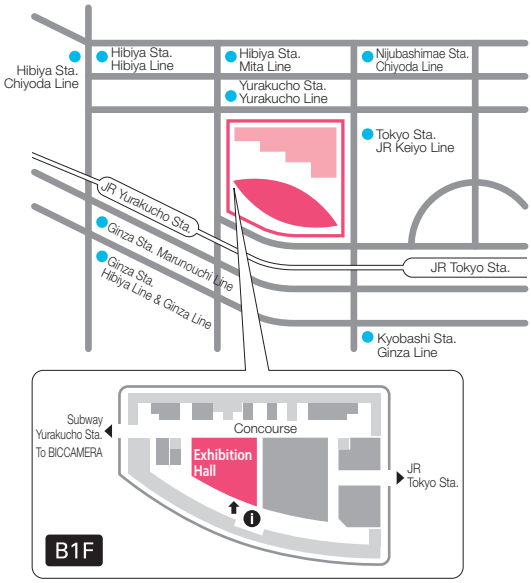
ACCESS

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

75th Anniversary Science & Technology Keio University
75th Anniversary in 2014

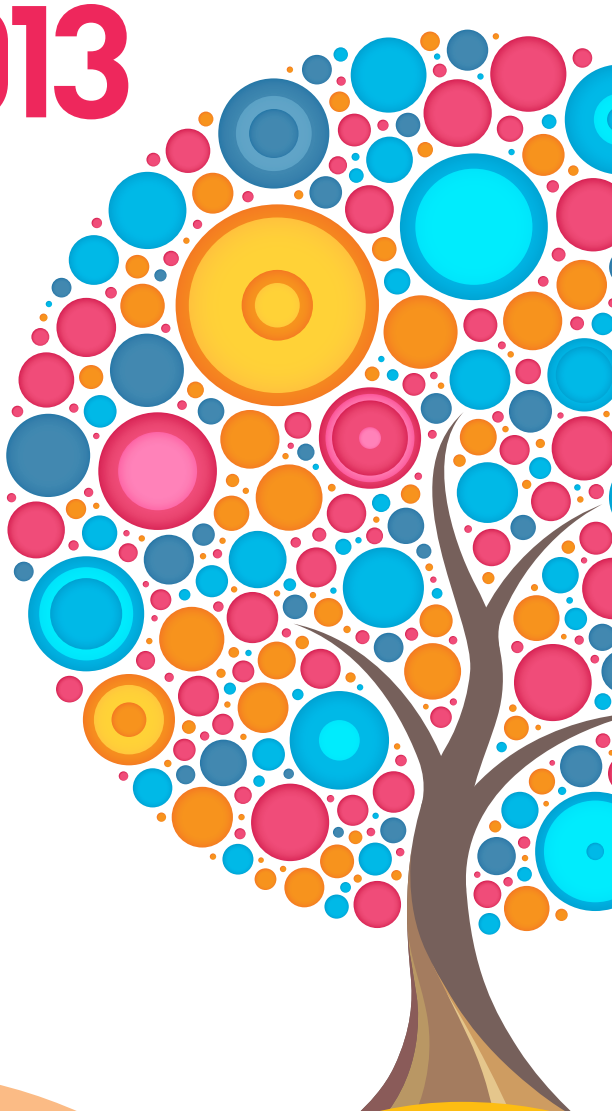
Keio Leading-edge Laboratory of Science and Technology (KLL)

3-14-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8522, Japan
Tel: +81-45-566-1794 Fax: +81-45-566-1436
E-mail: ktm@kll.keio.ac.jp

www.kll.keio.ac.jp/ktm

14th Annual Keio Science and Technology Exhibition

KEIO TECHNO MALL 2013



More Partnerships, More Dreams

13 Dec [fri] 10:00 ▼ 18:00

Tokyo International Forum
B2F (Exhibition Hall 2)

Admission Free

For Floor Map, please refer to the end.

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, KLL (Keio Leading-edge Laboratory of Science and Technology) 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, 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 2013

Program of Events
Outline of Exhibits

- Electronics
- Biomedical
- Administration Engineering
- Materials
- Information and Communication
- Society & Environment
- Mechanics

Main Event

Keio University Faculty of Science and Technology 75th Anniversary Commemorative Event

Emerging challenges in global tech leaders education

Where Event Stage **When** 13:30-15:00 (90 min.)

One of the missions of Keio University Faculty of Science and Technology is to provide educations to students which will lead to their successful careers for life.

While it is impossible to identify precisely the future industrial and academic needs, Keio University is committing ourselves to keep developing new educational systems. One important element is preparing students face challenges in the international area, i. e., global leaderships.

This special event aims to identify crucial aspects of global leadership educations for science and engineering students.

NAKA, Michimasa
CEO, StormHarbour Japan Ltd.

