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Newsletter

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IFAC Journals

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Automatica
http://www.elsevier.com/locate/automatica

Control Engineering Practice
http://www.elsevier.com/locate/conengprac

Engineering Applications of Artificial Intelligence
http://www.elsevier.com/locate/engappai

Journal of Process Control
http://www.elsevier.com/locate/jprocont

Annual Reviews in Control
http://www.elsevier.com/locate/arcontrol

Journal on Mechatronics
http://www.elsevier.com/locate/mechatronics

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Das Sekretariat der IFAC befindet sich seit 1978 aufgrund eines Übereinkommens mit der Österreichischen Bunderregierung und mit der Österreichischen Akademie der Wissenschaften in Laxenburg und wird derzeit aus Mitteln des Bundesministeriums für Verkehr, Innovation und Technologie ‚BMVIT' gefördert.

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Bundesministerium
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Innovation und Technologie

Informal Officers' Meeting

Vienna and Laxenburg, Austria
24 – 26 April 2014

Each year the IFAC officers gather in Austria for an annual informal meeting. This tradition dates back over several decades and began in times when it was slower and more expensive to communicate with colleagues over international borders. The tradition continues today as not only is it often more effective to meet and discuss issues face-to-face but it allows IFAC the opportunity to celebrate its ties to Austria, the seat of the permanent IFAC Secretariat, and the Austrian control community.

A lecture is presented by one of IFAC's officers at an Austrian university. The 2014 lecture was presented by IFAC Treasurer Prof. John Lygeros, ETHZ (CH) and was given at Vienna Technical University. IFAC is grateful to TU Vienna Prof. Andreas Kugi, Control Engineering Practice editor-in-chief, who made the arrangements to hold the lecture at the TU.

ABSTRACT

Cyber-security issues in SCADA systems have concentrated considerable attention, due in part to highly publicized security threats such as the STUXNET computer worm. The research presented in this talk is motivated by security issues for SCADA systems used to monitor and control the power transmission grid. We specifically concentrate on the implications and possible countermeasures of attacks on the Automatic Generation Control (AGC) system, one of the few control loops closed over such SCADA systems without the intervention of human operators. We show how an attacker who gains access to the AGC signal of the SCADA system in one control area can robustly destabilize the transmission system. We then proceed to design countermeasures against such attacks. To this end, we develop a novel fault detection/isolation filter applicable to high dimensional nonlinear systems, based on randomized optimization methods.

The officers visited the "Space" exhibit on Thursday, 24 April, which is currently on display at the Technical Museum in Vienna. BMVIT, the Austrian government agency which provides association support to the IFAC Secretariat in Austria, is one of the sponsors of this special exhibit.

The President's Dinner was held on 24 April at Ristorante Al Borgo, an Italian restaurant in Vienna's First District. This year IFAC was honored by the presence of His Excellency Ambassador Tebogo Seokolo, South African Ambassador to Austria, to celebrate the presidency of Prof. Ian K. Craig (ZA) and the upcoming 2014 IFAC World Congress, which will be held in Cape Town, South Africa in August 2014. In his opening remarks Prof. Craig mentioned that this was the first time an IFAC president's home country ambassador attended the President's Dinner. The President's Dinner presented the opportunity for dialogue between members of the Austrian control community, Austrian officials, representatives from other international organizations located in Austria, as well as past, present and incoming IFAC officials.

The meeting began promptly on Friday, 25 April and continued on Saturday, 26 April at the IFAC Secretariat in Laxenburg (south of Vienna.) As is usual for these meetings formal decisions are not undertaken.

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It is a meeting for updates about current IFAC issues, as well as planning for upcoming meetings and events. Topics this year included the upcoming IFAC World Congress in Cape Town and the annual meetings, status reports from the IFAC offlcers, and the ongoing actions resulting from the Strategic Planning process. In addition the incoming IFAC President-Elect Frank Allgöwer (DE), Technical Board Chair/Vice President Frank Doyle (US) and Executive Board Chair/Vice-President Sergio Bittanti (IT) were on hand to ask questions and be briefed on current IFAC issues.

