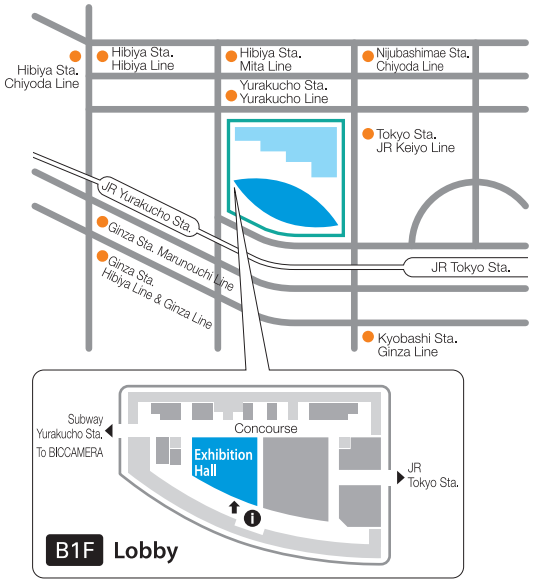
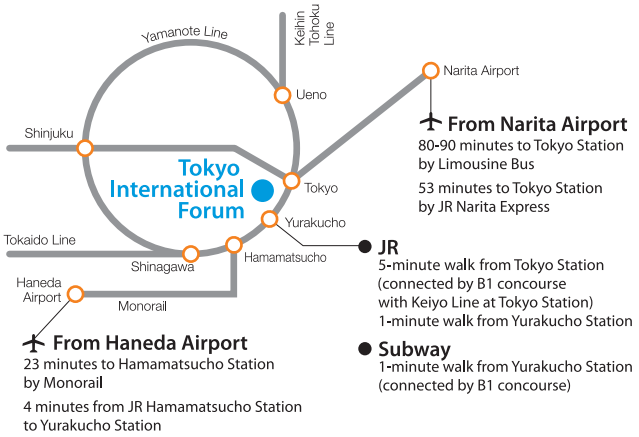
ACCESS

Tokyo International Forum
B2F (Exhibition Hall 2)

3-5-1 Marunouchi, Chiyoda-ku, Tokyo, Japan
Tel: +81-3-5221-9000





From Narita Airport
80-90 minutes to Tokyo Station by Limousine Bus

53 minutes to Tokyo Station by JR Narita Express

JR
5-minute walk from Tokyo Station (connected by B1 concourse with Keiyo Line at Tokyo Station)
1-minute walk from Yurakucho Station

Subway
1-minute walk from Yurakucho Station (connected by B1 concourse)

From Haneda Airport
23 minutes to Hamamatsucho Station by Monorail

4 minutes from JR Hamamatsucho Station to Yurakucho Station

Keio Leading-edge Laboratory of Science and Technology (KLL)

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223-8522, Japan
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E-mail: ktm@kll.keio.ac.jp

www.kll.keio.ac.jp/ktm/

KTM

More Partnerships,
More Dreams

16th Annual Keio Science and Technology Exhibition

KEIO TECHNO-MALL 2015

4 DEC [FRI] 10:00 ▼ 18:00

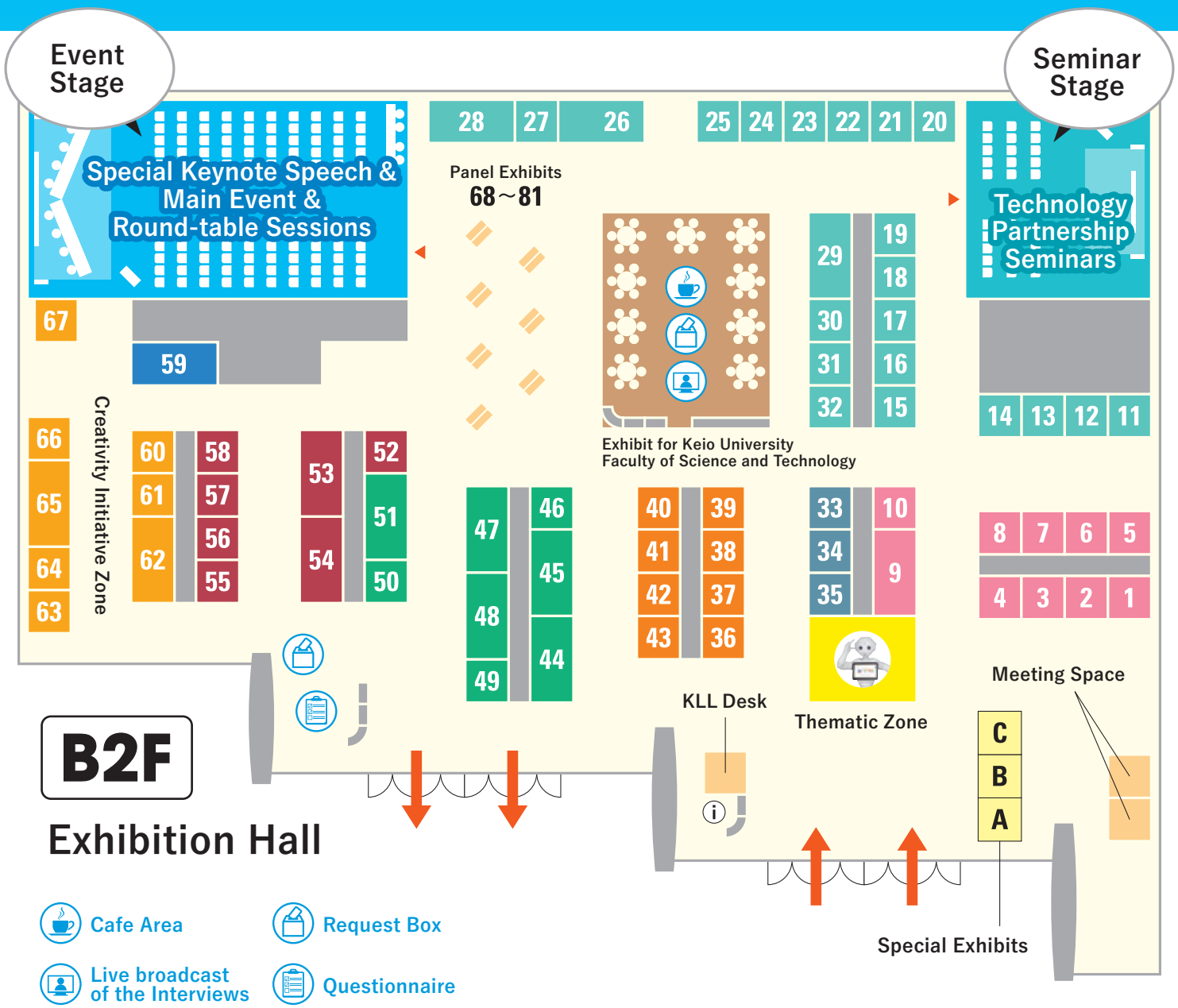
Admission Free

Tokyo International Forum B2F (Exhibition Hall2)

For Event Schedules,
Please refer to the end.

