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- Message from the chair
- Visit NRC Institute for Fuel Cell Innovation (NRC-IFCI)
- Special one time opportunity
- IEC/UL 60950-1 second edition - impact of changes
- Welcome.. recent arrivals
- What makes an image look good?
- **Quantitative computer simulation as a paradigm of scientific investigations**
- Wearable respiratory monitoring: algorithms and system design
- Impact of intermittent energy and dynamic transfers on the transmission grid
- Overhead system condition assessment and maintenance: techniques and benefits
- **Software designers, are you biased?**
- From softwood to software: 100 years of IEEE and Vancouver
- Challenges in designing CMOS systems-on-a-chip for wireless communications
- Robustness analysis of polytopic systems via SOS programming
- **Impacts of autonomous urban land vehicles**
- **Nonlinear model predictive control: the past, present and future**  
(red text generally denotes new or updated information)

## Message from the chair

Dear IEEE Member,

The first five months of this centennial year have been very busy, and more centennial events and initiatives are coming. One of the goals for this year is to hold celebration events at our schools: UBC, SFU and BCIT, and recognize the long standing relationship with their IEEE student branches - UBC celebrating 80 years, BCIT 46 years, and SFU 24 years. I should also mention here that UBC-Okanagan student branch was formed last year, and UNBC student branch was formally approved this year. We are extremely proud of our students and wish them success in their future activities.

The events at BCIT and SFU are coming up on May 18 and June 1st. Both events will showcase projects the students were working on this past year, they will feature presentations on the branch and section histories and addresses from our centennial industry sponsors. The Section will also present centennial plaques to both student branches as well as the schools.

Please stand by for more announcements regarding our upcoming June 27 centennial history event featuring a history presentation by our guest from the IEEE History Center and our Section's surprise announcements and presentations. This event is supported by our Life Member Affinity Group. If you are a life member and want to get involved in organizing this event, please contact our life member chair Shail Mahanti or myself.

The Vancouver Section Logo Competition and the Slogan Competition closed on April 30th. We thank all of our Section Members who took the time to vote.

The slogan competition voting was very close, with only one vote separating the winning and second place candidates. The winning slogan was: "100 Years of Technological Excellence". The runner-up was "100 years of Technology Innovations". The new Section Slogan will be unveiled at our next Section Centennial Event on June 27th, so please mark it down in your calendars and join us for another exciting event.

In the logo competition the logo candidate number 2 was the most popular, with candidate number 1 coming in second. The Vancouver Section executive and the Centennial Committee determined that the new Section logo will be a hybrid - it will contain several elements from the finalist candidate logos in the competition. The Section will work with a professional graphic designer to complete a new logo design. We look forward to a grand unveiling of the new Section logo, at an upcoming Vancouver Section event. Please visit the Vancouver Section website to view current announcements regarding the new Section logo.

Were you aware that our Section has plans to create a permanent monument dedicated to 100 years of IEEE in this area? We invite you to take part in this initiative - please contact me at [mazana.armstrong@ieee.org](mailto:mazana.armstrong@ieee.org).

Mazana Armstrong Chair, IEEE Vancouver



## Visit NRC Institute for Fuel Cell Innovation (NRC-IFCI)

Friday 15 July

15:00

RSVP by email to:

[anewton.ieee@gmail.com](mailto:anewton.ieee@gmail.com)

by Friday 08 July

Canada's National Research Council (NRC) is a leader in the development of an innovative, knowledge-based economy for Canada through science and technology.

Located in the heart of the Vancouver fuel cell technology cluster, the NRC Institute for Fuel Cell Innovation (NRC-IFCI) supports Canadian leadership in clean energy technology by addressing industry-defined R&D and commercialization priorities.

NRC-IFCI's "living laboratory" for clean energy solutions features state-of-the-art research labs, an Advanced Testing and Validation Centre (ATVC), integrated technology demonstrations, fuel cell electric vehicles and a hydrogen fueling station.