TSUJINO, Koichiro
Founder & CEO, ALEX Corporation

ENDO, Ken
Associate Researcher,
Sony Computer Science Laboratories

OHARA, Kyoko Hirose
Professor, Dept. of Foreign Languages and Liberal Arts,
Faculty of Science and Technology

IMOTO, Yuki
Assistant Professor, Dept. of Foreign Languages and Liberal Arts,
Faculty of Science and Technology

Facilitator: **ITOH, Kohei**
Professor, Dept. of Applied Physics and Physico-informatics,
Faculty of Science and Technology

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

Round-table Session I
"Fostering Academia-Industry Collaborations"

Fostering academia-industry collaborations has been a notable topic of discussion in both sides. The role of coordinators is important in matching academic seeds to industry needs. In this round-table session, we invite collaboration coordinators to discuss problems that the academia-industry collaborations are facing in the first stage and approaches for solving the problems.

10:30-11:50 (80 min.)

SAKURAI, Tohru
Industrial Support Department Director,
Kawasaki Institute of Industry Promotion

HASEBE, Akira
Director, Business Support Department,
Yokohama Industrial Development Corporation

TAKEUCHI, Masao
Senior Coordinator,
Headquarters for Research Coodination and Administration

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

SATO, Chie
Liaison Office Manager, KLL

Facilitator: **OKADA, Eiji**
Deputy Director, KLL

Round-table Session II
"New functional materials: State-of-the-art and furture prospects"

Active researchers introduce the state-of-the-art research on fabrication, physical property of new functional materials and nano devices. The future prospects of new functional materials will be discussed.

15:40-17:00 (80 min.)

UCHIDA, Ken
Professor, Dept. of Electronics and Electrical Engineering,
Faculty of Science and Technology

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

NOZAKI, Yukio
Associate Professor, Dept. of Physics,
Faculty of Science and Technology

Facilitator: **HAYASE, Junko**
Associate Professor,
Dept. of Applied Physics and Physico-informatics,
Faculty of Science and Technology

Technology Partnership Seminars (30 min. each)

12:20-12:50

Conformational changes of proteins in neurodegenerative diseases

Proteins adopt their unique three-dimensional structures and perform their physiological functions. Notably, changes into the abnormal conformations of some proteins have been observed in neurodegenerative diseases such as Alzheimer's disease. Our lab. has hence attempted to reveal intracellular mechanisms regulating protein structures and thereby contribute to the development of cures for the diseases.

FURUKAWA, Yoshiaki
Associate Professor, Dept. of Chemistry, Faculty of Science and Technology

13:00-13:30

Chemical Sensors Inkjet Printed on Paper

Inkjet printing technology commonly known from home-use inkjet printers has become a tool for industrial-scale mass fabrication. Our laboratory is making use of this technology in combination with paper substrates to develop low-cost, single-use and simple chemical sensors for clinical and environmental applications.

CITTERIO, Daniel
Associate Professor, Dept. of Applied Chemistry, Faculty of Science and Technology

15:10-15:40

Communication Network as a Control System

We have proposed QoS (quality of service)-aware and energy-efficient communication network systems based on control engineering approach. I would like to talk about how to see a communication network as a control system, and promising communications technologies in future smart communities.

KUBO, Ryogo
Assistant Professor, Dept. of Electronics and Electrical Engineering,
Faculty of Science and Technology

KEIO TECHNO-MALL 2013
Event Schedule

Event Stage (96 seats)

10:00 – 10:00-10:15 Live broadcast of the Opening Address

10:30 – 10:30-11:50 (80 min.)

Round-table Session I
"Fostering Academia-Industry Collaborations"
SAKURAI, Tohru
Industrial Support Department Director, Kawasaki Institute of Industry Promotion
HASEBE, Akira
Director, Business Support Department, Yokohama Industrial Development Corporation
TAKEUCHI, Masao
Senior Coordinator, Headquarters for Research Coodination and Administration
MIYATA, Shogo
Associate Professor, Dept. of Mechanical Engineering, Faculty of Science and Technology
SATO, Chie
Liaison Office Manager, KLL
Facilitator: **OKADA, Eiji**
Deputy Director, KLL

11:00 / 11:30

12:00 – 12:15-13:15

Live broadcast of the Interviews
NAKAJIMA, Atsushi Booth No. 19
NISHI, Hiroaki Booth No. 30/31
SUGIURA, Toshihiko Panel No. 66

12:30 / 13:00

13:30 – 13:30-15:00 (90 min.)

Main Event
Keio University Faculty of Science and Technology
75th Anniversary Commemorative Event
"Emerging challenges in global tech leaders education"
NAKA, Michimasa
CEO, StormHarbour Japan Ltd.
TSUJINO, Koichiro
Founder & CEO, ALEX Corporation
ENDO, Ken
Associate Researcher, Sony Computer Science Laboratories
OHARA, Kyoko Hirose
Professor, Dept. of Foreign Languages and Liberal Arts, Faculty of Science and Technology
IMOTO, Yuki
Assistant Professor, Dept. of Foreign Languages and Liberal Arts, Faculty of Science and Technology
Facilitator: **ITOH, Kohei**
Professor, Dept. of Applied Physics and Physico-informatics, Faculty of Science and Technology

14:00 / 14:30 / 15:00 / 15:30

15:40-17:00 (80 min.)

