Co-creating new social contributions through development of next generation human resource for Super Smart Society

Union of open education and open innovation

Tokyo Tech is newly launching a consortium to promote the realization of Super Smart Society (Society 5.0), and planning to develop future leaders who are capable of supporting the transformation to Super Smart Society by establishing for the Outstanding Graduate School Education Program in Tokyo Tech. To accomplish this aim, Tokyo Tech is looking for highly motivated companies who wish to join this consortium and support this education program.

Goal and Features of the Consortium and Education Program

In order to become the world pioneer in the transformation to Super Smart Society, Tokyo Tech will collaborate with participating companies to build a next generation research and education platform through industry-government-academia collaboration.

1. From individual part-time lecturing to a social collaborative education program
   The consortium gathers industry, government and academia in one place to create a next generation systematic curriculum and collaborative education system for Super Smart Society.

2. From individual internships to consortium organized matching-based internships
   The consortium provides internship opportunities to students at mixed companies of cyber-physical spaces in matching to the companies’ preferences.

3. From conventional discipline to an inter-disciplinary education for cyber-physical space
   The consortium develops cyber-physical integrated education which places emphasis on both fundamentals and cutting-edge technologies for the AI (artificial intelligence) era.

4. From individual working doctor program to a recurrent education program
   The consortium offers recurrent education program various styles of learning such as seminars, training camps, open lectures, summer programs, specialized master and doctoral programs etc. based on companies needs for training/education of future elites or new employees.

5. From individual collaborative research projects to consortium organized collaborative research
   The consortium provides technical consultations from a broader viewpoint while promoting joint collaborative research through the matching of companies and doctoral course students.
Super Smart Society Promotion Consortium

**Super Smart Society Promotion Committee**
- Organize networking opportunities for professionals from various job fields such as private companies, government organization, and academia, and promote Super Smart Society through this industry-government-academia collaboration.
- Conduct training of new employees through seminars and summer programs.

**Social Collaborative Education Steering Committee**
- Feed back requests from participating companies and organizations, and co-create a new systematic curriculum and education system through industry-government-academia collaboration.
- Support internship and job-hunting activities of students by matching their expertise and skills with the preferences of companies.

- Propose new courses based on the latest industry trends, and provide opportunities to professionals working in private companies and organizations to directly participate in education for students by working as part-time lecturers.

**Interdisciplinary Research Promotion Committee**
- Provide interdisciplinary joint research opportunities between participating companies and professors who possess various knowledge and skills required for the realization of Super Smart Society.
- Encourage participation of students as Research Assistants (RA) in joint research projects based on matching of their knowledge with requirements of participating companies and organizations.

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Outstanding Graduate School Education Program to be Proposed

Graduate School of Super Smart Society Engineering Combined with Advanced Quantum Science

### IV. Social collaborative education scheme

**Cutting-edge lectures from the industry**
- Joint research with industry
- Internship, job-hunting support
- Promotion of startups and business creation

**Student Screening from various fields and nationalities**
- Graduation degree completion criteria
- Recruitment of students in a wide range of fields from the world.
- Quality assurance through student screenings, ongoing reviews and completion certification.

**Feature of Education**
- Integrated education in cyber-physical spaces.
- Four pillars of education: Quantum science, fundamental technology, system implementation, and new society creation.
- Social collaborative education schemes including internships.
- Project-based learning through the consortium.

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**Super Smart Society Promotion Consortium**
- Board of directors
- Super Smart Society Promotion Committee
- Social Collaborative Education Steering Committee
- Interdisciplinary Research Promotion Committee
- Joint research
- Professors
- Students
- Academia
- Japanese

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**Super Smart Society Engineering Education Program**

**Cyber-Physical Space Integrated Education**

- **Cyber space**
  - Social system, IoT, road transportation, energy, manufacturing systems, smart cities, AI robot services, community care systems, global environment, international collaboration, international standardization,...

- **Physical space**
  - Integrated circuits, sensors, programming, image processing, big data processing, internet of things, manufacturing, architecture, and city planning, cyber security,...

- **Fundamental Technology Field**
  - Information theory, picture processing, radio and optical communication, network, system control, robotics, big data, machine learning, artificial intelligence, architecture and urban engineering, security, ...

