

Essay

New Paradigm of Research and Education Activities and Globalization at KAIST



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I think most of you have ever found “KAIST” in international conferences or journals, or directly visited KAIST. Korea Advanced Institutes of Science and Technology (KAIST) is a research based academic institution and leads the international level higher education and research activities in the fields of engineering and technology. The core of KAIST is located in the Daedeok Research Complex in the city of Daejeon, 150 kilometers south of the capital city, Seoul. Daedeok complex is the nation’s R&D capital and home to some 50 public and private research institutes, universities, and high-tech and venture capital companies.

KAIST has twin campuses located in Daedeok and Seoul and it extends to six colleges for Natural Science, Life Science and Bioengineering, Engineering, Information Science and Engineering, Business, and Cultural Science with 20 departments, furthermore eight research institutes and five affiliate schools.

For the 2009 academic year, more than 8,000 students were enrolled; 3,452 in the bachelor’s, 2,197 in the master’s, and 2,357 in the doctorate programs. The number of international students reached 389 approximately covering 5 percent of all students, with 124 in the bachelor’s, 134 in the master’s, 22 in the joint M.S.-Ph.D., and 109 in the doctoral programs. KAIST has 842 professors and 334 staff members as of January 2009.

Since the establishment of KAIST in 1971, it has become a top university of science and technology in Korea. Currently, there are more than 500 faculties, 450 research affiliates, and about 9,700 students at KAIST. To make KAIST one of the best Science and Technology Universities in the world, KAIST is pursuing global excellence in four aspects as shown below;

Education: design and synthesis, bilingual and dual degree programs

Research: KAIST institute for research excellence, and research at the interface

Operation: Dept.-centric system, boundary-less system, ethics

Cooperation: globalization, interaction with the internal community, and contribution to the society

Recently, KAIST was granted two big projects. Korean government pumped 40 million US dollars, a large sum for a university, directly into KAIST, so that it could develop more models in both the electric vehicles and mobile harbors. The Korean vehicles challenge the dominant presumption in the auto vehicle industry that, electric cars should use batteries. But instead, the KAIST model suggests that the cars should suck up power from the road with electric power line.

KAIST and former ICU (Information and Communications University) were merged on March 1st, 2009. According to the agreement, all IT related departments and researcher centers at

KAIST and ICU are integrated into IT Convergence Campus (ICC). In other words, ICU and relevant parts of KAIST evolve into the ICC. ICC is headed by a vice president and has College of Science and Technology and School of IT Business under the umbrella. After the merger, the prior ICU faculty and staff are subjected to the same policies and regulations for Appointment and Promotions that have been applied to the current KAIST faculty and staff. KAIST is now deploying a huge world-class education and research man power of 170 IT related professors in total (106 before) and 3800 students (2700 before).

The goal of ICC is as follows; Development of a new model for a highly interdisciplinary research and education programs at the interface between IT and other engineering/science disciplines; Rapid evolution of KAIST into an internationally recognized center for IT convergence and IT systems; Provision of new opportunities to establish technology-based start-up companies, for KAIST faculty members and students. There are plans for new curriculums; strongly recommend each ICC professor to develop one course, either in interdisciplinary areas or IT system design. ICC will develop about 20 courses on IT convergence areas by 2011 and put more emphasis on freshmen design class and Renaissance Ph.D. Program. In addition, ICC will develop the Capstone project, which can provide students with an opportunity for establishing a start-up company.

It is one of important issues for KAIST to be globalised now. ICC will be developed with attractive advanced programs for globalization. For example, ICC will recruit distinguished foreign faculty to be increased from the current 3% to 6% by 2011. This program will encourage people who are interested in international higher education and R&D of advanced science and technology in the field of IT. Global Internship, Joint/Dual degree programs, and Post doctoral fellow programs will also be fully expanded and supported for the globalization of KAIST. Foreign professors/researchers will be invited to serve Ph.D dissertation as committee members. Exchange of Professors and students will be strongly encouraged as well.

Hot Topics

Special Contribution from IEICE Fellow Prof. Dr. Wolfgang-Martin Boerner archived in IEICE homepage !



*Professor Emeritus and Director
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IEICE Fellow, IEEE Life Fellow
Member of IUCN SSC/WI*

Prof. Wolfgang-Martin Boerner has been devoted to international research and higher education activities for over 40 years since he received his PhD degree from University of Pennsylvania in 1963 and actively leads worldwide R&D activities of polarimetric SAR remote sensing and imaging. He offered a contribution entitled “International Collaboration on advancing microwave radar remote sensing and stress-change monitoring of the terrestrial covers from space for the benefit of sustaining the biosphere in which we reside” upon the request of

IEICE Task Force for International Policy and Planning (TFIPP) to encourage younger researchers and students toward their future. The contribution assesses the current remote sensing technologies with polarimetric radar sensors, satellite based space imaging and introduces R&D activities of multimodal Synthetic Aperture Radar sensor technologies. This contribution is archived on the top of IEICE Global Plaza No.8 in IEICE homepage (English) at http://www.ieice.org/eng/global_plaza/index.html/. Further, you can see his superb international academic activities at <http://www.ece.uic.edu/Faculty/boerner.html/>.

~~~~~ **IEICE Society Conference successfully held, also consecutive English Sessions provided!**

Annual IEICE Society conference was held at Niigata University during September 15-18 and provided complete English Symposium Session BS-10 "Network Planning, Control and Management" everyday. This was planned and managed by Technical Committee on Information Communication Management (See <http://www.ieice.org/cs/icm/>) under IEICE Communications Society. About 40 members participated in each session and meaningful discussions were held **on the subject** between speakers and participants (Fig.1,2). Details will be reported in next issue.



Fig.1 Presentation in English



Fig.2 Discussion in English

