



SDM members in APCOSE2010

November 2010

Message from the Director and Dean

Bicycle lanes are a familiar system design issue. Karen Ellemann, the Danish Minister for the Environment, bicycled through Tokyo during her visit to Japan to attend COP10 in October. She commented that bicycle lanes and traffic education for children are necessary in this country. Around the same time, a chief researcher in a Ministry of Land, Infrastructure, Transport and Tourism research institute reported that over 6000 kilometers of main roads have enough space to set up 1.5 meter-wide bike lanes. However, such a project to set up bicycle lanes on 300 kilometers of model roads was said to face difficulties since negotiation with the related parties takes so long. These phenomena represent the typical governmental and social issue of lack of infrastructure, despite the dramatic increase in cyclists caused by social trends such as environmental symbiosis, ecological considerations, and promotion of good health. When counting the number of agencies involved in road maintenance, including those responsible for the safety and convenience of vulnerable road users, such as pedestrians, it seems like the list is longer than the list of those agencies that are not involved. This is one of the most important research topics in Keio SDM. In this limited space, I'd like to briefly mention the two messages I heard in Ms. Ellemann's remarks. One is that users should have top priority, and the other is that a hands-on approach should be taken. Those responsible for this issue must seriously consider returning to these principles.



Yoshiaki Ohkami
Director, SDM Research Institute
Dean, Graduate School of
System Design and Management

News

TOPIC

1

ETH Special Lecture



Prof. Frank Schweitzer



Lecture by Prof. Schweitzer

Prof. Frank Schweitzer from the Swiss Federal Institute of Technology Zurich (ETH,) one of SDM's collaboration partners, gave a special lecture on Collective Dynamics of Firms on October 4, 2010, as a part of the Introduction to Business System Management course (Prof. Nakano and Assistant Prof. Minato.) More than 40 people, including students from other graduate schools and people from other organizations seized this chance to learn about mathematical business analysis methods directly from an internationally renowned researcher. SDM is planning another lecture by ETH Professors next spring, which provides a great opportunity for SDM students to experience a lecture given in one of the most prestigious schools in Europe and to improve their knowledge and English skills. It has also been agreed that a few SDM students will study at ETH for a certain period every year. Other opportunities for SDM students to study at international prestigious graduate schools are growing.

Notice

SDM Japanese Website Renewed



SDM's Japanese website has been totally renewed to appeal SDM's features; small class sizes, research-based education, integration of social and technical areas, melting pot of students with and without work experience, faculty with international work experience, and our strong ties with industry and foreign universities. Please visit our new Japanese website.

Official website

▶ <http://www.sdm.keio.ac.jp/>

TOPIC 2 RENAULT-Polytechnique HEC “Multicultural Management and Company Performance” Chair

2010 marks the second time that SDM students have participated in the Renault-Polytechnique HEC internship program. Students who hope to work in an international company in the future are able to experience and compare corporate cultures in Japan and France. Prof. Nakano and Prof. Ogi from SDM are mainly involved in the program, with the support of KBS.

Comments by the participants

Report by Akira Sato



Akira Sato (left) with co-researchers

Attending Renault-Nissan Multicultural Management and Company Performance Program gave me a glimpse of the engineering

culture in France, which I found different from that of the US. I was lucky to have a research opportunity at the Renault-Nissan R&D facility, for my research theme is soft systems methodology. We experienced issues that global companies face, from the inside. Working with the French helped me to identify some issues. Another thing I learned was the importance of improving my system thinking skills by seeing other people's perspectives. When I said “This opinion is based on the difference between French and Japanese,” I was told “or it could be individual differences.”

Report by Mikito Tateishi

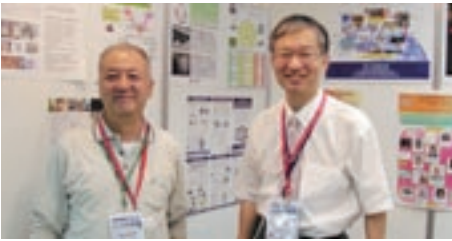


Mikito Tateishi (fourth from left)

SDM students are taught to see trees as well as the entire forest. What I learned as a participant in the program was that people with different

cultural backgrounds see the trees and the forest differently. Around two weeks into the program, we had a chance to discuss how to build the process to systematize the information we had obtained thus far. During the discussion, each member felt that the others didn't see trees and the forest, and the discussion continued for three days. This experience helped us to understand each other better and enabled us to figure out how to operate as a team. I frequently noticed different cultural perspectives, not just within our team, but also in general. I am very grateful to have had this opportunity, and I recommend SDM students to participate.