Round-table Session II
"New functional materials: State-of-the-art and furture prospects"
UCHIDA, Ken
Professor, Dept. of Electronics and Electrical Engineering, Faculty of Science and Technology
EINAGA, Yasuaki
Professor, Dept. of Chemistry, Faculty of Science and Technology
NOZAKI, Yukio
Associate Professor, Dept. of Physics, Faculty of Science and Technology
Facilitator: **HAYASE, Junko**
Associate Professor, Dept. of Applied Physics and Physico-informatics, Faculty of Science and Technology

16:00 / 16:30 / 17:00 / 17:30 / 18:00

Seminar Stage (30 seats)

10:00 – 10:00-10:15 Live broadcast of the Opening Address

10:30 / 11:00 / 11:30 – Live broadcast of the Round-table Session I

12:00 – 12:20-12:50 (30 min.)

Technology Partnership Seminar
"Conformational changes of proteins in neurodegenerative diseases"
FURUKAWA, Yoshiaki
Associate Professor, Dept. of Chemistry, Faculty of Science and Technology

12:30 – 13:00-13:30 (30 min.)

Technology Partnership Seminar
"Chemical Sensors Inkjet Printed on Paper"
CITTERIO, Daniel
Associate Professor, Dept. of Applied Chemistry, Faculty of Science and Technology

13:30 / 14:00 / 14:30 – Live broadcast of the Main Event

15:00 – 15:10-15:40 (30 min.)

Technology Partnership Seminar
"Communication Network as a Control System"
KUBO, Ryogo
Assistant Professor, Dept. of Electronics and Electrical Engineering, Faculty of Science and Technology

15:30 / 16:00 / 16:30 – Live broadcast of the Round-table Session II

17:00 / 17:30 / 18:00

Outline of Exhibits

Special symbols used in the following exhibition descriptions

Keio Patent

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

Seminar

Technology Partnership Seminar; detail shown on Page 5.

Electronics

Electronics

BOOTH 1

Medical Haptics

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

Transmission of force sensation between remote areas is realized by bilateral control of master-slave robots. Transmission of force sensation is achieved by position tracking and action-reaction law. We applied the technology to medical robots for supporting operators by the transmission of force sensation.

Electronics

BOOTH 2

Thermal-Aware Design of Nanoscale Electronic Devices

Professor **UCHIDA, Ken**
Department of Electronics and Electrical Engineering

In nanoscale electronic devices, self-heating effects caused by the electric current flowing through the device have a significant impact on the electrical characteristics as well as the material properties of the devices. By utilizing these effects, we are trying to enhance device performance and to generate new functional devices for a future green society.

Electronics Mechanics

BOOTH 3

Responsive Multithreaded Processor for Distributed Real-Time Systems

Keio Patent

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

RMT Processor integrates a processor core (RMT PU), which executes eight threads simultaneously based on their priority. It supports four real-time communication links (Responsive Links), various I/O devices (e.g., SpaceWire, PCI-X, IEEE1394, and PWM), an IPC controller, and a run-time execution tracing.

Electronics

BOOTH 4

An Approach to Adaptive Welfare Devices for Human and Environment

Professor **MURAKAMI, Toshiyuki**
Department of System Design Engineering

In future, due to Japan's aging society, human-friendly and environmental adaptability are strongly required for welfare devices. To meet this demand, a novel approach to walking assistive devices and wheelchairs is investigated and their advanced control algorithm is developed.

Electronics Biomedical

BOOTH 5

Non-Contact Swallowing Function Evaluation System

Keio Patent

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

It's getting more important to evaluate swallowing function for preventing accidents and illness such as aspiration pneumonia. We developed a new evaluation system for swallowing function. This system can evaluate swallowing function safely and quantitatively without the application of a Fiber grating vision sensor. We estimate the movement of the throat using the shape of the throat information, and measure the time of the swallowing movement affected by aging.

Electronics Biomedical

BOOTH 6

Neonatal Respiratory Function Evaluation System

Keio Patent

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

We developed a system for quantitatively assessing maturity of the infant respiratory function in newborns/infants with immature respiratory function by unrestrictive, non-invasive, contactless, and highly precise acquisition and pattern analysis of respiratory information.

Biomedical

Biomedical

BOOTH 7

Beat Your Arrhythmia: Innovative Laser Therapy Launched from KEIO University

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

We have proposed the application of photodynamic therapy (PDT) to non-thermal arrhythmia treatment and developed a clinical device. We will present new findings of in vitro and in vivo studies and show you the laser catheter devices under development.

Biomedical

BOOTH 8

Diagnose, Extend, and Weld Blood Vessels with Laser Technology

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

We will present to you laser technology that diagnoses blood vessels, extends them without breakage, and welds the holes in them without exogenous material. We have reserved a number of patents and have practical experience. We will demonstrate the operation of the newly developed angioplasty device.

Biomedical Materials

BOOTH 9

Surface Engineering for Biomaterials

Keio Patent

Professor **KOMOTORI, Jun**
Department of Mechanical Engineering

In recent years, metals are used as implants for medical treatment and are placed inside the human body for a long time. To satisfy safety requirements in long-term usage, there have been numerous approaches toward such materials. Here are some of the new surface modification processes developed recently.

Biomedical Information and Communication

BOOTH 10

Smell Test for Health Checking

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

The olfactory system can catch the scent of danger such as gas leak. It is therefore important to test to see whether you have olfactory dysfunction or not. We propose a method of testing the olfactory system easily within a short time. A smell test can then be introduced into regular health checks.