### ***Special one time opportunity***

IEEE membership at half price + free ComSoc

IEEE membership dues are at half price now through 15 August 2011 and we are offering free Communications Society membership to new members

It is a great value

IEEE membership at half price + free ComSoc together

This offer is in effect now, and the 2011 membership benefits start immediately through 31 December

Please follow the link: [http://www.comsoc.org/newjoinspecial\\_Chapters](http://www.comsoc.org/newjoinspecial_Chapters)

Note: Complimentary IEEE ComSoc membership offer is only available to individuals who are not IEEE members and wish to join IEEE as a professional member or student member.

Valid only for the 2011 membership year.

Offer expires on 15 August 2011. Students please create a new web account.

### ***Web offer only***

Void where prohibited by law.



Mostafa Anvari  
CSA International

## IEC/UL 60950-1 second edition - impact of changes

IEC 60950-1 is the International Standard for the Safety of Information Technology Equipment. Its scope includes information technology equipment, communication technology equipment, office appliances and multi-media equipment for use in the home, office, business, school, computer room and similar locations.

The Second Edition of this standard was published on 27 March 2007. Since 1 December 2010, all new product submittals have been evaluated using all the requirements in the Second Edition. Accordingly, it is essential that all product designers and developers become familiar with it.

Upon completion of this presentation, attendees will:

- Know the differences between the latest versions of the CSA/UL/IEC Standards for Safety of Information Technology Equipment (ITE) and their predecessors

- Have the ability to analyze CSA/UL/IEC 60950-1 Second Edition and compare them to the existing first edition Standards

- Have the ability to analyze the changes to the IEC 60950-1 Second Edition and UL 60950-1 Second Edition and their potential impact on the construction, performance, components and other items related to future ITE submittals

**Speaker:** Mostafa Anvari obtained his Bachelor Degree in Applied Science from the University of British Columbia in Electrical engineering. Since graduation he has been working in various capacities as design engineer, engineering management and other managerial positions, in Montreal Quebec, and Vancouver.

He joined CSA international in 2000 and has been working as certification engineer in ITE group. He is a member of the Association of Professional Engineers and Geoscientists of British Columbia.

Thursday 26 May  
700 - 800 pm

Alpha Technologies Ltd.  
7700 Riverfront gate  
Burnaby BC

Please register  
in advance

Drinks and snacks  
will be provided

### Information

Joint Aerospace and  
Electromagnetics execs  
Dave Michelson  
davem@ece.ubc.c  
Steven McClain  
StevenMcClain@ieee.org  
Peter Lim  
Peter.Lim@alpha.ca



IEEE Joint Aerospace and  
Electromagnetics Chapter

## Welcome.. recent arrivals to the best IEEE section on Earth!\*

Brodie Allum	ST	Carlos Gaitan	GS	Shawn O'Neill	M
Nabil Al-Rousan	GS	Garth Haugen	AM	Jonnathan Quintero Gracia	ST
Fardin Barekat	ST	Yin Huang	ST	Nima Sadeghi	GS
Duncan Bees	M	Mohammad Islam	ST	Bambang Sarif	GS
Darwin Borja	M	Asad Khan	ST	Mehdi Seyfi	GS
Craig Boyes	ST	Wenbo Li	ST	Mahzad Shahrokhi	M
Claude Brule	M	Haitao Li	GS	Mohammed Shatnawi	GS
Arthur Carr	AM	Ming-Cheng Lin	GS	Hatem Tagourti	M
Scott Davis	M	David MacLeod	M	Seiyifa Tawari	ST
Jiarui Ding	GS	Anup Mathew	GS	Slobodan Vukadinov	M
Jayson Eppler	M	Keenan Moe	ST	Jiesheng Wei	GS
Larry Ewert	M	Miguel Murran	GS	Michael Wiltshire	ST
Tanjila Farah	GS	Hyunjin Na	ST	Yi Ran Wu	ST
Devyn Farr	ST	Erina Nesbit	ST	Andy Wu	GS
Simon Fauvel	GS	Hasen Nicanfar	GS	Joseph Yu Mu	ST
				Cheng Zhang	GS

AF Affiliate - AM Associate Member - F Fellow - GS Graduate Student Member - LF Life Fellow  
LM Life Member - LS Life Senior - M Member - SM Senior Member - ST Student Member

\* IEEE Vancouver named Outstanding Large Section for 2009!