KEIO TECHNO-MALL 2015

FLOOR MAP



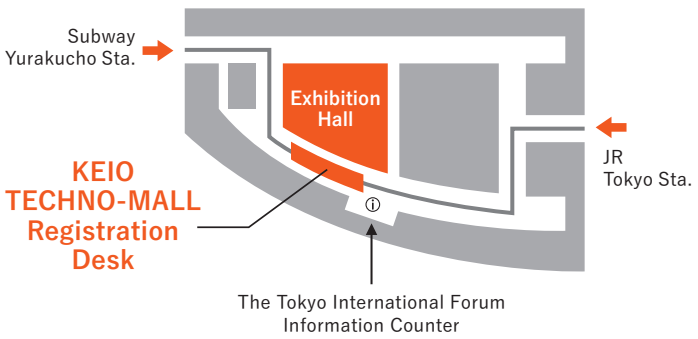
Biomedical | Information and Communication

Mechanics | Electronics

Society & Environment | Materials

Other Fields | Creativity Initiative Zone

B1F Lobby



KEIO TECHNO-MALL
provides four platforms

1 Encounters with researchers and subjects of research

You can be sure of unexpected encounters and first-hand information otherwise unattainable on the internet. More than just topics related directly to your own products or business, perhaps, you will find subjects of research with prospects for new business expansion.

2 Expanded scope and greater flexibility

By learning about the actual research at exhibition booths and seminars, talking directly with the researchers and feeling actual objects, you will be able to get a real feeling for the expanse of possibilities. Also, with regard to collaboration with universities, Keio Leading-edge Laboratory of Science and Technology (KLL) will respond flexibly to requests for advice about procedures and contractual aspects.

3 Internal publicizing of research results

With the KEIO TECHNO-MALL being a venue for the objective and academic publication of research results, you can demonstrate the outcomes of industry-academia collaboration inhouse as part of your R&D activities, and you can utilize it as a place for paving the way for business expansion.

4 Search for product / technology possibilities

Proposals for the utilization of your products and technologies in helping research are also very welcome. The KEIO TECHNO-MALL provides a platform for linking to the development of new products and technologies amid the flow of people, objects, funds and information.

KEIO TECHNO MALL 2015

Program of Events
Outline of Exhibits

Event Information

Venue Event Stage

Special Keynote Speech

12:00-12:30

Open Innovation and Industrial-Government-Academic Cooperation as Revitalization Strategy

AMARI, Akira
Minister in charge of Economic Revitalization
Minister in charge of Total Reform of Social Security and Tax
Minister of State for Economic and Fiscal Policy

Main Event

13:30-15:00

Brain, Mind and Happiness

People want their happiness. In the talk session, the panellists will discuss “Brain, Mind and Happiness” from combination of bio-medical instrumentation, brain science and psychology points of view.

Speech

MAENO, Takashi
Dean and Professor,
Graduate School of SDM

Talk Session

MAENO, Takashi
Dean and Professor,
Graduate School of SDM

MITSUKURA, Yasue
Associate Professor,
Dept. of System Design Engineering, Faculty of Science and Technology

MINAGAWA, Yasuyo
Associate Professor,
Dept. of Psychology,
Faculty of Letters

MIKI, Norihisa
Associate Professor,
Dept. of Mechanical Engineering, Faculty of Science and Technology

OKA, Kotaro
Professor,
Dept. of Biosciences and Informatics, Faculty of Science and Technology

Facilitator:
OKADA, Eiji
Deputy Director, KLL
Professor, Dept. of Electronics and Electrical Engineering, Faculty of Science and Technology

Round-table Session I

10:30-11:50

Engineering Approach for Environmental Issues

Issues of “Environment” in designing social systems will be discussed by experts of enviromental issues in various fields in Science and Technology in Keio.

IIDA, Norimasa
Professor,
Dept. of System Design Engineering, Faculty of Science and Technology

TANAKA, Shigeru
Professor,
Dept. of Applied Chemistry, Faculty of Science and Technology

IKAGA, Toshiharu
Professor,
Dept. of System Design Engineering, Faculty of Science and Technology

Facilitator:
UEDA, Toshihisa
Professor, Dept. of Mechanical Engineering, Faculty of Science and Technology

SATO, Haruki
Professor,
Dept. of System Design Engineering, Faculty of Science and Technology

Round-table Session II

15:40-17:00

Future Society with Intelligent Robots

What do you think about future society with intelligent robots? Here are presented the following intelligent technologies: computer vision, communication, reasoning with knowledge. We might invite one more special guest here. It is human or machine?

MOTOMURA, Yoichi
Deputy Directory of the Artificial Intelligence Research Center, National Institute of Advanced Industrial Science and Technology

AOKI, Yoshimitsu
Associate Professor,
Dept. of Electronics and Electrical Engineering, Faculty of Science and Technology

IMAI, Michita
Professor,
Dept. of Information and Computer Science, Faculty of Science and Technology

Facilitator:
YAMAGUCHI, Takahira
Professor, Dept. of Administration Engineering, Faculty of Science and Technology

Seminar Information

Venue Seminar Stage

Technology Partnership Seminars

30min. each

❶ 10:45-11:15

Efficient Cell Culturing Device using Resonant Vibration of Cell Culture Substrate

Regenerative medicine requires mass cultivation of cells. Generally cell cultivation process is repeatedly proceeded as a conventional procedure. The lecturer introduces a novel cell culturing method based on the mechanical engineering point of view. The method uses a resonant vibration of culture substrate to achieve an efficient cell culture process.

