Professor	Generation of bispecific small target-binding protein and its application to cancer treatment
Soshi Iimura	Laboratory for Materials and Structures, Institute of Innovative Research	Assistant Professor	Clarification of concerting spin fluctuations model to realize highest Tc in iron-based superconductors
Kiyoshi Kanazawa*	Advanced Data Analysis and Modeling Unit, Institute of Innovative Research	Assistant Professor	Studies on FX market microstructure based on evidence and theory
Shoichi Kishiki	Laboratory for Future Interdisciplinary Research of Science and Technology, Institute of Innovative Research	Associate Professor	Quick Inspection Method for Functional Continuity based on Visible Damage
Shinichi Sato	Laboratory for Chemistry and Life Science, Institute of Innovative Research	Assistant Professor	Electrochemical Antibody Modification and Application to Antibody-Drug Conjugation

*Granted Challenging Research President's Honorary Award

(Tokyo Tech news published : Research Planning Division・September 13, 2018)

Tokyo Tech student is 2018 Yu-Gi-Oh! Duel Links world champion

Takahiro Hamada, a 2nd-year master's student in Computer Science at the School of Computing, has been crowned world champion in the Duel Links category of the Yu-Gi-Oh! World Championship 2018. The e-sports competition was held on August 4 and 5 at Makuhari Messe International Exhibition Hall in Chiba Prefecture.

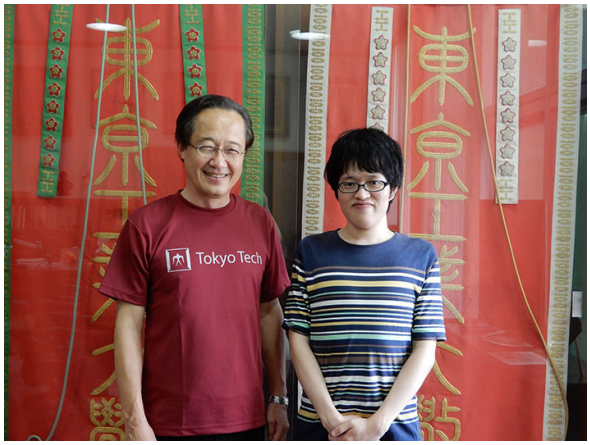
Originally a popular manga series created by artist Kazuki Takahashi, Yu-Gi-Oh! gradually evolved into an animation series and a card game version. By May 2018, Yu-Gi-Oh! Duel Links, the free, digital collectible card game developed for mobile devices had been downloaded over 70 million times.

The world championships have been held annually since 2003, with players in three categories — general, elementary school, and dual links — battling against each other using a combination of monsters, spells, and traps. During Yu-Gi-Oh! Duel Links, players must defeat their opponent three times within 60 minutes to advance to the next round. This year, 16 players from 12 countries and regions participated. Hamada remained undefeated throughout the tournament despite starting his Duel Links battles just four months ago.

Comments from Takahiro Hamada

I have limited experience with this application. However, I believe I won this competition because I familiarized myself with Yu-Gi-Oh! content in elementary and middle school, and that brings me great joy. I am not letting my guard down, though. I look forward to receiving an invitation to the world championships again next year, where I will devote myself to achieving similar results. I appreciate everyone who supported me, particularly those who helped arrange my deck at the competition. Thank you.

Harada is currently carrying out research on the uses and benefits of an advanced interactive therapeutic robot.



World champion Hamada (right) with Tokyo Tech President Masu

(Tokyo Tech news published : Public Relations Section・September 26, 2018)

Taiki Ishida 4th at Pokémon World Championships 2018

Taiki Ishida, a 3rd-year Industrial Engineering and Economics student, finished fourth in the Pokkén Tournament Championship Series of the 2018 Pokémon World Championships, held in Nashville, USA from August 24 to 26.

Ishida smiles with trophy in hand

The Pokémon World Championships comprise three categories: video games, trading card games, and the Pokkén tournament. Ishida, who won the Japan championships in March, joined the last of these with 15 other players born in 2002 or earlier to compete for the crown. All players used Nintendo Switch systems, competing in a double elimination format. Ishida won three of his first four matches before being defeated in his final bout.