## What makes an image look good?

### - recent progress on objective image quality assessment

Zhou Wang  
University of Waterloo

Monday 27 June  
11:00am -12:00pm

ASB9705  
Simon Fraser University  
Burnaby

#### Information

Circuits and Systems  
joint Vancouver/Victoria  
chapter chair  
Ljiljana Trajkovic  
ljilja@cs.sfu.ca

Images are subject to a wide variety of distortions during acquisition, processing, compression, transmission and reproduction. Humans are sensitive to image distortions and can effortlessly identify image distortions. By contrast, objective evaluation of perceived image quality turns out to be a difficult task.

In the past decade, there has been a sudden acceleration in progress and interest in image quality assessment, which, not coincidentally, has corresponded with a rapid rise in interest in digital imaging in general, driven by technological advances and the ubiquity of digital images. The roles of image quality assessment methods are not only to monitor image quality degradations and to benchmark image processing systems, but also to optimize a large number of image processing algorithms and systems. In this talk, we will first give a brief overview of the field of objective image quality assessment. We will then introduce our recent progress on the design of image quality measures and discuss their extended applications beyond quality assessment.

**Speaker:** Zhou Wang received the Ph.D. degree from The University of Texas at Austin. He is currently an Assistant Professor in the Department of Electrical and Computer Engineering, University of Waterloo. His research interests include image processing, coding, communication, and quality assessment; computational vision and pattern analysis; multimedia coding and communications, and biomedical signal processing. He has more than 90 publications in these fields with more than 6,000 citations.

Dr. Wang has served as an Associate Editor of IEEE Transactions on Image Processing, IEEE Signal Processing Letters, and Pattern Recognition; a Guest Editor of IEEE Journal of Selected Topics in Signal Processing, and EURASIP Journal on Image and Video Processing; and a reviewer for more than 40 international journals. He is a recipient of 2009 IEEE Signal Processing Society Best Paper Award, ICIP 2008 Best Student Paper Award (as senior author), and 2009 Ontario Ministry of Research and Innovation Early Researcher Award.



## Quantitative computer simulation as a paradigm of scientific investigations

Krzysztof Pawlikowski  
University of Canterbury

Monday 27 June  
4:00 pm to 5:00 pm

Room 1600  
SFU Harbour Centre, Van\*

#### Information

Circuits and Systems  
joint Vancouver/Victoria  
chapter chair  
Ljiljana Trajkovic  
ljilja@cs.sfu.ca

\*ed. 07 June

Advances of computer technology initiated in the twentieth century have resulted in adoption of computer simulation as the most popular tool of performance evaluation studies of such complex stochastic dynamic systems as e.g. modern multimedia telecommunication networks. Such wide-spread reliance on simulation studies raises the question of credibility of results from such studies. This question needs to be answered before computer simulation can be objectively accepted as an independent, self-sufficient paradigm of scientific investigations.

In this talk, having briefly overviewed the main necessary conditions of any trustworthy simulation study conducted for performance evaluation of stochastic dynamic systems, we will focus on simulation studies with on-line output data analysis. The perils and pitfalls of quantitative discrete-event computer simulation will be considered, together with its fast distributed version, known as Multiple Replications in Parallel, implemented in Akaroa2, a unique controller of quantitative stochastic simulation.

**Speaker:** Dr. Krzysztof Pawlikowski is a Professor in Computer Science & Software Engineering at the University of Canterbury, in Christchurch, New Zealand. He received a Ph.D. degree in Computer Engineering from Gdansk University of Technology, Poland, and worked at that university until February 1983. The author of over 170 journal and conference papers and four books has given invited lectures at over 80 universities and research institutes in Asia, Australia, Europe and North America.