~~~~~ **Useful Remarks**

IEICE Transaction on Fundamentals of Electronics, Communications and Computer Science useful for your paper submission with the prompt review and editorial systems



**Hiroki Koga, Assoc. Prof. Dr.,
 University of Tsukuba
 Editor, IEICE Trans. on Fundamentals
 of Electronics, Communications and
 Computer Science
 IEICE Engineering Sciences Society**

"IEICE Transaction on Fundamentals on Electronics, Communications and Computer Science" (for short, IEICE Trans. Fundamentals) is the transaction of Engineering Sciences Society. As the title "Fundamentals" indicates, most of submitted papers report basic (not so application-oriented) research results. Members of IEICE can submit papers related to the following 32 specialties: Engineering Acoustics, Noise and Vibration, Speech and Hearing, Ultrasonics, Digital Signal Processing, Analog Signal Processing, Systems and Control, Nonlinear Problems, Circuit Theory, VLSI Design Technology and CAD, Numerical Analysis and Optimization, Algorithms and Data Structures, Graphs and Networks, Reliability, Maintainability and Safety Analysis, Cryptography and Information Security, Information Theory, Coding Theory, Communication Theory and Signals, Spread Spectrum Technologies and Applications, Mobile Information Network and Personal Communications, Intelligent Transport System, Image, Vision, Computer Graphics, Language, Thought, Knowledge and Intelligence, Human Communications, Neural Networks and Bioengineering, Multimedia Environment Technology, Communications Environment and Ethics, Concurrent Systems, Measurement Technology, General Fundamentals and Boundaries

The editorial committee of IEICE Trans. Fundamentals consists

of one editor-in-chief, one deputy editor-in-chief, one editor and 48 associate editors. Prof. Hiroshige Yamamoto (University of Tokyo) serves as the editor-in-chief and Prof. Tadashi Dohi (Hiroshima University) serves as the deputy editor-in-chief since June 2009. When a paper is submitted to Regular Section where members of IEICE can submit papers at any time, one of the 48 associated editors who is the most appropriate to the paper, is assigned to the paper. Evaluation results of the paper including review reports are sent to the author(s) after peer review by experts. IEICE Trans. Fundamentals also has Special Sections that is focused on specific research areas. In 2008, 15 Special Sections were provided. Call for Paper for each Special Section is available at

<http://www.ieice.org/event/ronbun-e.php?society=ess/>.

You will catch our activities with some statistics on papers submitted to IEICE Trans. on Fundamentals. In 2008, 519 papers (310 papers and 209 letters) were submitted to Regular Sections. Many papers were submitted from East Asian region, for examples, 161 papers from Japan, 149 papers from Korea, 90 papers from China and 63 papers from Chinese Taipei. Many papers were submitted also from other countries including Thailand, Singapore, Iran, some European countries and North American countries. Above all, it stands out that more than one hundred papers were submitted in the fields of digital signal processing, cryptography and information security.

It is required for an author of Paper or Letter to send the source file (LaTeX or Word) of manuscript in both initial submission and revision, but not required to submit the final version of manuscript at first. This new system was established in October 2007. Accepted papers can be published in IEICE Trans. Fundamental earlier than before that time. This also means that papers accepted with certain conditions should be carefully revised by authors themselves before resubmission. Once resubmitted, the evaluation in the second review tends to be very severe. Therefore, it is hard for the authors to revise the papers again. Recently, authors can send Copyright Transfer and Page Charge Agreement by FAX or e-mail as well as by postal mail.

Finally, I would like to express my sincere thanks not only to authors but also to reviewers and editors covering Special Sections. It is you that make IEICE Trans. Fundamentals!

~~~~~ **Let's join APSITT 2010 in Malaysia**

IEICE Communications Society

The 8th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT 2010) will be held at **Kuching** in Malaysia on June 15-18 in 2010. The important information: Final Camera-ready due is January 20 after the notification of acceptance around December 15. See details at: <http://www.ieice.org/cs/in/APSITT/2010/>.

~~~~~ **APARM 2010 in New Zealand**

IEICE Engineering Sciences Society

The 4th Asia-Pacific International Symposium on Advanced Reliability and Maintenance Modeling (APARM 2010) will be held in Wellington, New Zealand, on December 2-4, 2010. The important due dates are: Special Session proposal due is April 1, regular paper due is June 15. See details at <http://msor.victoria.ac.nz/Events/APARM2010/>.

~~~~~ **Message from TFIPP Secretariat**

This issue is delivered also by a free mail magazine "IEICE Global Plaza on Line" with updated IEICE conference calendar, news of scholarships and ICT trends in Asian countries. Whenever you want to receive it, contact Prof. Kenzo Takahashi, TFIPP at global@ieice.org. Back numbers are available at http://www.ieice.org/eng/global_plaza/index.html/.