TAKEMURA, Kenjiro

Associate Professor,
Dept. of Mechanical Engineering,
Faculty of Science and Technology

❷ 13:00-13:30

Wireless Health Monitoring

I introduce our proposed wireless health monitoring techniques. First, I introduce array sensor consisting of antenna elements. It can classify human ctivity and also localize. Then I introduce wirelees bital signal detection techniwue based on Doppler sensor, and moreover, new monitoring technique based on low resolution infrared array sensor.

OTSUKI, Tomoaki

Professor,
Dept. of Information and Computer Science,
Faculty of Science and Technology

Booth ▼ P09

❸ 15:10-15:40

Diamond Electrodes

We introduce several electrochemical applications of boron-doped diamond electrodes such as electrochemical sensors, waste water treatment, CO_2 reduction, and novel organic synthesis.

EINAGA, Yasuaki

Professor,
Dept. of Chemistry,
Faculty of Science and Technology

For Event Schedules, please refer to the end.

*Please note that content, etc. of events or seminars are subject to change due to unavoidable circumstances on the day of the exhibit.

Outline of Exhibits

☐ Special symbols used in the following exhibition descriptions

Keio Patent — Technology involving patent rights held by Keio University. For further information, please inquire at the KLL Desk.

Seminar — Technology Partnership Seminar; detail shown on Page 8.

KIF Research Project — Research Project at Keio Innovation Foundry (KIF) as one of Keio University Faculty of Science and Technology 75th Anniversary Commemorative Project. For further information, please see KIF web site.

http://www.kll.keio.ac.jp/kif/

Biomedical

Biomedical

BOOTH 1

Wireless Health Monitoring

Keio Patent Seminar

Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce wireless health monitoring techniques that can realize noncontact measurement of vital signals, such as heart beat, breathing, and blinking.

Biomedical | Information and Communication

BOOTH 2

Monitoring Using Radio Wave: Array Sensor

Keio Patent

Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce array sensor that can monitor person using radio wave without invading privacy. Array sensor can classify activities and localize person.

Biomedical | Information and Communication

BOOTH 3

Monitoring Based on Temperature Distribution: Monitoring System Using Low-Resolution Infrared Array Sensor

Keio Patent

Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce our monitoring system using low-resolution infrared array sensor that can monitor person based on temperature distribution without invading privacy.

Biomedical | Information and Communication

BOOTH 4

Rehabilitation for smell using several scents

Keio Patent

Professor **OKADA, Kenichi**
Department of Information and Computer Science

Sense of smell plays a role to perceive the danger. Thus it's an essential sense in life. However, the disease and aging decrease human's olfactory ability. Therefore, olfactory rehabilitation is necessary to develop olfactory ability. In this study, we rehabilitated subject's olfaction using olfactory display for medical care in order to improve their olfactory ability.

Biomedical

BOOTH 5

Cure arrhythmia safely and surely

Keio Patent

Professor **ARAI, Tsunenori**
Department of Applied Physics and Physico-informatics

We have proposed PD Ablation as an application of Photodynamic Therapy to non-thermal arrythmia treatment without any side effects and developed a clinical device. We will present new findings of in vitro and in vivo studies.

Biomedical

BOOTH 6

Cure arteriosclerotic blood vessel safely and surely

Keio Patent

Professor **ARAI, Tsunenori**
Department of Applied Physics and Physico-informatics

We will present you an innovative laser technology extending vascular wall without cracks. We reserved number of patents and have practical experiences. We will demonstrate the latest operation of newly developed angioplasty device to extend atherosclerosis vessels as well as drug delivery system, both with heating.

Biomedical

BOOTH 7

Treatment device development that answers the needs of medical

Keio Patent

Professor **ARAI, Tsunenori**
Department of Applied Physics and Physico-informatics

Our Arai Lab. developes therapeutic systems in line with medical needs by means of directly collaborative research with clinicians of respective department.

Biomedical | Information and Communication

BOOTH 8

Medical Devices Enabled by Micro/Nano Technology

Associate Professor **MIKI, Norihisa**
Department of Mechanical Engineering

Our laboratory develops medical devices exploiting micro / nano technologies. We demonstrate brain activity recording and eye tracking systems and an implantable artificial kidney.

Biomedical | Materials

BOOTH 9

Functional coating for medical application

Keio Patent

Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

(1) Medical apron with blood repellency (2) Endoscope with blood repellency (3) Gauze with excellent hemostatic effect, blood coagulability (4) New coating with anti-virus were developed. All of them can be applied to medical application.

Biomedical | Information and Communication

BOOTH 10

Swallowing Function Evaluation System

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

We introduce a non-contact and non-invasive swallowing function evaluations system by using 3D shape analysis of moving throat during swallowing.

Information and Communication

Information and Communication | Materials

BOOTH 11

Optical Interconnect Devices for Exa-Scale Computing

Keio Patent

Associate Professor **ISHIGURE, Takaaki**
Department of Applied Physics and Physico-informatics

Optical interconnect technologies are drawing much attention for realizing exa-scale high-performance computing systems. In this research, polymer optical devices for high-bandwidth-density interconnects are designed and fabricated in order to demonstrate their outstanding performances.

Information and Communication | Society & Environment

BOOTH 12

SuperSQL: A Database-centered Web Application Construction Tool

Associate Professor **TOYAMA, Motomichi**
Department of Information and Computer Science

SuperSQL has been developed as the database publishing extension for SQL. We have recently added simple Web application development functionality to the SuperSQL. In addition to the high productivity, it will ease the construction of Web application for both PC and mobile devices.

Information and Communication | Society & Environment

BOOTH 13

Email + Database = Functional Email

Associate Professor **TOYAMA, Motomichi**
Department of Information and Computer Science

Extending the syntax of Email, we propose Functional Email as the breakthrough for classical Email. Within the Email address, a function name and parameters are given, which are used to generate a query for database to realize dynamic mailing lists.

Information and Communication | Society & Environment

BOOTH 14 A Naked-Eye 3D Display System Based on Trick Art

Professor **FUJISHIRO, Issei**
Department of Information and Computer Science

We introduce a novel naked-eye 3D display system, which takes into account depth perception by shade and shadow and motion parallax of human vision system to make combined use of general-purpose displays for allowing an individual viewer to perceive 2D graphic contents in 3D, without any loss of resolution and brightness.