He was the Alexander-von-Humboldt Research Fellow (Germany) in 1983-84 and 1999, and a Visiting Professor at universities in Austria, Australia, Italy, Germany and the USA. His research interests include discrete-event computer simulation, performance modelling of multimedia telecommunication networks, on-line statistical analysis and modelling of teletraffic, and applications of experimental networking facilities.





Wee Ser  
Nanyang Technological  
University

**Distinguished Lecturer**

## Wearable respiratory monitoring: algorithms and system design

More than 15% of the population suffers from some forms of respiratory disorders (e.g. Asthma, Bronchitis, Sleep Apnea, etc.) and some of such disorders can be acute. Currently, physicians perform such diagnosis by listening to lung sound using a stethoscope. The problem of this existing approach is that, the history of occurrence is important and yet patients descriptions are often erroneous. Furthermore, auscultation with stethoscope is subjective and cannot be used for long duration monitoring too. The emerging trend is therefore to monitor respiratory disorders in a home setting through the use of a wearable system.

This lecture will focus on presenting the findings generated from a joint research program undertaken by the lecturer and his engineering team at NTU and the physicians at the National University Hospital (Singapore). In particular, the monitoring of two types of respiratory disorders: wheeze based (e.g. Asthma) and snore based (e.g. Sleep Apnea disorder) will be discussed. In addition to presenting the typical characteristics of such signals, the lecture will also address the problems imposed by the wearable constraint and discuss the algorithms and system solutions to these problems. The development of algorithms and the associated circuits and systems has evolved through three generations of designs. The problems faced and the findings obtained for these designs will be shared at the lecture. A demonstration of the effectiveness of some of these techniques and designs will be given during the lecture too.

**Speaker:** Associate Professor Wee Ser received his B.Sc. (Hon) and Ph.D. degrees both in EEE from the Loughborough University, UK, in 1978 and 1982 respectively. He joined the Defence Science Organization (DSO) in 1982 and became Head of the Communications Research Division in 1993. In 1996, he was appointed Technological Advisor to the CEO of DSO National Laboratories. In 1997, he joined the

Nanyang Technological University (NTU) and has since been appointed Director of the Centre for Signal Processing. Wee Ser is currently the associate editors for the IEEE Communications Letters and the Journal of Multidimensional Systems and Signal Processing (Springer). He is a senior IEEE member and a member of a TC in the IEEE Circuit and System Society. He has served in the RCM of ISCAS 2009 and ISCAS 2010, as Chair of the local IEEE Signal Processing Chapter, and in the local IEEE Communications Chapter. He has served as track chair of several international conferences and has served in the International Advisory Committee of an IEEE Signal Processing Workshop on DSP and as a panel chair of an International DAB Symposium.

More recently, he was invited as a keynote speaker for ICSIPA.09 (IEEE Conference of Signal and Image Processing Applications). He has also served in several national advisory and technical committees. He is a board director of a public listed company and an honour advisor to the Seattle Technology. He has published about 120 research papers in refereed international journals and conferences. He holds six patents (including 4 US patents) and is a co-author of four book chapters. He is the Principal Investigator of several research projects (with about US\$2m of grants from the Ministry of Education, A\*STAR, DSO National Laboratories, and the industries). He has been shortlisted for the EEE Teaching Excellence Award from 2007 to 2009. Wee Ser was a recipient of the Colombo Plan scholarship and the PSC postgraduate scholarship. He was awarded the IEE Prize during his studies in UK. While in DSO, he was a recipient of the prestigious Defence Technology (Individual) Prize 1991 and the DSO Excellent Award 1992. His research interests include microphone array research, wearable signal processing system design; integrated audio-video based monitoring system design, signal classification techniques, and channel estimation and equalization.