Comments from Taiki Ishida

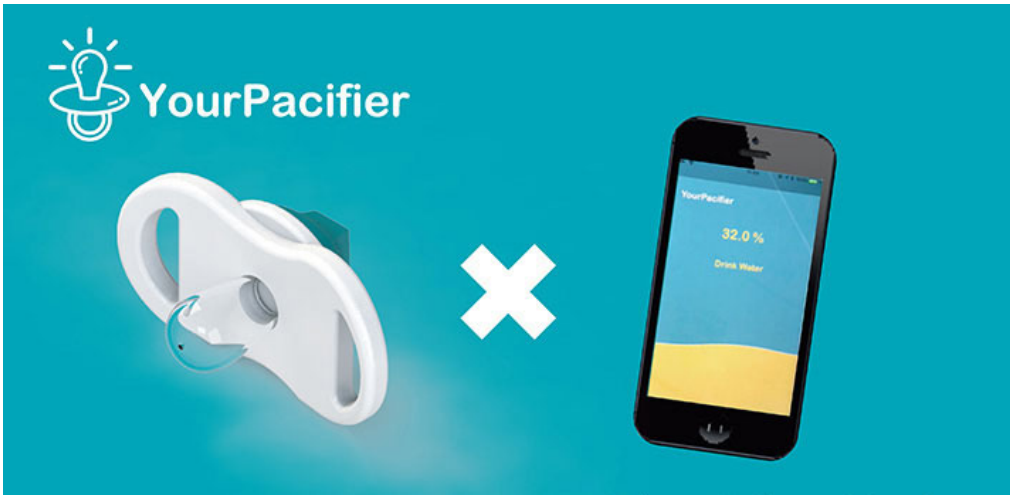
My interest in the eSports industry has deepened thanks to my experiences in Nashville. I started playing Pokkén at arcades during my high school days, and have been frequenting competitions since I became a university student. I am very pleased with this result, and aim to practice hard so I secure a place in the contest again next year.

Ishida is a 3rd-year student studying economics and management at Tokyo Tech's Industrial Engineering and Economics department.

(Tokyo Tech news published : Public Relations Section・October 19, 2018)

Tokyo Tech student's team national winners at James Dyson Award 2018

Hiroki Naganuma, a 2nd-year master's student in Computer Science, and five of his team members are the Japan winners at the James Dyson Award 2018, an annual design engineering competition open to students and recent graduates. The winning team members won the competition with their invention YourPacifier.



YourPacifier's hydrating soother and mobile app work together to support both infant and parent

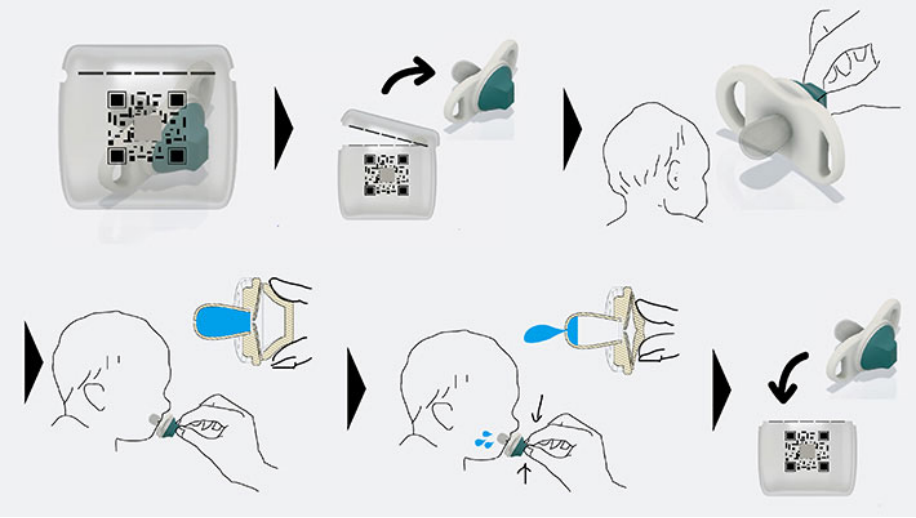
What is YourPacifier?

YourPacifier is a smart soother that detects the humidity on a baby's lips, rehydrates him or her when required, and informs the infant's guardian if further action is required.

The idea for the creation was born when one team member was carrying out public health research in Asia and the Pacific islands. He learned that many young children were being hospitalized for diarrhea-related dehydration, which is often caused by the rotavirus, and decided that a solution was needed.

A sensor in the pacifier measures the hydration levels of the baby. If levels are dangerously low, the pacifier alerts an adult of the danger through a mobile app. At this stage, the app presents the user with three simple questions, and based on the answers given, advises the user to, for example, seek medical attention at a hospital. Additionally, YourPacifier collects data that can be shared with hospitals, making it a useful tool in identifying and analyzing epidemics in surrounding areas.

YourPacifier won the 3rd Place Grand Prize and Persistent-Neodesign Prize at Stanford's Health Hackathon in October 2017. Since then, the team has carried out various proof of principle tests and has experimented with the design of the product casing. Naganuma plans to announce the results of these tests at a domestic symposium in September.