In addition to the meetings the IFAC offlcers were invited to the Laxenburg City Hall for a short meeting/presentation about the town of Laxenburg with Mayor Robert Dienst. For more information about Laxenburg, the permanent home of the IFAC Secretariat since 1978, one can view "The Magic of Laxenburg", a documentary available in English that was produced in 2013 for Austrian Broadcasting.

http://www.youtube.com/watch?v=G9cnwHRHwew (link accessed 29.4.2014)

Planning is already underway for the 2015 Informal Meeting, which is currently scheduled for 7 – 9 May 2015.

HE Amb. Tegolo Seokolo (South Africa)
Photo used with permission,
South African Embassy Vienna

Introducing the IFAC Fellows

Continuation in a series

Jozsef Bokor

Jozsef Bokor received the Dr. Eng. degree from the EE Department of Budapest University of Technology and Economics. He started to get experience in applying operations research in an industrial institute. Later he joined the Department of Automation at the Budapest University of Technology and Economics again and obtained his Ph.D. in designing optimal input signals for identiflcation experiments. Since then he has held positions at the same university, where currently he is Professor and former Head of the Automation Department, Faculty of Transportation and Vehicle Engineering. He is also Research Director of the Computer and Automation Research Institute, Hungarian Academy of Sciences where he is the head of the Systems and Control Laboratory.

During Bokor's US studies a strong collaboration was formed with the Department of Aerospace and Mechanics, University of Minnesota, MN. This joint research focused on the theory of LPV systems, fault detection, isolation and reconflguration and applications to various modeling, identiflcation and control problems related to spacecrafts. Recently they operate a joint UAV laboratory sharing students and experinces in design of control for various missions. Recently he is an adjunct research professor at UMN.

Bokor's Department and Laboratory participates in several EC projects on automotive and spacecraft control, and in UAV project supported by ONR US. He is a member of IEEE CSS, IFAC TC on System ID and Safeprocess, used to serve as an IFAC Technical Board Vice Chair and as an Associate Editor of the IFAC Journal *Automatica.*

Bokor authored/coauthored over 500 scientiflc and technical papers and 8 books. He was elected Corresponding Member and later Member of the Hungarian Academy of Sciences in 1999 and 2002. In addition to being an IFAC Fellow Bokor is a Fellow of IEEE, Associate Editor of IFAC Journal *Automatica,* and is slated to be a member of the IFAC Council for 2014-2017.

Markos Papageorgiou

Markos Papageorgiou received the Diplom-Ingenieur and Doktor-Ingenieur (honors) degrees in Electrical Engineering from the Technical University of Munich, Germany, in 1976 and 1981, respectively. He was a Free Associate with Dorsch Consult, Munich (1982-1988), and with Institute National de Recherche sur les Transports et leur Sécurité (INRETS), Arcueil, France (1986-1988). From 1988 to 1994 he was a Professor of Automation at the Technical University of Munich. Since 1994 he has been a Professor at the Technical University of Crete, Chania, Greece. He was a Visiting Professor at the Politecnico di Milano, Italy (1982), at the Ecole Nationale des Ponts et Chaussées, Paris (1985-1987), and at MIT, Cambridge (1997, 2000); and a Visiting Scholar at the University of California, Berkeley (1993, 1997, 2001, 2011) and other universities.

Dr. Papageorgiou is author or editor of 5 books and of some 400 technical papers. His research interests include automatic control and optimisation theory and applications to trafflc and transportation systems, water systems and further areas. He was the Editor-in-Chief of Transportation Research – Part C (2005-2012). He also served as an Associate Editor of IEEE Control Systems Society – Conference Editorial Board, of IEEE Transactions on Intelligent Transportation Systems and other journals.