Monday 06 June  
4:00 pm to 5:00 pm

Room 1600  
SFU Harbour Centre  
Vancouver

**Information**  
Circuits and Systems  
joint Vancouver/Victoria  
chapter chair  
Ljiljana Trajkovic  
ljilja@cs.sfu.ca



Gordon Dobson-Mack  
Powerex

## Impact of intermittent energy and dynamic transfers on the transmission grid

Thursday 23 June

12:30pm to 1:15pm

BC Hydro  
Dunsmuir Auditorium  
(near Stadium Skytrain  
Station)  
Second Floor  
333 Dunsmuir Street  
Vancouver, BC

By December 2010, there was 7,500 MW of wind generation installed in the Northwest Power Pool ("NWPP"). In July 2012, the installed capacity is forecast to grow to 13,500 MW which corresponds to approximately 20% of the NWPP's coincident peak and 40% of its minimum load. A consequence of increased intermittent resources being integrated into the grid is that energy schedules will vary much more than they have in the past. When faced with the challenge of integrating renewable energy, many Balancing Authorities want increased access to dynamically scheduled ancillary services, such as regulation. As a result, several Transmission Providers in the Pacific Northwest have wondered how much variability in power flows can be allowed without jeopardizing system reliability.

understanding of the issues associated with DTC limits and develop a common methodology for determining DTC limits.

This presentation will discuss the emerging issue of Dynamic Transfer Capability limits and the work of the DTC Task Force.

**Speaker:** An Electrical Engineering graduate of Queen's and Ecole Polytechnique, Gordon joined BC Hydro as an EIT in 1990. Currently he works at Powerex - BC Hydro's wholly owned energy marketing subsidiary - as their Transmission Issues Manager and is the Chair of the DTC Task Force. Previously Gordon has worked in Transmission Planning, Transmission Scheduling, Power Supply Operations (PSOE) and System Operations (SCC). Gordon is a member of the IEEE.

In October 2010, a Dynamic Transfer Capability ("DTC") Task Force was convened to determine how the volume of Dynamic Transfers could be increased without compromising system reliability. The Task Force brings transmission planners together from twelve transmission companies across the WECC and its goals include: understand differences in the DTC studies conducted to date; foster technical



### Information

Power and Energy Chair  
Glen Tang  
glen.tang@ieee.org

John Lauletta  
Exacter, Inc

## Overhead system condition assessment and maintenance: techniques and benefits

Thursday 16 June

12:00pm to 1:00pm

BC Hydro  
Edmonds Auditorium  
(near Edmonds Skytrain  
Station)  
6911 Southpoint Drive  
Burnaby, BC

As overhead distribution electric equipment ages it is subject to damaged by lightning, environmental pollution, switching surges, freeze/thaw cycles, and other issues of age related wear-and-tear. The result of this damage is momentary and sustained outages, reduced feeder reliability, increased Customer Minutes of Interruption (CMI) and a degradation of standard reliability indices such as SAIFI and SAIDI.

Finally, a review of U.S. statistics on weakened equipment findings and field methods to pinpoint the structure and piece of equipment to replace will be reviewed.

**Speaker:** John Lauletta has been involved in electric utility measurement technology since 1975. John's career includes ten years with American Electric Power as Measurements Manager, 14 Years as VP Scientific Columbus and most recently as President and CEO of Exacter, Inc. John holds engineering degrees from The Ohio State University and Purdue University and is the Past Chair of the Central Ohio Power Engineering Society Chapter of IEEE. John holds several patents in predictive failure technologies.

Exacter, Inc. is a developer of predictive technologies for electric utility reliability, grid conditions-based assessment, and preventive maintenance.

This presentation will review the root causes of equipment damage, the symptoms that result from weakened equipment, the opportunity to improve overall overhead distribution reliability, case studies to demonstrate the efficacy of predictive-based overhead system hardening, and the methodologies to develop conditions-based predictive maintenance programs. The review will include high-voltage laboratory test methods and results that demonstrate the failure syndromes of weakened overhead equipment.



### Information

Power and Energy Chair  
Glen Tang  
glen.tang@ieee.org



Antony Tang  
VU University Amsterdam

## Software designers, are you biased?

The many standards, methodologies and processes that the software industry uses provide no guarantee in good designs. A good software design is the result of the many appropriate and well reasoned design decisions made by the designers. So far we have not paid much attention to how proficient designers make their decisions, and how they avoid bad decision making. Research has shown that people make biased decisions, software designers may be subjected to cognitive and other biases also.