Pacifier case with QR code for quick access to mobile app

The James Dyson Award

The James Dyson Award is an annual design engineering competition open to students and recent graduates. This year, over 1,300 inventions created by participants from 27 countries competed for the top spot. The creators of YourPacifier and two runners up from Japan will advance to Stage 2 of the competition, where they will compete internationally in the hopes of making the global top-20 shortlist. These innovators will be announced in late September. British engineer James Dyson will decide the international winner, along with two runners up, in mid-November.

Comments from Hiroki Naganuma

This product was initially created last year by a team of students from the Kanto and Kansai areas, but we now have working professionals who have also joined the project, so we are in a phase of adjustment.

In order for us to really save infant lives, we must not only spread the word but also develop a sustainable business that will supply this product to the market. We need both people and funding in order to manufacture and continue to develop this device. For the team, winning this award will help us recruit new global partners who sympathize with our idea and are willing to help us solve a worldwide problem.

Naganuma is currently carrying out research on the theoretical aspects of deep learning. He hopes his efforts will contribute to the accuracy of sensors in YourPacifier.

(Tokyo Tech news published : Rota++・September 14, 2018)

Tokyo Tech's Hara 13th at Duathlon World Championships

Shohei Hara, a 4th-year Polymer Chemistry student and member of the Tokyo Tech Triathlon Club, finished 13th in the under 23-category of the 2018 Fyn International Triathlon Union (ITU) Duathlon World Championships in Odense, Denmark on July 6.

Unlike the triathlon, which involves swimming, cycling, and running, a duathlon consists of a running leg, followed by a cycling leg, and then a second running leg. At the Multisport World Championships Festival in Denmark, these legs were 10 km, 36 km, and 4.9 km respectively for all participants aged 18 to 23.

Hara during the grueling cycling leg

Comments from Shohei Hara

I was able to put 100% of what I had learned during my practice sessions into the race. My 13th-place finish demonstrates that I still have a long way to go before I can compete with the world's top performers. I will take this result home and continue to practice so I become even stronger. I would like to sincerely thank everyone who supported me.

Hara is a 4th-year Polymer Chemistry student carrying out research on the homeotropic alignment control of rigid, rodlike polyimides. He has been officially nominated as a promising international duathlon competitor by the Japan Triathlon Union.

Tokyo Tech Triathlon Club

The Tokyo Tech Triathlon Club was established in 1993. The club currently consists of 23 members from Tokyo Tech and other universities who practice swimming in pools, oceans, rivers, and lakes in addition to cycling and running when training for races such as the Japan Inter-Collegiate Triathlon Championships.

(Tokyo Tech news published : Public Relations Section・September 6, 2018)

Rowing Club at Changsha International Universities Rowing Regatta

The Tokyo Tech Rowing Club participated in the 2018 Changsha International Famous Universities Rowing Regatta, held in the capital of China's Hunan province from July 26 to 30.

This year, the regatta brought together 20 university rowing teams from nine countries and regions. Up against the likes of the University of Cambridge, Yale University, and the University of Otago, the Tokyo Tech Rowing Club was the only team representing Japan at the competition.

The race itself was split into two runs — one on Saturday and one on Sunday — with the team clocking the fastest combined time crowned champion. Unfortunately, Tokyo Tech lost valuable seconds after a mishap on the first day, and were quickly out of contention for the overall win. However, the team showed great speed and team spirit on the second day, ousting their Yale counterparts by an impressive margin. Oxford Brookes University won both the men's and women's 1, 000-meter races.

Tokyo Tech pulling away from Yale University rowers

(back from left) Rowing Club alumnus Okoshi, Unagami, Fujii, Hattori, Nakajima, Hasegawa, Nakamori
(front from right) Hara, Ogawa, Inoue, Funaoka, Shimada

In addition to the race, the Rowing Club members also had the chance to visit museums, tour the famous Orange Isle in Changsha, and visit Yali High School for a cultural exchange session. This visit to China was the first overseas outing for the Tokyo Tech Rowing Club in roughly 20 years. The team is now firmly focused on the culmination of the rowing season — the Intercollegiate Rowing Championships to be held in early September.

Rowing Club members exploring near Young Mao Zedong statue in Changsha

Comments from Captain Tomohiro Funaoka

I can't say I am satisfied with the result, but it was an excellent experience to row against some of these foreign athletes. In addition, we were able to deepen exchanges with students from Cambridge, Yale, and other world-class universities during the ceremonies and sightseeing sessions, so I think overall, it was a successful expedition. We were able to join this competition because we ranked first among national universities in Japan last year. We will continue fighting for better results to ensure that we will compete overseas again next year. We ask for everyone's continued support!

