The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control Education Workshop
Seoul, Korea, 6 July, 2008

Already at the World Congress in Prague, an initiative was started, aiming at young engineering students and high-school teachers, by organizing a Workshop for them. The initiative proved to be very successful and so the organizers of the World Congress in Seoul decided to continue this practice. Thus, a one-day Workshop was organized on the day preceding the Congress. It was held at the Convention and Exhibition Center (COEX) in Samsung-dong, Gangnam-gu, Seoul, Korea. The Workshop organizers were the Technical Committee on Control Education (TC 9.4) of the International Federation of Automatic Control (IFAC), the Technical Committee on Education of the Control Systems Society, the Institute of Electrical and Electronics Engineers (IEEE), the Korean Institute of Control, Robotics and Systems (ICROS), and the Robot HRD Center supported by the Korean “Ministry Knowledge Economy”.

The Workshop aimed to inspire interest from youth towards studies in Automatic Control and to assist high school teachers in promoting the discipline of Automatic Control among their students.

The Workshop was composed of five short but effective presentations on various problems from the real world that have been solved by using control engineering methods, techniques and technologies. The attractiveness and excitement of choosing a career in control engineering was also addressed. Live interaction between the presenters and the audience was an important feature of the Workshop.

The Workshop started at 10:00 a.m. with opening remarks by the organizers. Then the technical program followed.

**Embedded Control Systems**
Professor S. B. Moon, Sejong University, Korea
The talk focused on the review of embedded hardware and operating systems so that one is equipped with the knowledge to make appropriate decisions on hardware and software in the initial stages. Control algorithms for robotic control, strategies for service robot planning, and human-robot interactions were also reviewed.

**Joys and Perils of Automation: Controlling Elevators to Serve You Smart and Fast**
Professor Christos G. Cassandras, Department of Manufacturing Engineering and Center for Information and System Engineering (CISE), Boston University, USA
One of the definitions of the word “control” is “to govern or direct according to rule” (Merriam-Webster dictionary). In science and engineering, these “rules” have traditionally been dictated by the laws of nature - such as gravity or conservation of mass. Computer technology, however, has enabled us to build complex systems that have become essential to our daily life, from automated factories to computer networks. The “rules” that these systems must obey are as arbitrary as human imagination can make them. While this is exciting, it is also dangerous. The presentation contrasted those two kinds of systems and then embedded module were reviewed too.

**Forthcoming Events**

The Tables of Contents of the IFAC Journals can be found respectively at

- **Automatica**
  [http://www.elsevier.com/locate/automatica](http://www.elsevier.com/locate/automatica)

- **Control Engineering Practice**
  [http://www.elsevier.com/locate/conengprac](http://www.elsevier.com/locate/conengprac)

- **Engineering Applications of Artificial Intelligence**
  [http://www.elsevier.com/locate/engappai](http://www.elsevier.com/locate/engappai)

- **Journal of Process Control**
  [http://www.elsevier.com/locate/jprocont](http://www.elsevier.com/locate/jprocont)

- **Annual Reviews in Control**
  [http://www.elsevier.com/locate/arcontrol](http://www.elsevier.com/locate/arcontrol)

- **Journal on Mechatronics**
  [http://www.elsevier.com/locate/mechatronics](http://www.elsevier.com/locate/mechatronics)

**Correction:**

page 2 of issue 1/2009 of the IFAC Newsletter, list of Coordinating Committees, mistakenly gave identical names for CCs 6, 7, 8 and 9.
The correct names are:
- CC6 - Power and Process Systems
- CC7 - Transportation and Vehicle Systems
- CC8 - Bio- and Ecological Systems
- CC9 - Social Systems

We apologize for this mistake.
discussed, as an example of the latter “human made” systems, the case of controlling elevators. The basic elevator dispatching control problem, where elevators are assigned to floors so as to minimize the amount of time people wait, was described. It was shown how simple ideas from control engineering can make elevators serve you smart and fast.

Network-Based Sensing and Control for Industrial Systems
Professor J. I. Moon, Hoseo University, Korea
The integration of intelligent devices, communication networks, and software into industrial systems can deliver fast diagnostics and warnings for system reliability, real-time control, system flexibility, and simplified wiring. That talk addressed industrial network solutions based on either wireless or wired network for sensing and control of industrial devices such as robot and vehicle systems. Among industrial wireless and wired network, wireless LAN and Zigbee based application examples were given. In addition, CAN (Controller Area Network) based examples were introduced.

A lunch break was taken from 11:30 until 1:00 with the presenters and attendees mingling in informal chats. Professor Jong Hyeong Kim of Seoul National University gave an exciting demonstration of a mobile robot system developed by his research group.