In this talk, I will give an overview of how biases and reasoning failures may lead to unsound design decisions. There will be a discussion of some of the recent research findings in design reasoning techniques, which may help to overcome some of the biases. To assist self-improvements, I will briefly discuss some reflection techniques.

**Speaker:** Antony Tang is a senior researcher at the VU University Amsterdam. He is also an adjunct researcher in the Faculty of Information and Communication Technologies at the Swinburne University of

Technology in Melbourne Australia. After working in the software industry for over 20 years in senior positions, Antony decided to carry out research in software engineering to understand what happened to the many design and project failures in the software industry. He completed his PhD in 2007.

He has been studying software architecture design reasoning. He is interested in understanding how design decisions are made and their influences on software systems. He also studies development processes in relation to software design knowledge management and communication.

Personal homepage:  
<http://www.ict.swin.edu.au/personal/atang/>.

Tuesday 14 June  
6:15 pm  
6:00 doors

Room C225  
UBC Robson Square  
Campus, Vancouver\*

**Information**  
Computer Society Chair  
Sathish Gopalakrishnan  
sathish@ece.ubc.ca

\*ed 04 June



## From softwood to software: 100 years of IEEE and Vancouver

Michael Geselowitz  
IEEE History Center

- IEEE Vancouver centennial history presentation and exhibition
- unveiling of the new centennial slogan
- and lots of other surprises....

**Speaker:** Michael N. Geselowitz is Staff Director of the IEEE History Center. Immediately prior to joining IEEE in 1997, Mike was Group Manager at Eric Marder Associates, a New York market research firm, where he supervised Ph.D. scientists and social scientists undertaking market analyses for Fortune 500 high-tech companies. He is also a registered Patent Agent.

Monday 27 June  
6 – 8 pm

SFU Harbour Center  
room TBA

Since 1884, IEEE has been fostering innovation. The City of Vancouver was incorporated just two years later, as the arrival of the transcontinental railroad began the transformation of a lumber town into a manufacturing and transportation hub. By 1911, the city's population exceeded 100,000 and the first intrepid group of engineers joined together to form a Section of the American Institute of Electrical Engineers (AIEE). In the past 100 years, the members of AIEE, its sister organization the Institute of Radio Engineers (IRE), and their joint successor IEEE have led the way in the technologies that transformed Vancouver, Canada and the entire 20th century. This talk will review some of this history and suggest ways that the members of the IEEE Vancouver Section can be active participants in preserving and making known their proud heritage.

Mike holds S.B. degrees in electrical engineering and in anthropology from the Massachusetts Institute of Technology, and M.A. and Ph.D. degrees in anthropology from Harvard University. His research focus has been on the history and social relations of technology. He has worked as an electronics engineer for the Department of Defense, and he has held teaching and research positions relating to the social study of technology at M.I.T., Harvard, and Yale University, including a stint as Assistant Collections Manager/ Curator at Harvard's Peabody Museum of Archaeology and Ethnology

**Information**  
Mazana Armstrong  
IEEE Vancouver Chair  
mazana.armstrong@ieee.org





## Challenges in designing CMOS systems-on-a-chip for wireless communications

David Su  
Atheros Communications

**Distinguished Lecturer**

Monday 30 May  
5:30pm

Rm 2020 Kaiser Bldg  
2332 Main Mall  
UBC Campus  
**Information**

Solid-state Circuits Chair  
Shahriar Mirabbasi  
shahriar@ece.ubc.ca

This talk describes the challenges in designing CMOS systems-on-a-chip for wireless communications. RF transceiver building blocks for signal amplification, frequency translation, and frequency selectivity are examined with special emphasis on low noise amplifier, power amplifier, mixer, and frequency synthesizer.

System-on-a-chip integration issues are also discussed. The talk concludes with a case study of a wireless LAN SoC. .