Biomedical Information and Communication

BOOTH 11

Neural Sciences of Mind and Body

Associate Professor **USHIBA, Junichi**
Research Associate **KASUGA, Shoko**
Department of Biosciences and Informatics

We are researching mechanisms of how the brain controls the human body in collaboration with medical faculties and hospitals. We anticipate that we will be able to contribute to the development of rehabilitation devices, or thought-controlled orthoses for the purpose of functional motor recovery from hemiplegia triggered by stroke.

Biomedical

BOOTH 12

Laser Processing for Biomedicine

Keio Patent

Assistant Professor **TERAKAWA, Mitsuhiro**
Department of Electronics and Electrical Engineering

The research focuses on the creation of novel biomedical technologies by using pulsed laser. Cell-selective delivery of molecules, laser-based controlled release of drugs, and laser processing of biodegradable materials will be exhibited, which will contribute to future drug delivery, gene therapy, and regenerative medicine.

Administration Engineering

Administration Engineering | Society & Environment

BOOTH 13

Advanced Marketing Analysis: Quantification for Customer Satisfaction and Service Quality, and Web Access Log Data Analysis

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

Nowadays, marketing analysis using the Web environment is attracting attention. On the other hand, effective information can be also acquired from analysis of questionnaires, which is positioned as a conventional approach. We present various marketing analyses, such as case studies of professional sports services, in which we quantify customer satisfaction and service quality, and web access log data analysis for career service and golf e-commerce sites.

Administration Engineering

BOOTH 14

A Study on Statistical Control Charts and Experimental Designs

Research Associate **MATSUURA, Shun**
Department of Administration Engineering

Our laboratory studies statistical control charts for monitoring the states of manufacturing processes and experimental designs for improving the quality of manufacturing processes. We present statistical properties of control charts for monitoring multivariate characteristics simultaneously and experimental designs for developing products that are robust to noise.

Materials

Materials | Biomedical

BOOTH 15

Ultraprecision Micro-Nano Manufacturing

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

To create new products with high added value, we are conducting research and development on high-accuracy, high-efficiency, resource-saving manufacturing technologies through micro-/nanometer-level material removal, deformation, and property control. Our recent research focuses include ultraprecise mechanical fabrication, micro-nano forming/imprinting, electrical machining, laser machining, laser Raman spectroscopy, and laser defect repair.

Materials | Mechanics

BOOTH 16

Application of electro-adhesive elastomer

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

Since 2002, we have developed a new functional elastomer of "Electro-Adhesive Gel (EAG)" whose adhesive property at the surface can be changed according to applied electric field. The high-performance EAG is possible to be applied to the brake, clutch and fixture mechanisms. We will exhibit the practical application devices in our booth.

Materials | Biomedical

BOOTH 17

Diamond-like carbon films to biological application

Keio Patent

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

Diamond-like carbon (DLC) films have attractive properties such as low friction coefficient and high gas barrier, and been used in many areas. In fact, there are some industrial applications to packaging and automobile parts etc. Here, we show DLC-coated medical device which contains fluorine (F-DLC) with antithrombogenicity property.

Materials | Biomedical

BOOTH 18

High-Sensitivity Magnetic Field Sensor with Nanometer Resolution Using Diamond

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

A high-sensitivity magnetic field sensor with nanometer resolution has been developed using impurities doped in a high-purity diamond. Our aim is to realize a bioimaging system that can replace the present MRI.

Materials

BOOTH 19

Novel Methods for Large-scale and Fine Synthesis of Metal Nanoclusters

NAKAJIMA, Atsushi
Professor, Department of Chemistry
Research Director, JST-ERATO Nakajima Designer Nanocluster Assembly Project

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

Materials Mechanics

BOOTH 20

Surface Engineering for Structural Steel

Keio Patent

Professor **KOMOTORI, Jun**
Department of Mechanical Engineering

There are many surface modification treatments performed for metals used for machines and constructions aiming to functionalize their properties. Properties needing to be improved are fatigue strength, corrosion resistance, wear resistance, and more. Here are some of the new surface modification processes developed recently, targeting the improvement of such properties.

Materials

BOOTH 21

Antifouling coating film with superhydrophobic and superoleophobic property

Keio Patent

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

Antifouling coating film with superhydrophobic and superoleophobic properties was fabricated by a simple method. The film cannot be soiled by liquids that have various surface energies including cooking oil, soy sauce, mayonnaise, and ketchup. And the transparency and durability of the coating film were improved for practical use.

Materials Society & Environment

BOOTH 22

Functional thin-film by biomaterials

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

Recently, there are many application researches using natural materials. We focused on biomaterials, for instance, chitin, which is refined from crab shell, and squid bone. Using biomaterials like chitin, we fabricated functional thin films and nano-fibers, such as AR-film and blood-stanching nano-fiber film, by a wet process.

Information and Communication

Information and Communication

BOOTH 23

Automatic Conversation System with Attentive Listening Ability

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

An automatic conversation system is demonstrated. It has distinctive two features: 1) It has the ability to learn from conversation; 2) it has the ability to listen attentively.