Funaoka is a 4th-year Earth and Planetary Sciences student carrying out research on seismic quiescence preceding large earthquakes.

Rowing teams from around the globe

(Tokyo Tech news published : Rowing Club・September 6, 2018)

Aikido Club wins multiple awards at 37th national competition

Tokyo Tech's Aikido Club has won bronze in the group category and gold in the individual category at the 37th All Japan Shinshin Toitsu Aikido Taigi Competition. The winning pair in the latter category consisted of 3rd-year Life Science and Technology student Shotaro Inoue and 2nd-year Electrical and Electronic Engineering student Yudai Yamazaki.

Master Ohara (center) and members of the Tokyo Tech Aikido Club

Held in Tochigi Prefecture's Haga district on September 23, this year's competition was attended by 113 middle school, high school, and university students.

Comments from club captain Shotaro Inoue

We followed up last year's group victory with individual golds this year, and I am very pleased about that. A big shout-out goes to all the club members and alumni, and of course Master Hideo Ohara. I would also like to dedicate this result to our previous mentor, Master Yutaka Otsuka, who guided the club for so many years.

The Tokyo Tech Aikido Club is celebrating its 50th anniversary this year. We will continue working hard as a unified team and look forward to everyone's continued support.

Shotaro Inoue is a 3rd-year Life Science and Technology student specializing in biology. He hopes to utilize the psychological tranquility he has achieved through aikido training in his studies and research.

Tokyo Tech Aikido Club

The Tokyo Tech Aikido Club, established in 1968, celebrates its 50th anniversary in 2018. Members have training sessions four days a week and receive instruction from Master Ohara, 7th dan, once a week. By activating the mind and body as one, the club trains with the goal of "respecting and guiding the mind of the opponent."

(Tokyo Tech news published : Aikido club・October 22, 2018)

Kendo Club group champions in national technical schools judo and kendo contest

Tokyo Tech's Kendo Club has won the group category at the 54th Nationwide Judo and Kendo Competition for National Technical Schools on August 18. This year, the tournament took place on Ookayama Campus.

Ito (front row, third from left), Saito (front row, far left), and Kitahara (front row, far right) posing with other Kendo Club members after victory

In addition to Tokyo Tech, the Nationwide Judo and Kendo Competition for National Technical Schools includes competitors from Kitami Institute of Technology, Muroran Institute of Technology, Nagoya Institute of Technology, Kyoto Institute of Technology, and Kyushu Institute of Technology. The institutes compete in judo and kendo in both group and individual categories, the latter of which includes six members from each institution.

This year, Tokyo Tech's individual performances were also strong. Kaisei Saito, a 1st-year student from the 2nd Academic Group, took second place in the men's category. 4th-year Mechanical Engineering and Science student Rei Kitahara was third in the women's category.

Comments from Captain Kengo Ito

The Kendo Club has been training regularly amidst our studies with the aim of winning this competition. We achieved this for the first time in four years, and I am very pleased. I would like to express my appreciation to all the faculty members, senior students, and everyone else who have been supporting our club's activities.

At this tournament, individual performances were stronger than last year, but we were also able to stick together as a team and fight united to the very end. Everyone on the team has matured through the tough practice sessions we have endured together, and I am proud to be captain of this squad. That said, I am confident that the Kendo Club will continue to work together to achieve a successive victory even after I hand over the captaincy.

Ito, a 3rd-year Computer Science student drawn to software, brain informatics, and artificial intelligence, is looking to join a research lab that best matches his interests soon.

Comments from Kaisei Saito

As this tournament was held at Tokyo Tech, I was particularly motivated to win the individual category, but I was only able to achieve second place. Fortunately, I am still a 1st-year student, so I have the chance to aim for victory next year and the following year in both the individual and group categories.

As a 1st-year student of the 2nd Academic Group, Saito is currently attending a wide range of technical and liberal arts lectures to broaden his knowledge base, which he hopes to tie in with his specialization in the future.

Tokyo Tech Kendo Club

The Tokyo Tech Kendo Club currently consists of 24 students, most of whom study at the bachelor level. Club members train together regularly with two goals in mind — participating in the Kanto University Kendo Federation All-Japan Championships and winning the Nationwide Judo and Kendo Competition for National Technical Schools.

Ito (right) and Kendo Club mentor Assoc. Prof. Akira Kato (left) reporting victory to Tokyo Tech President Kazuya Masu

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Public Relations Section, Office of Public Engagement, Tokyo Institute of Technology
2-12-1-E3-13 Ookayama, Meguro-ku, Tokyo 152-8550 Japan
Tel +81-3-5734-2976 Fax +81-3-5734-3661 Email publication@jim.titech.ac.jp

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Osamu Jinnouchi, Associate Professor, School of Science

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