From the Brain to the Stock Market
Dominique Duncan, PhD student, Yale University, USA
Two of the most complex systems disturbed by noise are the brain and the stock market. The presentation focused on showing how researchers model a noise in the brain as well as in the stock market. The similarities in the analysis of brain waves and of stock market behavior were discussed. The success of using mathematics and control engineering in predicting neurological disorders, such as epileptic seizures was reported, and then it was discussed that, at least in theory, one dollar can be turned into billions. It was demonstrated that one can move from the brain to the stock market with powerful stochastic theory and control showing that the partnership between mathematics and control engineering, as well as a collaborative effort in research are necessary for success in solving complex problems of the modern world.

Cooperative Driverless Vehicles
Professor Ljubo Vlacic, Griffith University, Australia
The idea of intelligent vehicles has brought with it promises of heightened safety, reliability and efficiency. No longer would the onus of responsible driving be placed on fallible humans, in fact, the very idea of a car crashing, or causing damage to someone would be completely alien and unthinkable. Congestion would entirely evaporate as computers took control of vehicles and decided the optimal route for greatest efficiency. While this seems extremely idealistic, there is an element of truth to these benefits that intelligent vehicle technologies can provide. Thanks to the most recent development of decision and control algorithms intelligent vehicles are now even capable of undertaking driving manoeuvres in cooperation with each other. That talk addressed intelligent vehicle technologies and gave examples of cooperative driverless vehicles for cities.

The presentations of the morning were followed by a stimulating and inspiring panel discussion moderated by Professor Jong Hyeong Kim, Seoul National University. In this panel there was a lot of interaction with the participating audience.

The discussion was then followed by a wrap-up of the workshop by Professor Bozenna Pasik-Duncan, the chair of the IEEE Control Systems Society Technical Committee on Control Education and Professor Ljubo Vlacic, the chair of the IFAC Technical Committee on Control Education.

This Workshop was one of the most important outreach program activity in connection with the Congress. It was an excellent service to the local community and, at the same time, a successful and memorable event. The feedback from the students and teachers was very positive. The comments included statements such as: “It increased my interest in engineering. Good lunch, nice speakers, well prepared power point presentations. I learned about new technology and mathematics that we use everyday or in other people’s lives”.