Information and Communication

BOOTH 24

"Mental Scouting": Future Communication System

Associate Professor **MITSUKURA, Yasue**
Research Associate **FUJI, Taiki**
Department of System Design Engineering

We developed various objective evaluation systems using EEG. These systems can detect mental state (e.g., interest levels, concentration ratio, and drowsiness). We propose a future communication system by projecting the mental condition onto a head-mounted display.

Information and Communication

BOOTH 25

Human-Activity-Sensing Using Radio Waves

Keio Patent

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

We introduce our proposed human-activity-sensing systems using radio waves. The proposed sensing system can classify human activity. As a specific application of our system, we introduce the falling detection system that has been reported by many news and other media.

Information and Communication

BOOTH 26

Non-Contact Biological Sensing

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

We introduce our non-contact biological sensing method without attaching any device. As an example, we demonstrate the method that can sense breathing and cardiac beat wirelessly.

Outline of Exhibits

Information and Communication

BOOTH 27

ZINK: ZNA Information Centric Networking

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 Society & Environment

BOOTH 28

Fast Route-Switching Technology

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

Today's Internet has multiple paths between a source and a destination. However, the routers choose a pre-determined path even when it is congested. Our software routers avoid choosing a congested path and utilize other paths for better packet forwarding.

Information and Communication Society & Environment

BOOTH 29

Big data storage

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

Big data require a global sharing system for large files and relations among the files. Our global distributed storage system called Content Espresso realizes high access throughput, high reliability, and low storage cost. Our file-relation-sharing platform called Catalog enables users to notice hidden aspects of files and to discover related files from the aspects.

Information and Communication

BOOTH 30

Open Innovation Platform

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

A service-oriented router (SoR) for achieving an information-based open innovation platform is demonstrated. You can experience future network services provided by the SoR, such as multi-site recommendation, viewing-rate-based Web search, phishing protection, registered information delivery, and smart grid applications.

Information and Communication Society & Environment

BOOTH 31

Smart Community Infrastructure

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

In Kurihara City, Miyagi, we proposed a new smart community system by conducting experiments on 15 households' HEMS and BEMS using several city facilities. In the demonstration, you can experience HEMS of this project and the relationship with information-based open innovation.

Information and Communication Society & Environment

BOOTH 32

Studies on Human-Robot Interaction

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

Our research focuses on human robot interaction (HRI). In this event, we display three robots with a demo: a mobile robot for communicating with users through gestures; a wearable avatar for telecommunication through streaming broadcast; and a movable display that promotes remote user gestures under telecommunication.

Information and Communication

BOOTH 33

A Tabletop Interface System Supporting Counter Operation

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

This study aims to support clerks in counter operations. Customers often come in groups. Therefore, the clerk has to pay attention to the interests of each customer and reach a conclusion that everyone can agree on. This system analyzes the gaze directions of customers to help the clerk recommend suitable items.

Information and Communication Society & Environment

BOOTH 34

Improving the Content Design of Digital Signage Evolutionarily through Utilizing Viewers' Involuntary Behaviors

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

A digital signage system, which automatically improves its content so as to be more attractive to viewers, is proposed. The system learns the viewers' attention points and their feelings towards the content through utilizing their involuntary behaviors, and evolutionarily produces attractive designs using a genetic algorithm.

Information and Communication

BOOTH 35

Elastic Lambda Aggregation Network (ELAN)

Keio Patent

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

The problems in a communication network are the increase of traffic, the increase in power consumption of the network device, and improve disaster tolerance. In order to solve these problems, we studied the technology of efficient resource allocation, accommodation the multiple services and the topology, and high availability lifeline service.

Information and Communication

BOOTH 36

E3-DCN: Energy Efficient, and Enhanced-type Data Centric Network

Keio Patent

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

E3-DCN: Energy Efficient, and Enhanced-type Data Centric Network development project. In the E3-DCN project, DCN will be applied to a contents delivery network (CDN). To realize the energy efficient CDN, data delivery route in the E-DCN and data transmission method of the E-DCN should be optimized to reduce data transmission energy. The E3-DCN project will realize a CDN application on JGN-X.

Outline of Exhibits

Information and Communication

BOOTH 37

EVNO
～Energy Virtual Network Operator～

Keio Patent

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

We propose a new structure of electric power network whose generation and delivery systems are separated from each other. A third-party institution called EVNO manages multiple distributed energy sources comprehensively, and provides a virtual energy generation system. An efficient energy supply and demand system is achieved by M2M technology.

Information and Communication

BOOTH 38

Human Behavior Understanding and Prediction by a Combination of Data Mining and Pattern Recognition

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

We developed a method for predicting next activity, for example, abnormal/dangerous behaviors avoidance and next activity recommendation. The objective is to predict human activities. In order to predict a next activity, the activity history database is analyzed by data mining. We applied Naïve Bayes classifier and the database of daily scenes.

Information and Communication

BOOTH 39

Sports Video Analysis by Using Image-Sensing Technologies

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

In team sports games, players' motion and ball trajectory are very essential for analyzing and understanding tactics of the teams. We developed a robust tracking method of sports video and realize deep understanding of players' attention and team tactics.

Information and Communication

BOOTH 40

Gaze Estimation and Human-Monitoring Technologies for Actual Applications

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

There is a growing need for human sensing technologies in various scenes. We demonstrate novel sensing technologies for obtaining gaze and posture information of a target person and actual applications.