TOPIC 3 GCOE/SDM booth in APCOSE2010



GCOE/SDM booth at APCOSE2010

The 4th Asia-Pacific Conference on System Engineering (APCOSE2010) was held from October 4-6 at the National Taiwan Ocean University in Keelung, Taiwan under the theme

“System Engineering: Collaboration for Intelligent Systems.” Since the 2nd APCOSE, which was hosted by Keio SDM in the Collaboration Complex in 2008, the Conference has expanded to reflect the economic growth in the Asia-Pacific region. Over 200 people from 14 countries participated this year. From Keio University, the Global COE program and SDM jointly hosted a booth at the Conference. It was the only Japanese booth as well as the only one hosted by a university from any country. Research and educational activities in GCOE and SDM were introduced with posters, videos, and brochures. The participants showed keen interest in both the Global COE program and SDM.

Many SDM members presented their research or participated in enthusiastic discussions at the Conference, including Prof. Yoshiaki Ohkami, Prof. Taketoshi Hibiya, Prof. Shinichiro Haruyama, Prof. Toshiyuki Yasui, Associate Prof. Seiko Shirasaka, doctoral students Takayuki Tomaru (D3) Jitsuzo Katsumata (D2) and Hung-Chi Hsiao (D2), master's student Eiji Osaki (M2), and from SDM Research Institute, Akihiro Sakaedani, Shaopeng Zhu and Yosuke Nakajima. The next APCOSE will be held from October 19-21, 2011 at the Korea Chamber of Commerce and Industry in Seoul, Korea under the theme of “Green Growth and System Engineering.”

TOPIC 4 “Keio System Management Course” Special Lecture



Lecture by Prof. Sasaki



Prof. Shoichi Sasaki

Prof. Takashi Maeno

As a part of “Keio System Management Course” co-hosted by Keio SDM and Nikkan Kogyo Shimibun, Prof. Takashi Maeno and Prof. Shoichi Sasaki gave a special lecture titled “Framework for Symbiotic, Safe and Secure System Design and Development and Its Example.” The lecture, held in Tokyo, attracted over 30 people, mainly from manufacturing.

Prof. Takashi Maeno introduced SDM's approach to design and development of large-scale and complex systems. The participants were very interested in his detailed explanation of SDM.

Prof. Shoichi Sasaki lectured on the hybrid car

Prius' development as system, and provided detailed examples and know-how of large-scale and complex system design. Many participants expressed interest in and asked about the impact of Toyota's corporate culture on the successful development of the Prius. This is the second special lecture following the one held in May with Prof. Yoshiaki Ohkami and Prof. Takashi Maeno. These special lectures on the introduction of SDM's approach and the lectures on professors' actual cases are expected to continue as they have been very well-received. The Keio System Management Course is planning to hold open public lectures on various themes.

Official website ► <http://www.kibanken.jp/keio/>

TOPIC 5 Special Lecture by Prof. Duncan Moore

SDM offers “Entrepreneurship 1” as an English course in 2010 Fall semester. Prof. Shinichiro Haruyama and Mr. Hiroshi Fujiwara (President and CEO of Internet Research Institute, Inc.) invited Prof. Duncan Moore from University of Rochester, USA to be a guest lecturer for this course. Prof. Moore gave intensive lectures on October 20 and 21; around seven hours in total.

Prof. Moore is a professor of business administration at University of Rochester, and an optical engineering researcher. In 2007, he was appointed as a director of the Center for Entrepreneurship. He gives lectures on entrepreneurship all over the world.

In his latest lectures at SDM, Prof. Moore spoke about legal issues for technology-based businesses, intellectual property, marketing and selling your idea, and financing.



Prof. Duncan Moore

TOPIC 6

JAXA Systems Engineering (Intermediate A) Training Seminar

Systems engineering (intermediate A) training seminar for JAXA employees was held on October 6 and 7 in the Collaboration Complex under the framework agreement between JAXA and Keio University. JAXA sent 23 participants to hear Prof. Masaru Nakano, Prof. Kenichi Takano, Prof. Shoichi Sasaki, Prof. Hidekazu Nishimura, and Associate Prof. Seiko Shirasaka give lectures on thinking from various perspectives and its application in system development, the Dual Vee model

and system development in vehicle development, and problem solving and creative decision-making, as well as an exercise on the root cause analysis of the Shigaraki Kogen rail accident. At the end



Prof. Sasaki commenting

of the seminar, participants actively participated in a comprehensive discussion on “the difference in system development between the automobile, electronic, and aerospace industries.”