Information and Communication

BOOTH 15 "Service-Oriented Gateway": Towards an Affluent Digital Society

Assistant Professor **KANEKO, Kunitake**
Professor **TERAOKA, Fumio**
Department of Information and Computer Science

The appearance of technologies such as big data, cloud computing, and IoT seems to have changed network services dramatically. However, the networks running these services are still bounded by a traditional uniform architecture. The Service-Oriented Gateway adopts a controllable SDN (Software Defined Networking) platform which allows the network to adapt to the needs of these services, thus realizing more potential for the development of network services.

Information and Communication

BOOTH 16 Next Generation Media Network

Assistant Professor **KANEKO, Kunitake**
Professor **TERAOKA, Fumio**
Department of Information and Computer Science

In the future network, we believe that the size and number of contents will grow much larger. To cope with this, we introduce a large file sharing system (Content Espresso) and an information searching system (Catalogue). Accordingly, we are developing a high-resolution video distribution service and the Campus Museum.

Information and Communication | Electronics

BOOTH 17 Research and development on photonic functional devices for optical commmunication using new wavelength band

Keio Patent

Professor **TSUDA, Hiroyuki**
Assistant Professor **KUBO, Ryogo**
Department of Electronics and Electrical Engineering

Optical functional devices operating in T-band (1000~1260nm) have been researched. T-band has very wide frequency bandwidth and the capacity of the optical communication can be drastically increased. The tunable light sources, the gain chip using quantum dot technology, and the planar lightwave circuit for T-band are developed.

Information and Communication

BOOTH 18 The automatic reconfigurable next-generation access network -Elastic Lambda Aggregation Network-

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

In the current communication network, increase traffic and power consumption of communication equipment, disaster tolerance of correspondence has been a problem. Therefore we research efficient resource allocation techniques, multiple services simultaneously accommodation technology and high availability technology in a disaster. We demonstrate efficient resource allocation technology in this exhibition.

Information and Communication

BOOTH 19 Automatic Attraction of Related Contents in E3-DCN

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

Data Centric Network enables user to request named data rather than numerically addressed hosts. The demonstration shows that automatical attraction of contents related with the requested content and the contents are cached in-network for low latency.

Information and Communication

BOOTH 20 The secure access control schemes towards realization of IoT with high reliability

Professor **SASASE, Iwao**
Department of Information and Computer Science

The research results about routing, media access control, and attack defense which fill power saving, high reliability and high security are shown towards realization of IoT (Internet of Things).

Information and Communication | Society & Environment

BOOTH 21 AffectiveWear: Facial Expression Recognition by Embedded Photo Sensors

Keio Patent

Associate Professor **SUGIMOTO, Maki**
Department of Information and Computer Science

We present a novel wearable facial recognition system "AffectiveWear". This system can recognize several facial expressions. The devices look like a normal eye-wear and head mounted display. We made prototypes with IR photo-interrupter. With this technology, you can enrich your communication with others or computers in various ways.

Information and Communication

BOOTH 22 Scene Recognition and Understanding by Communication Robot

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

We are developing a novel service robot which can communicate with customers by understanding various situation. Actual robot vision system with machine learning based object recognition wiil be demonstrated.

Information and Communication

BOOTH 23 Image Sensing Technologies for Security Applications

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

We introcude robust and practical human detection, tracking and pose estimation system for security camera applications. The typical results will be demonstrated in our booth.

Information and Communication

BOOTH 24 Sports Video Analysis by using Image Sensing Technologies

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

We are studying about sports video analysis by using image sensing technologies, such as automatic player detection, tracking, and play classification. The final goal of this project is to apply the system to Tokyo Olympic 2020.

Information and Communication

BOOTH 25 Next Generation Gaze Interface and its Application for Digital Signage

Associate Professor **AOKI, Yoshimitsu**
Department of Electronics and Electrical Engineering

We developed a novel gaze estimation system for digital signage applications. The system doesn't require special calibration for users. Actual system will be demonstrated in our booth.

Information and Communication | Society & Environment

BOOTH 26

Interactive Intelligent System

Professor **IMAI, Michita**
Department of Information and Computer Science

Imai laboratory studies on "Interactive Intelligence" to achieve smooth Human-machine interaction. We investigate the mechanism of human cognition and design an adaptive system based on the findings of the human cognition. We prepare a communication robot, an autonomos mobile wheelchair, and a wearable user interface and explain our technical motivation in this exhibition.

Information and Communication | Society & Environment

BOOTH 27

An automatic conversation system considering human relations

Professor **HAGIWARA, Masafumi**
Department of Information and Computer Science

A non-task-oriented dialogue system considering human relations is demonstrated. It can memorize contents of the conversation and utilize various knowledge in Wikipedia and Japanese WordNet.

Information and Communication | Society & Environment

BOOTH 28

Intelligent Application Development Paltform

Professor **YAMAGUCHI, Takahira**
Assistant Professor **MORITA, Takeshi**
Department of Administration Engineering

System development using general-purpose robots takes a lot of time. If the intelligent software is incorporated, cost (human, monetary, time) will be even higher. Therefore, in order to facilitate the development of the intelligent system using a robot, we perform research and development for building tools and intellectual software.

Information and Communication | Materials

BOOTH 29

Photonics polymers realiziing super-high-speed and super-high-definition devices

Professor **KOIKE, Yasuhiro**
Department of Applied Physics and Physico-informatics

Japan will start the 4K/8K broadcasting ahead of the world. We introduce the world's fastest plastic optical fiber that enables a real-time transmission of the staggering amount of information. Our photonics polymers also bring innovation to the liquid crystal display structure which becomes larger and more complicated.

Information and Communication

BOOTH 30

Interest Flow Control and Cache Management Based on Traffic in Named Data Networking

Professor **SHIGENO, Hiroshi**
Department of Information and Computer Science

Named Data Networking (NDN) is a type of content-centric networks. In NDN, users can obtain a content by using the only content name. We propose a method adapted to network traffic in order to improve the performance of NDN.

Information and Communication

BOOTH 31

ZINK: Information Centric Networking on New Generation Networks

Professor **TERAOKA, Fumio**
Assistant Professor **KANEKO, Kunitake**
Department of Information and Computer Science

In today's Internet, when we want to retrieve content we need to specify the server that provides the content. However, we do not have to pay attention to the server's location. We're trying to realize a new content-centric network instead of machine-centric network.