Papageorgiou is a Fellow of IEEE (1999) and a Fellow of IFAC (2013). He received a DAAD scholarship (1971-1976), the 1983 Eugen-Hartmann award from the Union of German Engineers (VDI), and a Fulbright Lecturing/Research Award (1997). He was a recipient of the IEEE Intelligent Transportation Systems Society Outstanding Research Award (2007) and of the IEEE Control Systems Society Transition to Practice Award (2010). He was presented the title of Visiting Professor by the University of Belgrade, Serbia (2010). The Dynamic Systems and Simulation Laboratory he has been heading

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FORTHCOMING EVENTS

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Title	2014	Place	Further Information
19th IFAC World Congress	August 24 – 29	Cape Town South Africa	http://www.ifac2014.org/ email: info@ifac2014.org
IEEE, IFAC, and others Workshop on Human Cyber Physical System Interaction Control for the Human Welfare H-CPS-I 2014	September 22 – 23	Paris France	http://h-cps-i.sciencesconf.org/myspace e-mail: mariana.netto@ifsttar.fr
Title	**2015**	**Place**	**Further Information**
8th TU Vienna/IFAC Conference on Mathematical Modelling MATHMOD 2015	February 18 – 20	Vienna Austria	http://www.mathmod.at/index.php?id=228 e-mail: not yet available
15th IFAC/IEEE/IFIP/IFORS Symposium on Information Control Problems in Manufacturing INCOM 2015	May 11 – 13	Ottawa Canada	http://incom2015.org/ e-mail: secr@incom2015.org
13th IFAC/IEEE Conference on Programmable Devices and Embedded Systems PDES 2015	May 13 – 15	Cracow Poland	http://not yet available e-mail: not yet available
3rd IFAC/IEEE Workshop on Multivehicle Systems MVS 2015	May 18	Genova Italy	http://mvs2015.unisalento.it/ e-mail: mvs2015@unisalento.it
2nd IFAC Workshop on Automatic Control in Offshore Oil and Gas Production OOGP 2015	May 27 – 29	Florianopolis Brazil	http://www.ifac-oilfield.ufsc.br/ e-mail: not yet available
5th IFAC Workshop on Dependable Control of Discrete Systems DCDS 2015	May 27 – 29	Cancun Mexico	http://not yet available e-mail: not yet available
9th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2015	June 07 – 10	Whistler Canada	http://www.adchem2015.ca/ e-mail: adchem.2015@ualberta.ca
IFAC Workshop on Advanced Control and Navigation for Autonomous Aerospace Vehicles ACNAAV 2015	June 10 – 12	Seville Spain	http://www.aero.us.es/acnaav15 e-mail: rvazquez1@us.es
2nd IFAC Conference on Embedded Systems, Computer Intelligence and Telematics CESCIT 2015	June 22 – 24	Maribor Slovenia	http://not yet available e-mail: not yet available
1st IFAC Conference on Modelling, Identiflcation and Control of Nonlinear Systems MICNON 2015	June 24 – 26	St. Petersburg Russian Federation	http://micnon2015.org/ e-mail: not yet available