Comprehensive discussion

TOPIC 7

JAXA Systems Engineering (intermediate B) Training Seminar



Lecture for JAXA employees

The SE intermediate seminar was held from October 19 to 21 for 17 JAXA employees selected from various departments. Prof. Heinz Stoewer,

president of Space Associates, was invited to lecture. At the beginning of the seminar, the participants filled out a questionnaire about their interests, and the lectures were delivered in response to the needs of the workers involved in space exploration. The difference between systems engineering as seen by the International Council on Systems Engineering (INCOSE) and project management by Project Management Institute (PMI) was discussed in groups based on the various case studies introduced in the seminar. On the last day, Prof. Stoewer lectured on

how to become an excellent system engineer or project manager, and emphasized the importance of continuously educating oneself in the fast-evolving environment. Prof. Stoewer's advice from his experience in the space exploration business was convincing and his comments were easy for the participants to understand.



Prof. Heinz Stoewer

TOPIC 8

Special Lectures by Mr. Niels Malotau



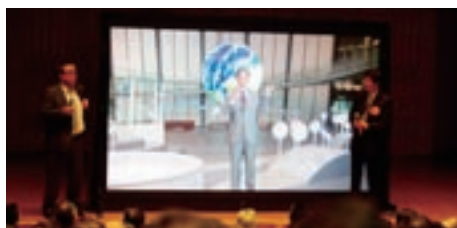
Mr. Niels Malotau in the seminar on the first day

A series of Special Lectures titled “Predictable Projects” by Mr. Niels Malotau was held from October 12 to 15 in the Collaboration Complex on Hiyoshi Campus. The lectures, given in English, and hosted by the Global COE Program “The center for Education and Research of Symbiotic, Safe and Secure System Design” and SDM

Research Institute, were open to the public on the first day and attracted over 20 people from outside of SDM. In the lectures, the skills to lead projects successfully were introduced for research and development managers, project managers, system engineers, and program/portfolio/resource managers who are responsible for delivering projects on time.

TOPIC 9

International Conference on Plastic Optical Fibers and KPRI International Symposium



Life-size Dr. Mamoru Mohri in the big screen

The 19th International Conference on Plastic Optical Fibers (POF2010) was held in the Collaboration Complex on Hiyoshi Campus from October 19 to 21. Associate Prof. Tetsuya Toma and

two SDM students presented their research. Compared to many presentations on material chemistry and communication technology, the presentations by Prof. Toma and the students were unique and attracted attention because they covered application research and its value in society. The KPRI International Symposium was also held along with POF2010. KPRI (Keio Photonics Research Institute) presented its research. Prof. Yasuhiro Koike of the Faculty of Science and Technology, which leads in optical plastic, is the chief researcher in KPRI, and Associate Prof. Toma is deputy director of KPRI. The near-future living space called “Gigahouse World” was exhibited in Raiosha for the first time.

In the special session held on the 19th, former prime minister Yukio Hatoyama made a speech. It was also an occasion to showcase Keio University's cutting edge technology as Dr. Mamoru Mohri, former astronaut and director of the National Museum of Emerging Science and Innovation, appeared on the big screen. The audience was duly impressed by Prof. Toma's demonstration of a 4K stereoscopic motion picture on the big screen.



Former Prime Minister Yukio Hatoyama making a speech

TOPIC 10

Information Session in Shanghai

Prof. Masaru Nakano from SDM attended a joint Japanese Universities Information Session at Shanghai Jiao Tong University and Fudan University in Shanghai in October. Both are prestigious universities in China; Shanghai Jiao Tong University is more science-oriented, whereas Fudan is known for its arts courses. The information session was scheduled for a time when Chinese people were still agitated about the territorial dispute between China and Japan, so a session at Peking University and Tsinghua University in Beijing were canceled. The sessions held at two

universities in Shanghai attracted an estimated 100 students. Students in Shanghai Jiao Tong University are more interested in SDM compared to students in Fudan University. Many Chinese students who would like to study in Japan are interested in Japanese animations, games, and pop music. Chinese people are keen to build their social and business networks and consider it an advantage to graduate from a prestigious school. It is generally acknowledged that the top students, children of Chinese Communist Party officials and wealthy families, tend to go to the US to

study, and that not all students in prestigious Chinese universities are excellent. It was a useful experience to attend the information session to improve our publicity and selection of foreign students.