- **Quantum Science Field**
  - Quantum information, light, quantum, nanoscience, quantum sensing, quantum annealing, quantum computers, quantum dynamics, ...

- **Cyber-physical fundamental theories for Super Smart Society**

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**International Graduate Program**

- **Academic for Leadership**
  - IT Industry
  - Electric Industry
  - Service Industry
  - Logistics Industry
  - Manufacturing Industry
  - Automotive Industry
  - Construction Industry
  - Government
  - Finance Industry

- **Overseas Collaborating Organizations**
  - **Social and business collaboration**
  - Joint research with participating organizations
  - International research and innovation
  - Joint research with the industry
  - Promotion of startups and business creation

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**Student Screening and Degree Completion Certification**
- Recruitment of students in a wide range of fields from the world.
- Quality assurance through student screenings, ongoing reviews and completion certification.

**Feature of Education**
- Integrated education in cyber-physical spaces.
- Four pillars of education: Quantum science, fundamental technology, system implementation, and new society creation.
- Social collaborative education schemes including internships.
- Project-based learning through the consortium.
Open Education in the Outstanding Graduate School
【Cultivate professionals for our future society via industry-government-academia collaboration】

- Cultivate professionals who are capable to integrate cyberspace technology of information and physical space technology for environment and society
- Cultivate professionals who are capable to lead Super Smart Society on a composite and comprehensive standpoint
- Cultivate professionals who are capable to develop revolitional technologies required for innovations toward Super Smart Society
- Cultivate professionals who possess creativity of new science as the seed of future technology advancements like quantum science

Industry → Education Program
【Social Collaborative Education Program】
- Group work and lectures on the latest technology trends given by participating companies
【Recurrent Education Program】
- Seminars, training camps, summer programs for new and young employees

Education Program → Industry
【Cyber-Physical Double Internships】
- Internships by masters course students (intra-disciplinary)
- Matching-based internships by doctoral course students (inter-disciplinary)

Education Program based on Collaborative Research
【Super Smart Society Consortium Project】
- Project-based learning through collaborative research
Main Professors of Super Smart Society Promotion Consortium

Prof. H. Nishimori
Dept. of Physics
School of Science
Realization of quantum computers based on quantum annealing theory

Prof. M. Kozuma
Dept. of Physics
School of Science
Quantum simulation and quantum sensors utilizing ultracold atoms

Prof. M. Takayasu
Advanced Data Analysis and Modeling Unit, Institute of Innovative Research
Interdisciplinary big data analysis, multi-scale space-time modeling

Prof. M. Fujita
Dept. of Systems and Control Eng., School of Engineering
Cooperative control between humans and robotic swarms

Prof. K. Tanaka
Dept. of Mathematical and Computing Science, School of Computing
Technology to ensure security after quantum computation

Prof. K. Sakaguchi
Dept. of Electrical and Electron. Eng., School of Engineering
5th Generation (5G) cellular networks utilizing millimeter waves

Prof. K. Suzumori
Dept. of Mechanical Eng., School of Engineering
Artificial muscles in robots for supporting disabled people

Prof. S. Yamada
Research of Science and Technology
Institute of Innovative Research
Seismic isolation, damping & monitoring of high-rise building

Open call for consortium membership!

◆◆ Super Smart Society Promotion Consortium to be started in October 2018 ◆◆

<No participation fee for FY2018>

[Activities in FY2018]

✓ We will hold seminars and fora to showcase latest trends and technologies related to Super Smart Society, as well as provide a place for networking between all participants.

<Super Smart Society Promotion Committee>

✓ We will develop various human resource cultivation schemes such as the Super Smart Society Engineering Education Program, Recurrent Education, and supplementary in-house training programs with the prospect of the Outstanding Graduate School launched in FY2019.

<Social Collaborative Education Steering Committee>

✓ We will share future visions on Super Smart Society and discuss the necessity of ecosystems and focused research themes toward Super Smart Society, to co-create interdisciplinary research teams.

<Interdisciplinary Research Promotion Committee>

How to apply: Fill all required items in the application form and send it to the consortium secretariat.

Super Smart Society Promotion Consortium Secretariat:
R. Yamada (School of Engineering), T. Harada (School of Computing), Y. Kobayashi (Institute of Innovative Research)
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University Research Administrator (URA), Tokyo Institute of Technology

* For more information and other inquiries, please contact the Secretariat.