Information and Communication | Electronics

BOOTH 41

Thermotics

Keio Patent

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

To attain super-realistic communication via a network, we are developing a new technology of thermal energy transformation for transmitting thermal sensation. We have succeeded in realizing transmission of warmth sensation based on simultaneous control of temperature and heat inflow using Peltier devices.

Information and Communication | Society & Environment

BOOTH 42

Super-Embodiment: Motion Media beyond Time and Space

Keio Patent

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

Super-embodiment is a novel concept for the enhancement of "perception and action" without physical transfer. We are developing a platform that treats integrated sensory information as new multimedia for enhancement of individual action.

Information and Communication

BOOTH 43

Cooperative Video Streaming and Trust-Based Network Security in Mobile Ad-hoc Network

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

We present recent studies on cooperative video streaming and trust-based security that consider the reputation of the path to deliver data in a mobile ad-hoc network. The goal of our studies is to build an efficient and secure network.

Information and Communication | Biomedical

BOOTH 44

Innovative Microdevices Enabling Advanced ICT

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

Advanced ICT exploiting our five senses mandates development of innovative hardware that seamlessly connects our senses with the environment. Our group is developing innovative micro-devices that include a wearable line-of-sight detection system and a tactile display by MEMS technology.

Information and Communication

BOOTH 45

Polymer Optical Devices Enabling Exa-Scale Computing

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 performance.

Society & Environment

Society & Environment

BOOTH 46

Development of Reproduction Equipment for Waste Solvent That Absorbs Dichloromethane by Vacuum Evaporation with Air Flow

Keio Patent

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

Dichloromethane (DCM) is hazardous to human health as the cause of chemical-substance-sensitive conditions and cancer. Reproduction equipment for waste solvent that absorbs dichloromethane by vacuum evaporation with air flow was developed.

Society & Environment

BOOTH 47

Development of Automatic Continuous Measurement Equipment for the Chemical Ions in PM2.5

Keio Patent

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

Recently, many studies point out that fine particulate matter of less than 2.5 μm in the atmosphere causes more damage to human health. Automatic continuous measurement equipment for chemical ions in PM2.5 was developed to understand the behavior of PM2.5 in the atmosphere.

Society & Environment

BOOTH 48

Optimal Control for Smart Energy Management Systems

Associate Professor **NAMERIKAWA, Toru**
Department of System Design Engineering

Currently, distributed energy systems, including renewable energy generators, are drawing attention. We propose optimal and reliable cooperative distributed control, as well as estimation and prediction methodologies, for smart electrical power network management systems, including photovoltaic cells and wind turbines.

Society & Environment | Biomedical

BOOTH 49

Inkjet-Printed Chemical Sensors for Healthcare and Environmental Analysis

Keio Patent Seminar

Associate Professor **CITTERIO, Daniel**
Department of Applied Chemistry

Inkjet printing technology commonly known from home-use inkjet printers has become a tool for industrial-scale mass fabrication. Our laboratory is making use of this technology in combination with paper substrates to develop low-cost, single-use, simple chemical sensors for clinical and environmental applications.

Society & Environment | Biomedical

BOOTH 50

Chemical Sensors and Probes for Healthcare, Environmental Analysis, and Bioimaging

Keio Patent

Professor **SUZUKI, Koji**
Department of Applied Chemistry

Our laboratory's research goal is the development of highly sensitive and selective chemical sensors and bioimaging probes. Here, we present (1) novel bright fluorescent and chemiluminescent dyes for various target analytes, (2) functional nanomaterials for medical and environmental sensing, and (3) fluorescent probes for selective bioimaging.

Society & Environment | Information and Communication

BOOTH 51

Networked Environmental Radiation-Sensing System

Professor **MATSUMOTO, Yoshinori**
Department of Applied Physics and Physico-informatics

This booth exhibits a module that measures radiation information including temperature and humidity by using low-power sensors and integrated circuit technologies. The data, including position information, were transmitted by the sensor network, and collection and analysis were performed using a server to visualize with a map or photograph information.

Society & Environment

BOOTH 52

Building Agent-based Simulation Environment with Geographical/Spatial Information for Evacuation Planning

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

The goal of this research is to build a geo-simulation environment for evacuation planning by using an agent-based simulation technique. The agent-based simulation technique is based on modeling of human decision-making and behavior. To improve the reality of the simulation, we attempt to attach spatial and geographical data to the simulation model.

Society & Environment

BOOTH 53

Business Process/Rule Management and Context-based Access Control Model

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

A Business Process/Business Rule Management Environment for inter-organizational workflow and Service-oriented Architecture has been build. In addition a workflow-driven context-based access control model has been proposed.

Society & Environment

BOOTH 54

Support Technologies for Promoting Human-to-Human and Human-to-Machine Communications

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

A naturally expressed gesture is an effective communication channel in conversation. However, there are individual differences in ability for reading gestures. And some people feel extra mental loads to communicate with other people and/or to operate information devices. So we have been studying sensor-based technologies to improve the skill of reading gestures and to measure degrees of the mental loads within communications.