Big thanks go to the organizers of the 17th IFAC World Congress led by Professors Wook Hyun Kwon, the IFAC President, and Hyungsuck Cho, the General Chair of the Congress, for their recognition of the importance of the Workshop and for their enthusiastic and highly appreciated support.
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<td>IFAC Workshop Control Applications of Optimization CAO</td>
<td>May 06 – 08</td>
<td>Jyväskylä, Finland</td>
<td><a href="http://www.automaatioseura.fi/CAO'09">http://www.automaatioseura.fi/CAO'09</a>  e-mail: <a href="mailto:office@atu.fi">office@atu.fi</a></td>
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<td>IFAC Conference Fieldbuses and Networks in Industrial and Embedded Systems – FeT 2009</td>
<td>May 20 – 22</td>
<td>Ansan, Korea</td>
<td><a href="http://www.fet2009.org">http://www.fet2009.org</a>  e-mail: <a href="mailto:fet2009@hanyang.ac.kr">fet2009@hanyang.ac.kr</a></td>
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<td>IEEE/IFAC Intl. Workshop Robot Motion and Control - RoMoCo'09</td>
<td>June 01 – 03</td>
<td>Czerniewo, Poland</td>
<td><a href="http://romoco.put.poznan.pl/">http://romoco.put.poznan.pl/</a>  e-mail: <a href="mailto:krzysztof.kozlowski@put.poznan.pl">krzysztof.kozlowski@put.poznan.pl</a></td>
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<td>IFAC Symposium Information Control Problems in Manufacturing - INCOM 2009</td>
<td>June 03 – 05</td>
<td>Moscow, Russia</td>
<td><a href="http://incom09.org/">http://incom09.org/</a>  e-mail: <a href="mailto:noc@incom09.org">noc@incom09.org</a></td>
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<td>IFAC Workshop 2nd Dependable Control of Discrete Systems - DCD'S 09</td>
<td>June 10 – 12</td>
<td>Bari, Italy</td>
<td><a href="http://dcds09.poliba.it">http://dcds09.poliba.it</a>  e-mail: <a href="mailto:dcds09@deemail.poliba.it">dcds09@deemail.poliba.it</a></td>
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<td>June 16 – 18</td>
<td>Haifa, Israel</td>
<td><a href="http://www.technion.ac.il/~rocond09">http://www.technion.ac.il/~rocond09</a>  e-mail: <a href="mailto:rocond09@technion.ac.il">rocond09@technion.ac.il</a></td>
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<td>IFAC Conference Analysis and Control of Chaotic Systems - CHAOS 2009</td>
<td>June 22 – 24</td>
<td>London, UK</td>
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<td>IFAC Workshop Aerospace Guidance, Navigation and Flight Control Systems - AGNFCs</td>
<td>June 30 - July 2</td>
<td>Samara, Russia</td>
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<td>IFAC Symposium Fault Detection, Supervision and Safety for Technical Processes – SAFEPROCESS</td>
<td>June 30 - July 3</td>
<td>Barcelona, Spain</td>
<td><a href="http://safeprocess09.ups.es/">http://safeprocess09.ups.es/</a>  e-mail: <a href="mailto:joseba.quevedo@upc.edu">joseba.quevedo@upc.edu</a></td>
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<td>IFAC/CIGRE Symposium Power Plants and Power Systems Estimation- SYSID 09</td>
<td>July 05 - 08</td>
<td>Tampere, Finland</td>
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<td>July 06 - 08</td>
<td>St. Malo, France</td>
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<td>IFAC Symposium Advanced Control of Chemical Processes - ADCHEM 2009</td>
<td>July 12 - 15</td>
<td>Istanbul, Turkey</td>
<td><a href="http://www.adchem09.ku.edu.tr/">http://www.adchem09.ku.edu.tr/</a>  e-mail: <a href="mailto:dburak@ku.edu.tr">dburak@ku.edu.tr</a></td>
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<td>July 20 – 24</td>
<td>Toulouse, France</td>
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<td>IFAC Symposium Modelling and Control in Biological and Medical Systems – MBBS 09</td>
<td>August 12 – 14</td>
<td>Aalborg, Denmark</td>
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<td>14th Intl. IEEE/IFAC Conference Methods and Models in Automation and Robotics – MMAR-09</td>
<td>August 19 – 21</td>
<td>Miedzyzdroje, Poland</td>
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<td>European Control Conference - in cooperation with IFAC</td>
<td>August 23 – 26</td>
<td>Budapest, Hungary</td>
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<td>IFAC Workshop Time Delay Systems (8th)</td>
<td>September 01 – 03</td>
<td>Sinaia, Romania</td>
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<td>IFAC Symposium Control in Transportation Systems - CTS 2009</td>
<td>September 02 – 04</td>
<td>Redondo Beach, CA, USA</td>
<td><a href="http://ee.usc.edu/CTS09/">http://ee.usc.edu/CTS09/</a>  e-mail: <a href="mailto:ioannou@usc.edu">ioannou@usc.edu</a></td>
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<td>September 10 – 11</td>
<td>Champaign, IL, USA</td>
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<td>September 10 – 12</td>
<td>Gifu, Japan</td>
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<td>EWICS/IFAC Intl. Conference Computer Safety, Reliability and Security – SAFECOMP</td>
<td>September 15 – 19</td>
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<td>September 16 – 19</td>
<td>Zaragoza, Spain</td>
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<td>IFAC Conference Manoeuvring and Control of Marine Craft (MCMC’2009)</td>
<td>September 16 – 18</td>
<td>Guaruja, Brazil</td>
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<td>IFAC Conference Intelligent Control Systems and Signal Processing – ICONS ’09</td>
<td>September 21 – 23</td>
<td>Istanbul, Turkey</td>
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<td>IFAC Workshop Estimation &amp; Control of Networked Systems</td>
<td>September 24 – 26</td>
<td>Venice, Italy</td>
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<td>IFAC Workshop Knowledge and Technology Transfer in Developing Countries</td>
<td>September 26 – 29</td>
<td>Ohrid, Macedonia, FYR</td>
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<td>October 06 – 08</td>
<td>Gandia, Valencia Spain</td>
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<td>October 06 – 08</td>
<td>Golden, CO, USA</td>
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<td>IFAC Workshop Mining, Mineral and Metal Industry</td>
<td>October 14 - 16</td>
<td>Viña del Mar, Chile</td>
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<td>IFAC Symposium Advances in Control Education</td>
<td>October 21 – 23</td>
<td>Kumamoto, Japan</td>
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<td>October 28 – 30</td>
<td>Bucharest, Romania</td>
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<td>IFAC Workshop Engine and Powertrain Control and Modeling (E-COSM’09)</td>
<td>November 30 - December 2</td>
<td>Rueil-Malmaison, Paris, France</td>
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<td>June 30 - July 02</td>
<td>Baltimore, MD, USA</td>
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<td>July 05 – 07</td>
<td>Leuven, Belgium</td>
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<td>July 07 – 09</td>
<td>Leuven, Belgium</td>
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<td>July 11 – 14</td>
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<td>July 12 – 14</td>
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<td>August 02 – 04</td>
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<td>IFAC Symposium Analysis, Design, and Evaluation of Human-Machine Systems- HMS</td>
<td>August 31 - Sept. 03</td>
<td>Valenciennes, France</td>
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<td>IFAC Symposium Nonlinear Control Systems - NOLCOS 2010</td>
<td>September 01 - 03</td>
<td>Bologna, Italy</td>
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<td>September 06 – 08</td>
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