12th IFAC Workshop on Time Delay Systems TDS 2015	June 28 – 30	Ann Arbor, MI USA	http://me.engin.umich.edu/dirifac/ e-mail: timedelay2015@umich.edu
American Control Conference (ACC) in cooperation with IFAC	July 01 – 03	Chicago, IL USA	http://a2c2.org/conferences/acc2015/ e-mail: tilbury@umich.edu
8th IFAC Symposium on Robust Control Design ROCOND 2015	July 08 – 11	Bratislava Slovakia	http://www.rocond15.sk e-mail: info@rocond15.sk
AIChE's, PD2M Meeting on Foundations of Systems Biology in Engineering - FOSBE 2015 in cooperation with IFAC	August 09 – 12	Boston, MA USA	http://not yet available e-mail: not yet available
9th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes SAFEPROCESS 2015	September 02 – 04	Paris France	http://safeprocess15.sciencesconf.org/ e-mail: contact@safeprocess2015.fr
5th IFAC Conference on Nonlinear Model Predictive Control NMPC 2015	September 17 – 20	Seville Spain	http://not yet available e-mail: not yet available
16th IFAC Conference on Technology, Culture and International Stability TECIS 2015	September 24 – 27	Sozopol Bulgaria	http://www.tecis.tu-plovdiv.bg/ e-mail: tecis@tu-plovdiv.bg
17th IFAC/IEEE/CSS Symposium on System Identiflcation SYSID 2015	October 19 – 21	Beijing China	http://sysid2015.info/index.html e-mail: secretariat@sysid2015.info
9th IFAC Symposium on Control of Power and Energy Systems CPES 2015	December 09 – 11	New Delhi India	http://not yet available e-mail: not yet available
Title	**2016**	**Place**	**Further Information**
7th IFAC Conference on Management and Control of Production and Logistics MCPL 2016	February 22 – 24	Bremen Germany	http://not yet available e-mail: not yet available
8th IFAC/IEEE and others Conference on Manufacturing Modelling, Management and Control MIM 2016	June 28 – 30	Troyes France	http://mim2016.utt.fr/ e-mail: mim2016@utt.fr
10th IFAC Symposium on Non-Linear Control Systems NOLCOS 2016	August 23 – 25	Monterey, CA USA	http://not yet available e-mail: not yet available

IFAC Fellows
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since 1994, received the IEEE Intelligent Transportation Systems Society ITS Institutional Lead Award (2011). He was awarded an ERC Advanced Investigator Grant (2013-2017).

Bozenna Pasik-Duncan

Bozenna Pasik-Duncan, has been a Professor of Mathematics and Courtesy Professor of EECS of University of Kansas (Lawrence, KS, USA) since 1984. She received her M.S. degree from the Mathematics Department of Warsaw University in 1970, and her Ph.D. and Habilitation Doctorate degrees from the Mathematics Department of Warsaw School of Economics in 1978 and 1986, respectively. She was a faculty member of the Mathematics Department of Warsaw School of Economics from 1970-1984.

Her research interests are primarily in stochastic adaptive control, system identifIcation and estimation, stochastic analysis, and STEM education. She is an author/co-author of more than 150 technical articles and three books. She has held visiting research appointments in Poland, Hungary, Czech Republic, France, Italy, Japan and China.

Pasik-Duncan has served in a number of capacities in IEEE Control Systems Society (CSS), such as the Chair of CSS Technical Committee on Control Education, 2002-2012, CSS Liaison to IEEE Women in Engineering Committee, 2006-2012, a member of CSS Conference Editorial Board, an Associate Editor of Transactions on Automatic Control (TAC), 1990-1997, Chair of Standing Committees on Assistance of Engineers at Risk, Women in Control, and International Affairs, Chair of Task Force on Globalization, Associate Editor at Large of TAC,1997-2002, two term elected member of CSS Board of Governors, Vice-President.

Bozenna Pasik-Duncan has been a Professor of Mathematics and Courtesy Professor of EECS of University of Kansas (Lawrence, KS, USA) since 1984.

IFAC Workshop on Dependable Systems (DCDS 2013)

York, United Kingdom
4 – 6 September 2013

The 4th IFAC Workshop on Dependable Control of Discrete Systems (DCDS13) was held in York, United Kingdom from 4-6 September 2013 and was hosted by the Universities of York and Hull (UK.) The event was sponsored by TC 1.3 (Discrete Event and Hybrid Systems) and co-sponsored by TC 4.1 (Components and Technologies for Control), TC 4.2 (Mechatronic Systems), TC 5.1 (Manufacturing Plant Control), and TC 6.4 (Safeprocess).

The workshop gave the opportunity to the two communities of System Dependability and Discrete Event Systems (DES) to exchange ideas in the fleld of Dependable Control of Discrete Event Systems. Research in this fleld has recently been fuelled by the needs of many application domains where dependable control becomes an increasing concern, such as transport, manufacturing, power production and healthcare.