Society & Environment

BOOTH 55

New Trend in Reactive Flow Technology

Keio Patent

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

Reactive flow technology is a technology using fluid flows with chemical and bio reactions. This technology is used in engines, reformers, reactors, and so on. We would like to show you the new trend of this technology. This technology is expected to be used in medical engineering in the near future.

Mechanics

Mechanics | Electronics

BOOTH 56

Development of Feeling Machine Tools without Force Sensors

Keio Patent

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

We are working on the development of a next-generation machine tool that has the ability to recognize a cutting condition without any additional sensors. In our booth, we plan to introduce a developed feeling machine tool, the portable 5-axis feeling polishing machine, and its application techniques.

Mechanics | Electronics

BOOTH 57

Field & Space Robotics -Traverse the Cosmos-

Assistant Professor **ISHIGAMI, Genya**
Department of Mechanical Engineering

The main mission of our group is to conduct fundamental and applied researches related to field robots and planetary exploration rovers. Our research interests include mobility analysis based on vehicle-terrain interaction mechanics; autonomous mobility for sensing, planning, navigation, and control; and development of sampling tools and novel mobility mechanisms.

Mechanics | Society & Environment

BOOTH 58

Mechanical Gravity Canceller - From a Principle Model to Catalog Products

Keio Patent

Associate Professor **MORITA, Toshio**
Department of Mechanical Engineering

Here, we propose a convenient eco-mechanism that makes a perfect-balance state just like weightlessness with no power supply. This time, it is fully prepared for production, and we will exhibit a "crossing gate without balance weight" for infrastructures and a "support system for tire exchange" for manufacturing systems.

Mechanics | Information and Communication

BOOTH 59

Motion-Copying System: Visualization and Reproduction of Experts' Skills

Keio Patent

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

This technology attains motion copying that reproduces motion and force in human motions. In particular, we have succeeded in realizing motion reproduction with contact operation by applying acceleration control. It will be possible to attain an innovative skill tradition, e.g., quantitative evaluation of experts' skills, skill transfer, skill training, etc.

Panel Presentations

Electronics Biomedical

PANEL 60

Sensing Application Using Microcavities

Associate Professor **TANABE, Takasumi**
Department of Electronics and Electrical Engineering

In conventional optical sensing, there is a tradeoff between the device size and sensitivity. This is because of the small interaction between light and matter. By means of a microcavity system, which can confine light in a small volume, we can accomplish small size and high sensitivity simultaneously.

Electronics Mechanics

PANEL 61

Developments of compact terahertz polarization imaging system

Keio Patent

Associate Professor **WATANABE, Shinichi**
Department of Physics

We are developing a compact terahertz polarization imaging system for industrial applications. We would like to discuss potential applications by using the precise terahertz polarization sensing system.

Society & Environment

PANEL 62

Spectrometer for Molecules with a Frequency Accuracy of 11 digits

Keio Patent

Professor **SASADA, Hiroyuki**
Department of Physics

A 3-micron spectrometer has been developed for high-resolution, sensitive molecular spectroscopy. Efficient difference-frequency generation in a waveguide-type device, enhancement of the optical field and effective pass length in a cavity absorption cell, and frequency control by an optical frequency comb allow us to observe spectral lines with a resolution of 10^9 and to determine the central frequency with an uncertainty of 10^11.

Materials Biomedical

PANEL 63

Diamond Electrodes

Keio Patent

Professor **EINAGA, Yasuaki**
Department of Chemistry

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

Biomedical Mechanics

PANEL 64

Dielectrophoresis-Activated Cell Sorter

Associate Professor **MIYATA, Shogo**
Department of Mechanical Engineering

A label-free cell sorter is an effective tool for cell therapy and regenerative medicine. We will introduce a new on-chip cell sorter using dielectrophoresis.

Biomedical

PANEL 65

Modeling of Light Propagation in Tissues for Diagnostic Applications

Professor **OKADA, Eiji**
Department of Electronics and Electrical Engineering

Light propagation in biological tissues, which cannot be measured by experiments, is analyzed by simulations. The results are applied to non-invasive optical diagnostics such as functional near-infrared optical brain imaging.

Mechanics Society & Environment

PANEL 66

Non-Destructive Evaluation by Ultrasonics

Professor **SUGIURA, Toshihiko**
Department of Mechanical Engineering

Non-destructive evaluation, detecting cracks or material degradation in structures, and identifying detachment in composite materials, have now become important for maintenance of industrial technology. Our laboratory is studying ultrasonic testing, including electromagnetic acoustic transducers for noncontact inspection, guided waves for inspecting long structures, and nonlinear ultrasonics for identifying closed cracks.

Information and Communication Society & Environment

PANEL 67

Communication Networks for Smart Communities

Seminar

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

We consider smart communities including various infrastructures and devices as smart sensor-actuator networks. Energy-efficient and low-latency communication technologies towards smart communities are presented.

Information and Communication

PANEL 68

Highly Efficient and Secure Mobile Ad-Hoc Network

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

Secure routing and multi-hop communication are required in mobile ad-hoc networks. We investigate routing and media-access control schemes to reduce power consumption and to ensure high real-time network reliability and throughput.