**Speaker:** David Su is the VP of Analog/RF Engineering at Atheros Communications, engaging in the design of CMOS wireless SoC. Prior to joining Atheros, he worked at Hewlett-Packard Company designing CMOS mixed-signal/RF integrated circuits.

Dr. Su is an IEEE fellow and a consulting professor at Stanford University. He has been a JSSC associate editor and is currently the ISSCC wireless subcommittee chair. He holds a Ph.D. degree from Stanford University as well as MS and BS degrees from the University of Tennessee, Knoxville.



## Robustness analysis of polytopic systems via SOS programming

Graziano Chesi  
University of Hong Kong

Monday 30 May  
200 -300pm

Kaiser 2020/2030  
UBC

**Information**  
Control Systems chair  
Ryozo Nagamune  
nagamune@mech.ubc.ca

Polytopic systems, i.e. linear systems affected by uncertain parameters constrained in a polytope, play a key role in automation and control systems.

Unfortunately, it is well known that fundamental problems such as establishing whether an equilibrium point is robustly stable for all admissible uncertainties, and determining worst-case system performances, are very difficult to solve for polytopic systems (NP-hard problems).

This talk addresses some of these problems, considering for instance the cases of time-invariant/time-varying uncertainties and linear/nonlinear dependence on the uncertainty, hence presenting our pioneering results based on sum of squares (SOS) programming, which have the nice properties to involve convex optimization problems and to be asymptotically non-conservative. The talk also briefly describes some of our results on SOS programming.

**Speaker:** Graziano Chesi received the Laurea in Information Engineering from the University of Florence in 1997 and the Ph.D. in Systems Engineering from the University of Bologna in 2001. He was with the Department of Information Engineering of the

University of Siena during 2000-2006 and then he joined the Department of Electrical and Electronic Engineering of the University of Hong Kong. He was a visiting scientist at the Department of Engineering of the University of Cambridge during 1999-2000 and at the Department of Information Physics and Computing of the University of Tokyo during 2001-2004.

Dr. Chesi has served as Associate Editor for Automatica, BMC Research Notes, the European Journal of Control, the IEEE Transactions on Automatic Control, and Systems & Control Letters. Also, he has served as Guest Editor of the Special Issues on Positive Polynomials in Control, Systems Biology, and Visual Servoing for various journals. He is the Founder and Chair of the Technical Committee on Systems with Uncertainty of the IEEE Control Systems Society. He is author of the book "Homogeneous Polynomial Forms for Robustness Analysis of Uncertain Systems" (Springer, 2009) and editor of the book "Visual Servoing via Advanced Numerical Methods" (Springer, 2010). He is first author in more than 100 technical publications.

Further information can be found at  
<http://www.eee.hku.hk/~chesi>





Tyler C. Folsom  
The Elcano Project

Tuesday 31 May  
7:00pm - 9:00pm

BCIT SW3-1750

ed - 26 MAY

**Information**

Joint Communications  
Chair Alon Newton  
alon.newton@gmail.com

## Impacts of autonomous urban land vehicles

The world demand for petroleum exceeds the long term supply. Most petroleum is used for transportation. Can global warming be slowed without drastic life-style changes? Achieving sustainability requires innovative thinking on transportation. A seminar from Environmental Teaching International includes:

- current transportation patterns
- the promise of electric and plug-in hybrid cars
- the role of ultra light vehicles
- the possibilities of Personal Rapid Transit (PRT)
- the role of autonomous vehicles
- transition paths to sustainability

**Speaker:** Tyler C. Folsom earned a bachelor's degree from Villanova University in mathematics. He received the Master of Arts in mathematics from the University of Maryland. He went to work for Sperry Univac Inc. and helped program the real-time control systems for two unmanned spacecraft at NASA's Goddard Space Flight Center. With a thorough grounding in computer software, he then studied the hardware, earning a Master's degree in Electrical Engineering from the University of Washington. After a decade in industry, he returned to the University of Washington to earn the PhD in Electrical Engineering. His dissertation was "Neural Networks Modeling Cortical Cells for Machine Vision". He is a licensed Professional Engineer in the state of Washington and a senior member of IEEE.