Information and Communication

BOOTH 32

Open Data Oriented Network Management Infrastructure

Professor **TERAOKA, Fumio**
Assistant Professor **KANEKO, Kunitake**
Department of Information and Computer Science

With the keyword "making network knowledge open data," we are developing an information-sharing infrastructure called KANVAS to promote secondary use of network knowledge. KANVAS enables efficient communication considering network situation and network management using inference of the cause of failure.

Mechanics

Mechanics | Materials

BOOTH 33

Electro-adhesive sheet and the applications

Associate Professor **KAKINUMA, Yasuhiro**
Department of System Design Engineering

A developed "electro-adhesive sheet (EA sheet)" can control the adhesion at the surface according to applied electric field. The EA sheet is applicable to the brake, clutch, fixture mechanism and so on. We will exhibit the practical application devices in our booth.

Mechanics | Materials

BOOTH 34

Ultra-precision machining and intelligent machining system

KIF Research Project
Associate Professor **KAKINUMA, Yasuhiro**
Department of System Design Engineering

We research on production process of optical elements, analyzing the sub-surface damage due to nanoscale cutting and grinding of optical materials. In addition, we are working on development of intelligent machine tools which have ability to control machining force and vibration according to cutting state. In our booth, we will exhibit samples of optical elements produced by ultra-precision machining and show the developed intelligent machine tools.

Mechanics | Electronics

BOOTH 35

Life support robot

Associate Professor **NAKAZAWA, Kazuo**
Department of System Design Engineering

A function that the robot which is active around us recognizes environment and plans an action is important. In this booth, we introduce a life support robot developing in our laboratory.

Electronics

Electronics

BOOTH 36

Wireless Power Transfer System for Battery-less Portable Devices

Professor **ISHIKURO, Hiroki**
Department of Electronics and Electrical Engineering

A wireless power transfer system for such applications of wearable or medical implantable devices has been developed. Fast tracking loop for load variation and electro-magnetic interference (EMI) suppression techniques are implemented in the developed wireless power transfer system.

Electronics | Materials

BOOTH 37

Novel optoelectronic devices based on nanocarbon materials

Keio Patent

Associate Professor **MAKI, Hideyuki**
Department of Applied Physics and Physico-informatics

Novel optoelectronic devices are realized by using nanocarbon materials such as carbon nanotubes and graphene.

Electronics

BOOTH 38

Diamond Quantum Imaging

Professor **ITOH, Kohei**
Associate Professor **HAYASE, Junko**
Department of Applied Physics and Physico-informatics

Using each electron embedded near a diamond surface as a pixel for quantum sensing, magnetic field imaging of the substance placed on top of the diamond surface is realized.

Electronics | Other Fields

BOOTH 39

Ultra low power reconfigurable accelerator CMA-SOTB-2

Professor **AMANO, Hideharu**
Department of Information and Computer Science

This is an ultra low power reconfigurable accelerator for battery-driven devices. This chip can execute some image processing applications with less than 1-mW power consumption. Today, we will show you a demo of executing an application by using a lemon battery.

Electronics | Mechanics

BOOTH 40

Responsive Multithreaded Processor for Distributed Real-Time Systems

Keio Patent

Professor **YAMASAKI, Nobuyuki**
Department of Information and Computer Science

We show some cutting-edge embedded technologies such as Responsive Multithreaded Processor (RMTP) for parallel distributed real-time system applied like humanoid robot control, RMTP SoC, RMTP SiP and Responsive Link, which is a real-time communication standard.

Electronics

BOOTH 41

Voltage Boosting Power Supply System with On-Chip Solar Cell using Standard CMOS Process

Associate Professor **NAKANO, Nobuhiko**
Department of Electronics and Electrical Engineering

We propose an on-chip power supply for the millimeter scale system operating autonomously. The power supply system using a standard CMOS process is composed of solar cell which outputs about 0.5V and DC-DC boost converter on a same die. The output voltage of the power supply system is more than 1V which is able to operate general analog circuits.

Electronics | Information and Communication

BOOTH 42

A Non-Contact Interface for Modular Smartphones

Keio Patent

Professor **KURODA, Tadahiro**
Research Associate **TAKE, Yasuhiro**
Department of Electronics and Electrical Engineering

Modular smart phones have been attracting attention because users can freely customize and update their phones by selecting modules. The non-contact interface technique is demonstrated for high-speed and high-quality communication between modules.

Electronics

BOOTH 43

Medical Haptics

Professor **OHNISHI, Kouhei**
Department of System Design Engineering

Transformation of force sensation between remote areas is realized by bilateral control with master-slave robots. In this control, position tracking and the action-reaction law achievement are realized. In our study, the technology is applied to medical robots, and we aim to support the operators with transmission of force sensation.

Society & Environment

Society & Environment | Materials

BOOTH 44

Saving energy and environmental friendly coating

Keio Patent

Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

(1) New coating with high heat transfer efficiency, (2) oil/water separation filter, (3) anti-frosting coating, and (4) carbon nano fiber fabricated by electrospinning method for battery electrodes were developed. All of them are environmental friendly and will be very effective for saving energy.

Society & Environment

BOOTH 45

A measurement and removal technology for PM2.5 in the air

Professor **TANAKA, Shigeru**
Department of Applied Chemistry

Recently, many studies point out that the fine particles in the atmosphere has more damage to human health. The automatic continuous measurement equipment for acidity and chemical ions in PM2.5 was developed to understand the behavior of PM2.5 in the atmosphere. The removal equipment was also developed by spraying with charged water mist.

Society & Environment

BOOTH 46

A removal technology for VOC in the exhaust gas by spring removal solution and recovery technology for VOC by cold condensation

Keio Patent

Professor **TANAKA, Shigeru**
Department of Applied Chemistry

The onset of a disease of cancer causing by VOC such as DCM and TCE in printing factory has become a serious problem. The removal equipment for VOC in exhaust gas by spraying removal solution was developed. The recovery equipment for VOC generated from removal solution by clod condensation was also developed.

Society & Environment

BOOTH 47

A Secure automation of social systems

Assistant Professor **IIJIMA, Tadashi**
Department of Administration Engineering

Our goal is automation of social systems by formally verified business processes, rules, and security policies integrated with them.

Society & Environment

BOOTH 48

Planning and Notification of Evacuation Plan built by using Wide-area or Indoor Evacuation Simulation

Assistant Professor **IIJIMA, Tadashi**
Department of Administration Engineering

Our research goal is to realize navigation technique for evacuees by real-time planning and notification of an adequate evacuation plan. In order to make the adequate plan, it's necessary to combine various simulation techniques, such as agent-based simulation and physical simulation of disasters.