Keio University booth

Laboratory Profile

Aerospace and Intelligent Systems Laboratory (AIS Lab) ▶ <http://aislab.sdm.keio.ac.jp/>

Director

Associate Prof. Naohiko Kohtake

Prof. Kohtake worked in R&D at the Japan Aerospace Exploration Agency (JAXA) and the European Space Agency. His specialties are design and management of space systems and ubiquitous systems, systems engineering, and user interfaces.

Lab Profile

At the Aerospace Intelligent Systems Lab (AIS Lab.), Associate Prof. Naohiko Kohtake, Assistant Prof. Nobuaki Minato and Assistant Prof. Sun Kim are the main members who conduct research together with professors and students that possess rich work experience in the aerospace field including Prof. Ohkami, Prof. Nishimura and Associate Prof. Shirasaka. The research topics are varied, from aerospace systems

Main faculty members

Deputy Director

Assistant Prof. Nobuaki Minato

Prof. Minato worked for Japan Aerospace Exploration Agency (JAXA) and Avion de Transport Regional, Toulouse, France (ATR.) His specialties are business system dynamics and aerospace management.

Assistant Prof. Sun Kim

Prof. Kim was a research assistant at Stanford University, after working for BMW AG, Johnson and Johnson, and serving in the Korean Army. His specialties are design for manufacturing, DFX, service science, location-based services, and healthcare engineering.



Observations / Interviews



Workshop



Simulations



Rapid Prototyping



Practical Experiments

to systems closely related to daily life, so that the achievements of the research can be shared and can contribute to society. The research includes not only technological research but also value creation in society and financial feasibility. The goal is to propose new services, products and systems from the users' standpoint. AIS Lab meets every Monday for seminars and discussions.

Main research topics

1 Location service with space technology



Quasi-zenith satellites © JAXA

Positioning technology, such as GPS, is broadening the field of application, as more than 60 million mobile phones in Japan are equipped with GPS location service. Accordingly, many location services have been created, including the provision of safety and security information; examples include emergency messages, informing parents of their children's location, and customer guidance by location-based advertisements. AIS Lab conducts research in cooperation with public, private and academic organizations, mainly on Indoor Messaging System (IMES) technology created by Japanese space technology, and basic technologies such as positioning technology and space information technology required in the development of positioning services and their platforms, and new positioning services. In particular, AIS lab is cooperating with JAXA, telecom and railway industries, and advertising agencies in design and demonstration experiments for commercial viability.

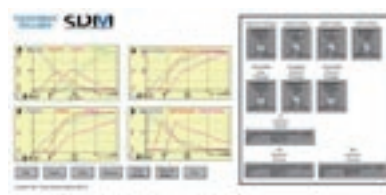
3 Integration of design approach and systems engineering

AIS Lab conducts research to change society and business by integrating design approach and systems engineering. Design methods for increasingly complex systems and services are created, applied, and evaluated on their effectiveness. In particular, product service systems, location-based services, and healthcare delivery systems are examples. Our specialty is conducting practical research by collaborating with relevant business industries.



Lab Summer Camp in 2010

2 Sustainable business design method and management theory



Communication System Dynamics Simulator

Communication System Dynamics Simulator
"Sustainability" tends to be thought of as relating to global environment or biodiversity, but the basic concept of sustainable design can be applied to businesses and social systems. AIS Lab is engaged in research on the most appropriate design methods and management methods applying sustainability to large-scale and complex business systems and social systems, such as the joint research with a French graduate school on a sustainable air transport system, and development with a foreign company of simulators to optimize a marketing communication strategy. The SORA seminar is held every Wednesday evening on Hiyoshi Campus. Non-member business participants are also welcome to attend to learn more about aerospace research and education.

4 Other research

In addition, faculty members and students individually conduct research on themes they find of interest in collaboration, where necessary, with related parties inside and outside the lab. The main research topics are as follows:

- Design and operation of a space situational awareness system to observe space debris
- Location-based service platform to be able to customize privacy and usability
- Building of a compound location sensing platform for indoor and outdoor seamless positioning system
- Safe and smooth snow removal system for roads in snow zones
- Finance scheme for dual-use satellite
- Application of systems engineering method to small satellite development

The AIS Lab is actively involved in international collaborations and participates in student exchanges with foreign organizations. For example, an SDM student is studying at OTB Research Center, Delft University of Technology (TU Delft), in the Netherlands, and two students from TU Delft are working at the AIS Lab.



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