Dr. Folsom started at QUEST Integrated Inc. (a contract Research and Development company) in 1985. He has managed and participated in the development of a wide variety of products at QUEST. His most recent project has been automatic flaw detection in aging aircraft. He is about to start a Small Business Innovation Research (SBIR) project for the U.S. Navy, which will design a robotic system to improve ship-board maintenance of condenser tubes.

In 2000 he began teaching at DigiPen Institute of Technology, reaching the rank of full professor. He wrote the stereo vision system for Team Sleipnir, an entry in the DARPA Grand Challenge. This was a contest offering a \$2 million prize in a 200 km race for autonomous vehicles across the California desert. He led the University of British Columbia's team in the DARPA Urban Challenge, a race for autonomous vehicles in traffic. He co-founded Cogneta Inc. to commercialize autonomous vehicle technology.

Dr. Folsom's current interest is in implementing an urban transportation system that can achieve 0.25 l/100 km equivalent, not require fossil fuel, and reduce accident rates by a factor of 30. The system is projected to be more compact and less expensive than alternative transportation modes. The approach is a software and systems method that does not require advances in vehicles, batteries or infrastructure. It uses open source for hardware and software to demonstrate how such a system can work. People anywhere in the world can participate via the Internet.





Frank Allgöwer  
University of Stuttgart

**Distinguished Lecturer**

Monday 27 June  
2 - 3pm  
McLeod 418, UBC

**Cosponsors**

Robotics and Automation;  
Systems, Man and  
Cybernetics

**Information**

Control Systems chair  
Ryozo Nagamune  
nagamune@mech.ubc.ca

ed - 10 JUNE

## Nonlinear model predictive control: the past, present and future

During the past decades model predictive control (MPC) has become a preferred control strategy for a large number of industrial processes. The main reasons for this popularity include the ability to explicitly handle constraints and dynamic nonlinearities, plus the possibility to consider multi-variable processes with potentially many manipulated and controlled variables.

After a discussion of the history and impact of MPC, we will give an overview over some system theoretic approaches on how to achieve stability, robustness and optimal performance and we will comment on the numerical challenges and solution approaches for solving the underlying real-time open loop optimal control problems, that have to be solved repeatedly in MPC. With a number of applications we will demonstrate that by using a proper setup and specially tailored optimization methods, even large problems, having hundreds of states, can be controlled efficiently using nonlinear MPC methods. Finally we will briefly highlight some recent developments in MPC and comment about the future of the field.

**Speaker:** Frank Allgöwer is director of the Institute for Systems Theory and Automatic Control at the University of Stuttgart in Germany. He studied Engineering Cybernetics and Applied Mathematics in Stuttgart and at the University of California at Los Angeles (UCLA) respectively and received his Ph.D. degree from the University of Stuttgart. Prior to his present appointment he held a professorship in the electrical engineering department at ETH Zurich and

visiting positions at Caltech, the NASA Ames Research Center, the DuPont Company, the University of California at Santa Barbara and the University of Newcastle in Australia.

Frank's main interests in research and teaching are in the area of systems and control with emphasis on the development of new methods for the analysis and control of nonlinear systems and networks of systems. Of equal importance to the theoretical developments are practical applications and the experimental evaluation of benefits and limitations of the developed methods. Applications span a wide range from mechatronic systems to systems biology.

At present Frank is Editor for the journal Automatica and for the Springer Lecture Notes in Control and Information Sciences series and serves as Associate Editor and on the editorial board of several further journals. He is on the Council of the International Federation of Automatic Control (IFAC), is on the Board of Governors of the IEEE Control System Society (CSS) and is chairman of the International Affairs Committee of IEEE CSS.

Frank received several recognitions for his work including the appointment as IFAC Fellow, the Landeslehrpreis Baden-Württemberg (state teaching award), and the Leibniz prize, which is the most prestigious prize in science and engineering awarded by the German Deutsche Forschungsgemeinschaft (DFG).