Society & Environment | Other Fields

BOOTH 49

Research and Development on Super Lean Burn Concept for Gasoline Engines with High Thermal Efficiency

KIF Research Project

Professor **IIDA, Norimasa** Department of System Design Engineering
Professor **UEDA, Toshihisa** Department of Mechanical Engineering
Associate Professor **YOKOMORI, Takeshi** Department of Mechanical Engineering
Assistant Professor **NISHI, Mina** Department of System Design Engineering

This research is aimed to develop innovative technologies to achieve 50% thermal efficiency on gasoline engines by super lean combustion. Main research targets are: 1) development of ignition system applicable to super lean mixtures, 2) promotion of the flame propagation, 3) reduction of heat loss in the combustion chamber of the engine, 4) knocking control based on chemical kinetics.

Society & Environment

BOOTH 50

New Developments in Reactive Flows

Keio Patent

Professor **UEDA, Toshihisa**
Department of Mechanical Engineering

Reactive flows play an important role in many engineering fields, such as mechanical engineering and chemical engineering. The new development in Reactive flows is shown.

Society & Environment

BOOTH 51

Marketing Data Analysis: Quantification for Customer Satisfaction and Service Quality, and Data Analysis for POS data with customer ID

Professor **SUZUKI, Hideo**
Department of Administration Engineering

Nowadays, marketing analysis using the Web environment attracts attention. On the other hand, effective information can be also acquired from analysis of the questionnaire which is positioned as a conventional approach. We present various marketing analysis, such as case studies of professional sports services, in which we quantify customer satisfaction and service quality, and data analysis for POS data with customer ID.

Materials

Materials | Electronics

BOOTH 52

Novel Methods for Large-scale Synthesis of Nanoclusters

Professor **NAKAJIMA, Atsushi***
Assistant Professor **TSUNOYAMA, Hironori**
Department of Chemistry
*KiPAS Principal Investigator

Novel methods for large-scale and fine synthesis of nanoclusters, super-small particles of sub-bulk size which have unusual and various functionalities, have been developed.
1. High power magnetron sputtering for nanoclusters
2. Micro-fluid reactor for liquid phase synthesis of nanoclusters protected by organic ligands

Materials | Society & Environment

BOOTH 53

Stains hardly adhere on surface: Easy removable coating

Keio Patent

Professor **SHIRATORI, Seimei**
Department of Applied Physics and Physico-informatics

(1) Easy removal coating for food or beverage and (2) easy removal coating for high viscous liquid such as concrete will be demonstrated. This will reduce environmental problems and save energy. We promote the coating products to practical use.

Materials | Biomedical

BOOTH 54

Ultra-Precision Micro Fabrication for New Materials

Keio Patent

Professor **YAN, Jiwang**
Department of Mechanical Engineering

We develop new technologies for micro/nano-scale shape generation and surface property control of new materials in order to improve the functional capability and added value of industrial products. Besides mechanical fabrication, we also use electrical/chemical effects, laser and ultrasonic vibration to innovate the machining technologies for materials such as super hard alloys, semiconductors, glass, diamond, CFRP, and ceramics.

Materials | Society & Environment

BOOTH 55

Development of pulverization disks using diamond films deposited by chemical vapor deposition

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering

Micro through-hole forming disks are used in pulverization devices. These components are core parts for particle pulverization contributory to economical use of fuel. However, conventional single-crystal diamond disks cost a lot. To reduce the cost of the disks, we develop ceramic disks coated with diamond films.

Materials | Society & Environment

BOOTH 56

The flexible solar cell device using Diamond-like carbon film

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering

The solar cell is effective to solve the energy problem. However, it is necessary to reduce the production cost and to expand the application. The solar cell using Diamond-like carbon film (DLC solar cell) meets these demands. In this booth, we introduce our research on DLC solar cell.

Materials | Society & Environment

BOOTH 57

Coating technology of thin film under atmospheric pressure to improve productivity and its application to rails, automobiles and packagings industries

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering

Synthesis technology of thin film is used in various fields such as automobile and packaging industries. Atmospheric-pressure plasma allows large-area and short-time treatments, which lead to productivity improvement. We introduce the characteristics and applications of amorphous carbon and silica based films synthesized under atmospheric pressure.

Materials | Biomedical

BOOTH 58

Next-generation technology for developing medical device using biocompatible Diamond-Like Carbon coating

Professor **SUZUKI, Tetsuya**
Department of Mechanical Engineering

The biocompatible materials have received much attention as the improvement of medical technology. Surface modification such as diamond-like carbon (DLC) coating is one method of improving various properties of biomaterials. We previously reported that fluorinated DLC markedly enhanced biocompatibility. We will introduce about our approaches to the biomedical application development.

Other Fields

Other Fields

BOOTH 59

Wave System

Keio Patent

Associate Professor **KATSURA, Seiichiro**
Department of System Design Engineering

We succeeded in realization of wave control of a mechanical system by a modeling methodology based on distributed parameter system. Using a delay element, it is possible to construct a stable system without complicated controllers.

Creativity Initiative Zone

Creativity Initiative Research
–Global Smart Society Creation Project–

Keio University has been selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) for the 2014 Top Global University Project as one of Japan's top universities providing a world-class level of research and education (Type A). Under this project, Keio will contribute to the world by taking advantage of its own strength at 3 cluster areas; "Longevity", "Security" and "Creativity". We here present Global Smart Society Creation Project under Creativity Initiative.

Other Fields

BOOTH 60

Biofied Building

Professor **MITA, Akira**
Department of System Design Engineering

Learning from the essential mechanisms of a living being, we are creating a new building space. We call this building space biofied building. We implement the mechanism into the building space for interaction between the building space and residents. A platform such as database and robot is currently studied.

Electronics | Information and Communication

BOOTH 61

Communications and Control Technologies in the IoT/M2M Era

Keio Patent

Assistant Professor **KUBO, Ryogo**
Department of Electronics and Electrical Engineering

In the next-generation IoT (Internet of Things) and M2M (machine-to-machine) networks, low-latency communication and high-precision control technologies are required. We present the concept of smart sensor-actuator networks supporting the IoT/M2M infrastructure from the viewpoint of communications and control engineering.