The DCDS programme included 29 high-quality papers, mostly from recognisable key groups that develop the state-of-the-art in the event areas. The standard that was set for accepting papers was high (B- in the IFAC scale), the acceptance rate was 60%, and papers were presented in a single track for maximum interaction. The programme was flnely and equally balanced between papers on off-line design, model-based dependability analysis and optimisation, and papers on on-line operation and fault diagnosis of DES. The best student paper award went to Sebastien Biallas of the Embedded Software Laboratory at Aachen University for his paper entitled „Boolean and Modular Abstractions for Programmable Logic Controllers“.

We also had the pleasure of hosting three very interesting invited talks: Bev Littlewood, one of the founders of research on software reliability in the 70s and director of the Centre for Software Reliability at City University London for over 20 years, gave an intriguing talk entitled „Assessing the probability of failure of 1-out-of-2 software-based systems: now you can multiply two small numbers ...“ where he identifled pitfalls involved in making assumptions of independence in fault tolerant control, and proposed solutions based on Bayesian probability that can mathematically underpin such assumptions. Alessandro Giua, chair of TC 1.4, gave an insight into recent fundamental theoretical work on „Diagnosis and diagnosability of DES using Petri nets“ by the University of Cagliari. Finally, Marc Bouissou, academic at École Centrale Paris and senior researcher at Électricité de France, gave us an industry perspective on the application of state-of-the-art model-based languages and cutting-edge dependability analysis techniques to the dependable design of „Stochastic Hybrid Systems“.

DCDS was flnancially supported and co-sponsored by Bosch and was attended by senior representatives of British industries with interests in dependable control, such as Rolls Royce and BAE. By bringing key researchers and practitioners together, the workshop contributed to further developing an interdisciplinary approach in control dependability. The workshop was hosted as a relatively informal event with an atmosphere conducive to working together to flnd new solutions to challenges. The weather in York was excellent and delegates enjoyed a guided tour of the ancient walled-city and a traditional dinner at the Hospitium - a medieval hall set in the Museum gardens among the charming ruins of St Mary‘s Abbey. More information can be found @ http://dcds13.net.dcs.hull.ac.uk/

Submitted by Professor Yiannis Papadopoulos of the University of Hull, IPC co-chair and DCDS Editor

Offenlegung:

Das Medienwerk ‘IFAC Newsletter’ wird als Organ der ‘International Federation of Automatic Control’ (IFAC) verlegt und ist Eigentum dieser Internationalen Föderation, deren Tätigkeit der Förderung von Wissenschaft und Technik automatischer Regelung und Steuerung dient. Die Föderation hat ihren Sitz in Zürich und ist nach Schweizer Recht als gemeinnütziger Verein angemeldet. Sie verfolgt weder wirtschaftliche noch praktische Ziele.

Das Sekretariat der IFAC beflndet sich seit 1978 aufgrund eines Übereinkommens mit der Österreichischen Bundesregierung mit der Österreichischen Akademie der Wissenschaften in Laxenburg.

Der ‘IFAC Newsletter’ erscheint sechsmal jährlich in englischer Sprache unter der Redaktion des Generalsekretärs der IFAC, Univ.Professor Kurt Schlacher. Die Zeitschrift dient der Information über die Aktivitäten der IFAC. Sie wird kostenlos an Abonnenten in 50+ Länder versandt. Die Kosten werden von der IFAC aus Beiträgen der derzeit circa 50 Mitgliedsländer getragen.

Präsident der IFAC für 2011-2014 ist Prof. Ian Craig (Südafrika), Vizepräsidenten sind Prof. Iven Mareels (Australien) und Prof. Roger Goodall (Grossbritannien). Alle Funktionen werden ehrenamtlich ausgeübt.

To our readers: To comply with the Austrian ‘Media Act’, every publication must contain a declaration once a year concerning ownership and purpose, as above.

IFAC Workshop on Advances in Control and Automation Theory for Transportation Applications (ACATTA 2013)

Istanbul, Turkey
16 – 17 September 2013

The First IFAC Workshop on Advances in Control and Automation Theory for Transportation Applications (ACATTA 2013) was held in Istanbul, Turkey from 16-17 September 2013.