Information and Communication

PANEL 69

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 70

Pedestrian Navigation Using Illumination

Keio Patent

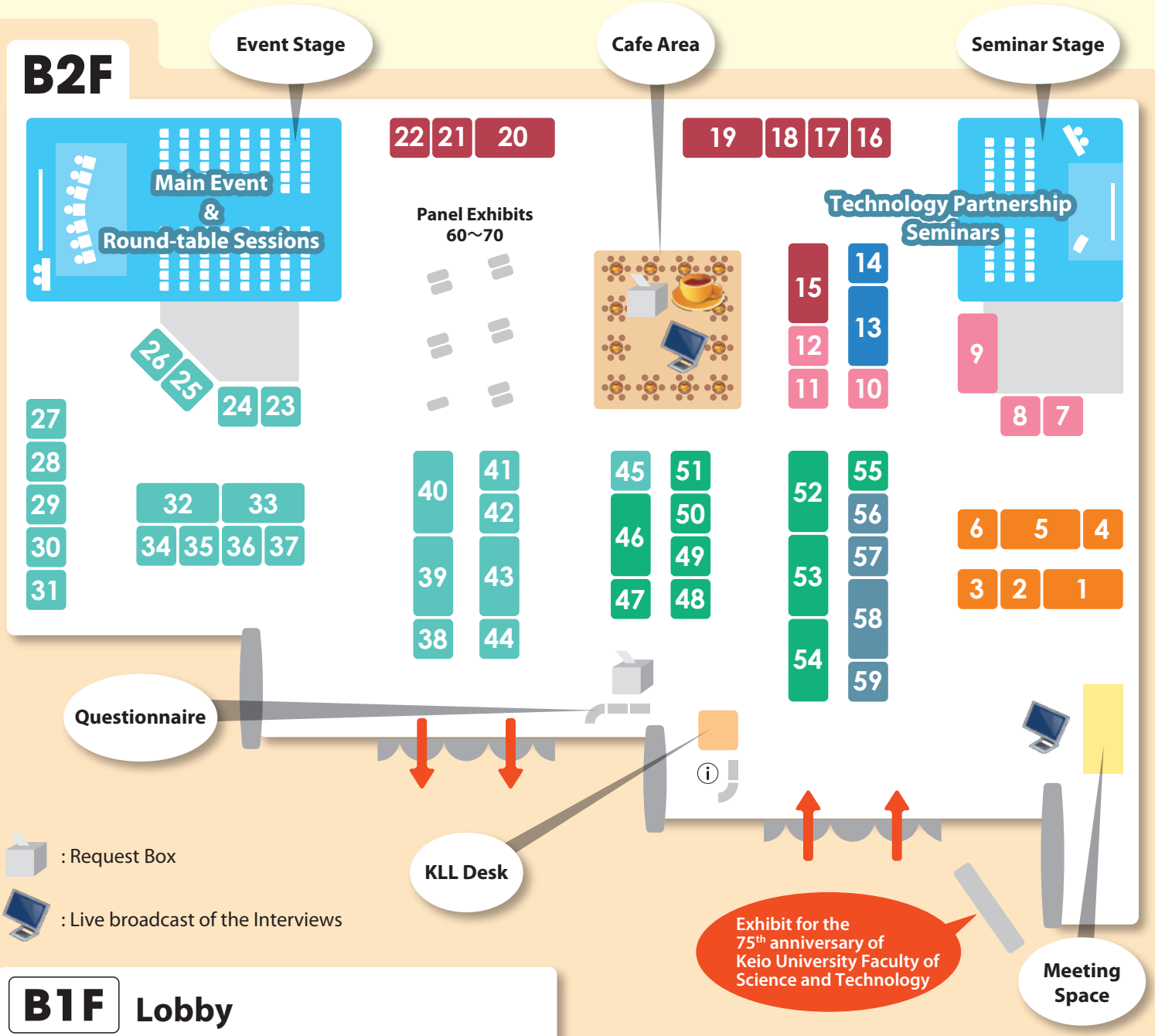
Professor **OTSUKI, Tomoaki**
Department of Information and Computer Science

We introduce our new pedestrian navigation system using illumination. The proposed method judges the regularity of illumination positions, and by using the information, it improves the position accuracy of pedestrian navigation.

KEIO TECHNO - MALL 2013

Floor Map

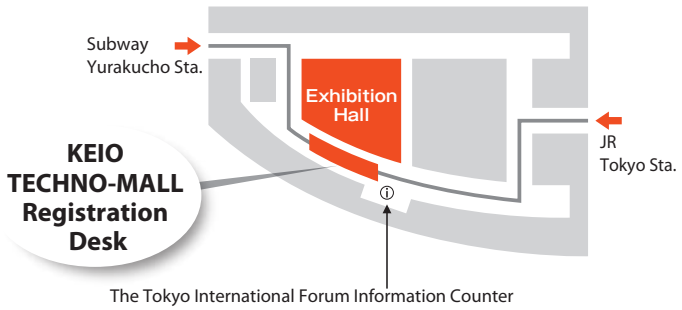
B2F



: Request Box

: Live broadcast of the Interviews

B1F Lobby



- Electronics
- Information and Communication
- Biomedical
- Society & Environment
- Administration Engineering
- Mechanics
- Materials