Information and Communication

BOOTH 62

Comfortable life by smart devices

Keio Patent

Associate Professor **MITSUKURA, Yasue**
Department of System Design Engineering

We always know the status of the person using brain wave (EEG). Then we will use the information to form an IOT, comfort and satisfaction that could not be obtained previously from the information, and further to characterize define such hedonic indices. We also propose a remote controller using the same.

Information and Communication | Society & Environment

BOOTH 63

Local Implementation of Smart Community

Keio Patent

Professor **NISHI, Hiroaki**
Department of System Design Engineering

It becomes indispensable to understand what is required for the highly-networked information society. In this viewpoint, we report the result of investigation by introducing three demonstrative smart-community sites with local governments.

Information and Communication | Society & Environment

BOOTH 64

NOC Implementation of Service-oriented Router

Keio Patent

Professor **NISHI, Hiroaki**
Department of System Design Engineering

It becomes indispensable to understand what is required for the highly-networked information society. In this viewpoint, we report the possibility of the future Internet focusing its key device, namely a backbone router, with the result of its demonstration.

Society & Environment | Other Fields

BOOTH 65

Smart Wellness Housing and Community Design

Professor **IKAGA, Toshiharu**
Department of System Design Engineering

We do research on Smart Wellness housing, office, community and city. Basing on sustainable engineering, our research goal is to clarify architectures and cities that realize health promotion, workplace productivity, low carbon, BLCP (Business and Living Continuity Plan), etc.

Information and Communication

BOOTH 66

Demonstration of Intelligent Power Management Technology Using P2P

KIF Research Project

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

Taking into account the deregulation of electricity in 2016, we demonstrate the power management between users. We use the open source P2P library called PIAX to find the supplier satisfying the user's policies. After the matching supplier is found, we use Web-RTC to execute power exchange.

Society & Environment

BOOTH 67

Global Smart Society Creation Project

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

This research aims to solve various problems caused by the super mature society which our country will face in the near future by studying sustainably developing social systems and technologies. This project is under conducted by Keio university cluster research project for super-global university by MEXT.

Special Exhibits

A Industry-Government-Academia Joint Project (supported by Ministry of Economy, Trade and Industry) Keio-Kanagawa Manufacturing Center

B Yokohama Industrial Development Corporation (IDEC)

C Kawasaki Institute of Industry Promotion (IIP)

Panel Presentations

Information and Communication | Society & Environment

PANEL 68

Research of Development of Middleware for Real-Time Trading Systems

Research Associate **CHISHIRO, Hiroyuki**
Department of Information and Computer Science

This research develops the RT-Seed middleware for real-time trading systems in order to realize automatic trading for stocks and exchanges. RT-Seed can guarantee timing constraints and improve quality of trading strategy. Therefore, software platforms for real-time trading systems can be realized.

Information and Communication

PANEL 69

ACTION
～Application Coordinated with Transport, IP and Optical Network～

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

Currently, core network is not enough efficiently. By assigning resources (bandwidth) according to the characteristics of the application, taking into account Quality of Experience (QoE) of users, efficient use of the network is achieved.

Information and Communication

PANEL 70

A Reconfigurable Hardware for Integrating Various Structured Storage Technologies

Assistant Professor **MATSUTANI, Hiroki**
Department of Information and Computer Science

We are developing FPGA-based hardware accelerators for various NOSQL storages that cover key-value store, column store, and graph database.

Information and Communication

PANEL 71

Optical aggregation network for the next-generation "5G" infrastructure

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

The spread of IoT, sensors, smartphones, and wearable terminals cause large traffic amount and increasing number of terminals. In addition, services have been diversified including mission critical services such as data center access and mobile back hole. In order to solve this problem, researches are conducted toward the development of "5G" a next-generation mobile communication system. As the 5G infrastructure, multi-QoS, multi-service Elastic Lambda Aggregation Network having multi-virtual service network has been proposed.

Information and Communication

PANEL 72

IoT Platform Supporting Sensor Data Transactions

KIF Research Project

Professor **YAMANAKA, Naoaki**
Department of Information and Computer Science

Currently, transaction platforms for application software and contents such as music or movie video are available via Amazon and App Store. With coming of IoT era, we think a transaction platform for sensor data is also needed. IoT sensor needs huge number and huge data send into the network. However, such data is not friendly to the user or application. For this application, we have been developed IoT trading platform having transaction, charging and pre-data processing capability. And also platform has data abstraction called virtual sensor functions.

Society & Environment | Biomedical

PANEL 73 Elucidation of physical and chemical characteristics of atmospheric aerosols related to their adverse health effect

Associate Professor **OKUDA, Tomoaki**
Department of Applied Chemistry

Recently, atmospheric aerosols such as PM2.5 are of serious concern for human health. Physical and chemical properties of aerosols such as chemical composition, surface area and surface potential are important as they provide metrics for their adverse health effects. We develop original methods to measure them based on atmospheric chemistry and aerosol engineering.

Society & Environment

PANEL 74 Development of a damage-free ultrasonic cleaning technique

KIF Research Project

Assistant Professor **ANDO, Keita**
Department of Mechanical Engineering

In ultrasonic cleaning, bubbles are nucleated acoustically in water and their oscillations contribute to the removal of contaminant particles at target surfaces. However, violent bubble collapse often gives rise to material damage. Here, we aim to develop a damage-free ultrasonic cleaning technique based on mild dynamics of bubbles driven by low-intensity sonication.

Materials | Electronics

PANEL 75 Development of terahertz polarimeter and its application on material sciences

Keio Patent KIF Research Project

Associate Professor
WATANABE, Shinichi
Department of Physics

We are developing a terahertz polarization measurement system in order to, for example, investigate internal stress distribution in plastic samples. In this panel, we introduce a current state of the equipment, and its application.

Electronics | Materials

PANEL 76 Magnonics: photo- and electro-engineering of magnons

Assistant Professor **SEKIGUCHI, Koji**
Department of Physics

The magnonics has a potential to realize ultralow-power consumption devices with powerful signal processing. By utilizing the magnetism, the magnonics will exceed the semiconductor-based signal processing. This project seeks for a high efficient use and a new function of magnetic materials.

Biomedical

PANEL 77 The development of microthermofluidic device for lifescience research

KIF Research Project

Associate Professor **SUDO, Ryo**
Associate Professor **TAGUCHI, Yoshihiro**
Department of System Design Engineering

This project develops microthermofluidic devices for life science research by the integration of microfluidic devices, which have been developed from the standpoint of bioengineering and bioMEMS, and micro-optical detection systems, which have been developed from the standpoint of thermal engineering and optical MEMS.