The idea of organizing such a workshop was born in the technical committee meeting of IFAC TC 7.4 (Transportation Systems) during the 13th IFAC Symposium on Control in Transportation Systems (CTS 2012) in September 2012 in Sofla, Bulgaria. In that meeting, it was decided that the next IFAC Symposium on Control in Transportation Systems (CTS 2015) should be organized in Krakow, Poland in the year 2015. However, it has been suggested that organizing a workshop on the applications of control theory in the fleld of transportation in addition to the triennial symposia of the IFAC TC 7.4 would be very useful to follow the most recent scientiflc and technological developments in this important application area of control theory. After having the positive support of the technical committee members, TOK (the Turkish NMO of IFAC) and IFAC, it has been decided to organize such a workshop in Istanbul.

Istanbul, which is a city with more than 15 million inhabitants, is one of the most problematic places on earth in terms of urban transportation with many challenges including natural barriers (such as the Istanbul Strait and Golden Horn) and unplanned urbanization. The trafflc jams in Istanbul are part of daily life. Nevertheless, there has been a continuous effort in recent years to improve the transportation quality, both in Istanbul and throughout Turkey. There are many ongoing transportation projects in Turkey including building new underground lines, railways, highways, ports and airports that will level up Turkey's transportation quality. For instance, recently the third airport for Istanbul, which is expected to be one of the biggest airports in the world with six runways and with a capacity of 150 million passengers annually, has been tendered. Some of the recent projects, such as the Marmaray project, which is a railway system that connects Europe and Asia with a tunnel tube under the Istanbul Strait allowing both mainline and underground trains operate on the same line, carry unique challenges as far as the control and automation theory is concerned. As a natural result of the increase in the recent transportation projects, the number of academics interested in transportation challenges has increased as well. Therefore, this workshop has provided an excellent opportunity to promote the importance of control and automation theory for transportation applications in this part of the world. For more information please see

http://www.marmaray.com

There were four excellent plenary speeches delivered by worldwide renowned scientists during the workshop. The flrst plenary speech was given by Prof. Roger Goodall from University of Loughborough, UK on 16 September 2013. Goodall delivered an exciting talk on the Control Challenges for Railway Systems of the Future. At the beginning of the afternoon session on the same day Prof. Josef Börcsök from University of Kassel, Germany delivered a very interesting speech on the Safety Parameters in Different Safety Standards. The second day of the workshop has started with the plenary speech given by Prof. Dr. Jan Maciejowski from Cambridge University, UK. Prof. Majiejowski talked on Real-Time Optimisation Based Planning and Scheduling of Vehicle Trajectories in his very inspirational speech.

The last plenary speech of the workshop was delivered on Tuesday afternoon by Prof. Dr. Clive Roberts from University of Birmingham, UK, where Prof. Roberts presented Next Generation Train Control – The Realization of Real-Time Optimisation to Improve Train Performance and enlightened the audience about the latest developments in this direction. Each plenary speech was followed by a technical session with two tracks (except for the technical session on Tuesday morning, in which there was only one track). A technical visit to the command centre of IETT, which is the main municipality agency responsible for public transportation in Istanbul, and to two of the laboratories of Istanbul Technical University was organized on the afternoon of the flrst day of the workshop. The technical visit was followed by the gala dinner of the workshop and a boat trip on the Istanbul Strait.

Although this has been the flrst workshop under this name and there has been quite a short time (just a few months) between taking the decision for organizing the workshop and the paper submission deadlines, it is believed that the workshop has reached its initial target by receiving 44 papers for consideration for presentation. After a very careful peer review process, 38 high quality papers were presented in the workshop. With the increasing population of the world and growing demand for more "clever" transportation solutions, it is also believed that the need for organizing such scientiflc events will rise. Therefore, many of the attendees have stated their wish for this workshop to become the flrst in a series of workshops organized by IFAC TC 7.4.

Submitted by: Mehmet Turan Söylemez/Istanbul Technical University, Istanbul, Turkey

Electric car propogation

Participants at
ACATTA 2013