Electronics

PANEL 78 Present Status and Future Prospects of Carbon Nanotube and Graphene Interconnect Technologies for LSIs

Professor **AWANO, Yuji**
Department of Electronics and Electrical Engineering

We reported the present status and future prospect of nano-carbon interconnect technologies (CNT vertical and graphene horizontal interconnects). Their superior electrical properties for replacing Cu interconnects were demonstrated. This work was performed as “Ultra-Low Voltage Device Project” funded and supported by METI and NEDO.

Electronics

PANEL 79 International Standardization Activities at IEC/TC113: Nanoelectronics and Proposals on Organic/Nano Device Characterization from Japan

Professor **AWANO, Yuji**
Department of Electronics and Electrical Engineering

Activities of the International Electrotechnical Commission (IEC) for Nanoelectronics (TC113) and our latest proposals on characterization methods for organic/nano-devices from Japan. This study was supported by the Joint R&D Project of International Standards funded by METI.

Electronics

PANEL 80 Medical Haptics

Professor **OHNISHI, Kouhei**
Department of System Design Engineering

Transformation of force sensation between remote areas is realized by bilateral control with master-slave robots. In this control, position tracking and the action-reaction law achievement are realized. In our study, the technology is applied to medical robots, and we aim to support the operators with transmission of force sensation.

Mechanics

PANEL 81 Research and Development of the User-friendly, Reliable and Accurate Intellectual System for Machining Complex-shaped Parts by Multitasking (Turning & Milling) Machine Tool with Multi-turrets

KIF Research Project

Professor **AOYAMA, Hideki**
Department of System Design Engineering

In order to machine a complex-shaped part easily, eliably and accurately by using the multi-turret-type machine tools, our research group promotes the research and development of two key technologies. One is the CAD/CAM based technology to determine an optimum machining process which is able to avoid tool collision and generate an automatic NC program. The other is the observer-based intelligent technology to realize accurate and efficient machining of complex parts.

KEIO TECHNO-MALL 2015
Event Schedule

Event Stage (120 seats)

10:00

10:00-10:15 (15min.) **Live broadcast of the Opening Address**

10:30

10:30-11:50 (80min.) **Round-table Session I**

Engineering Approach for Environmental Issues

IIDA, Norimasa
Professor,
Dept. of System Design Engineering,
Faculty of Science and Technology

TANAKA, Shigeru
Professor,
Dept. of Applied Chemistry,
Faculty of Science and Technology

IKAGA, Toshiharu
Professor,
Dept. of System Design Engineering,
Faculty of Science and Technology

Facilitator: **UEDA, Toshihisa**
Professor,
Dept. of Mechanical Engineering,
Faculty of Science and Technology

11:00

11:30

SATO, Haruki
Professor,
Dept. of System Design Engineering,
Faculty of Science and Technology

12:00

12:00-12:30 (30min.) **Special Keynote Speech**

Open Innovation and Industrial-Government-Academic Cooperation as Revitalization Strategy

AMARI, Akira Minister in charge of Economic Revitalization,
Minister in charge of Total Reform of Social Security and Tax, Minister of State for Economic and Fiscal Policy

12:30

Live broadcast of the Interviews (20min. each)

12:30-12:50【Booth No.61】
KUBO, Ryogo

12:50-13:10【Panel No.76】
SEKIGUCHI, Koji

13:00

13:10-13:30【Booth No.15, 16】
KANEKO, Kunitake

13:30

13:30-15:00 (90min.) **Main Event**

Brain, Mind and Happiness

【Speech】**MAENO, Takashi** Dean and Professor, Graduate School of SDM

【Talk Session】

MAENO, Takashi
Dean and Professor,
Graduate School of SDM

MITSUKURA, Yasue
Associate Professor,
Dept. of System Design Engineering,
Faculty of Science and Technology

14:00

MINAGAWA, Yasuyo
Associate Professor,
Dept. of Psychology, Faculty of Letters

MIKI, Norihisa
Associate Professor,
Dept. of Mechanical Engineering,
Faculty of Science and Technology

14:30

OKA, Kotaro
Professor,
Dept. of Biosciences and Informatics,
Faculty of Science and Technology

Facilitator: **OKADA, Eiji**
Deputy Director, KLL
Professor, Dept. of Electronics and Electrical Engineering,
Faculty of Scienceand Technology

15:00

15:30

15:40-17:00 (80min.) **Round-table Session II**

Future Society with Intelligent Robots

MOTOMURA, Yoichi
Deputy Directory of
the Artificial Intelligence Research Center,
National Institute of Advanced Industrial
Science and Technology

AOKI, Yoshimitsu
Associate Professor,
Dept. of Electronics and Electrical Engineering,
Faculty of Science and Technology

16:00

16:30

IMAI, Michita
Professor,
Dept. of Information and
Computer Science,
Faculty of Science and Technology

Facilitator: **YAMAGUCHI, Takahira**
Professor,
Dept. of Administration Engineering,
Faculty of Science and Technology

17:00

18:00

Seminar Stage (30 seats)

10:00

10:00-10:15 (15min.) **Live broadcast of the Opening Address**

10:30

10:45-11:15 (30min.) **Technology Partnership Seminar**

Efficient Cell Culturing Device using Resonant Vibration of Cell Culture Substrate

TAKEMURA, Kenjiro
Associate Professor, Dept. of Mechanical Engineering, Faculty of Science and Technology

11:00

11:30

12:00

12:00-12:30 (30min.)
Live broadcast of the Special Keynote Speech

12:30

13:00

13:00-13:30 (30min.) **Technology Partnership Seminar**

Wireless Health Monitoring

OTSUKI, Tomoaki
Professor, Dept. of Information and Computer Science, Faculty of Science and Technology

13:30

13:30-15:00 (90min.)
Live broadcast of the Main Event

14:00

14:30

15:00

15:10-15:40 (30min.) **Technology Partnership Seminar**

Diamond Electrodes

EINAGA, Yasuaki
Professor, Dept. of Chemistry, Faculty of Science and Technology

15:30

16:00

15:40-17:00 (80min.)
Live broadcast of the Round-table Session II

16:30

17:00

18:00

*For Event Information, please refer to the pages 06-08.