



- IEEE Vancouver Life Members Inaugural event
- Ensuring the operational security of power grids
- Coordinated control of small, remotely operated systems

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Congratulations

to Dr. Abhijit Sen who recently assumed the Chair of IEEE Vancouver's Life Members affinity group for organizing the

Sony labs tour as the group's *inaugural* event. Abhijit, a CS and IT faculty member at Kwantlen Polytechnic, sent along a photo of some of the tour attendees.



IEEE members and their guests visited Sony Imageworks, headquartered at 500 - 725 Granville Street, Vancouver on July 22, 2015. The tour provided the members with a general overview of the production pipeline, digital animation process, and visual effects for live action, CG features, and stereoscopic productions technology. The company recently completed productions of Columbia Pictures' PIXELS, Clint Eastwood's feature film AMERICAN SNIPER, Columbia Pictures' FURY, Marvel Studios'

GUARDIANS OF THE GALAXY and CAPTAIN AMERICA: THE WINTER SOLDIER, among others. Sony Pictures Imageworks is currently in production on the ANGRY BIRDS movie for Rovio, Disney's ALICE IN WONDERLAND: THROUGH THE LOOKING GLASS, the Warner Bros. live-action feature SUICIDE SQUAD and STORKS for Warner Bros. Animation. The tour was organized by the Vancouver Chapter of the IEEE Life Members Affinity Group.



Lei Wang
Powertech Labs

Ensuring the operational security of power grids using the on-line dynamic security assessment technology

Secure operation of power systems is of ultimate importance to the reliable supply of electricity and efficient operation of power market. A new technology for security analysis, named on-line dynamic security assessment (OLDSA), has emerged in recent years as a promising alternative to the conventional approach based on the off-line studies. OLDSA incorporates advanced concepts on modeling, computations, and software development.

With this technology, security analysis is performed using the real-time (or forecast) system conditions obtained through SCADA/WAMS or other databases, and valuable information is provided to grid operators for applications such as identification of potential security bottleneck in the system, optimization of operation of renewables, minimization of reserve and congestion management cost, restoration of systems after blackouts, etc. OLDSA technology has been applied for various time frames, from real time to day ahead to long term (months). Software systems with OLDSA functionality have been installed and operational in control rooms of a number of major grid operators, including BC Hydro.

This presentation describes the technical approach of OLDSA technology, including modeling, analysis methods, software architecture, and integration with other data/software systems in control rooms. The application areas and status of this technology, as well as some of the benefits achieved, are also discussed with examples.

Speaker: Lei Wang received his B. A. Sc. and M.A. Sc. degrees in electrical engineering from the Shanghai Jiao Tong University in 1982 and 1984 respectively, and his Ph. D. degree from the University of Toronto in 1991. From 1989 to 1993 he worked in the Analytical Methods and Specialized System Studies Department at Ontario Hydro in Toronto, Canada. In 1993 he joined Powertech Labs in Vancouver, where he is now a Principal Engineer in the Power System Studies Group which provides international consulting services and commercial power system software. His interests include power system stability and control and on-line dynamic security assessment and he has authored many publications on these subjects. He is a registered professional engineer in the Provinces of Ontario and is a member of the IEEE. Dr. Wang is the recipient of the 1994 IEEE PES Walter Fee Outstanding Young Engineer Award.

Wednesday 26 August

Noon - 1:00 PM

BC Hydro
Edmonds A01 Aud'm
Center Room,
6911 Southpoint Dr Bby

Information

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Coordinated control of small, remotely operated and submerged vehicle-manipulator systems

Time & Date: Thursday 20 August 6:30 PM

Location: BCIT Burnaby Campus, Room TBD

Current submerged science projects such as VENUS and NEPTUNE have revealed the need for small, low-cost and easily deployed underwater remotely operated vehicle-manipulator (ROVM) systems. Unfortunately, existing small remotely operated underwater vehicles (ROV) are not equipped to complete the complex and interactive submerged tasks required for these projects. Adapting a popular small ROV into a ROVM that is capable of low-cost and time-efficient underwater manipulation will help to realize this objective.

The primary focus of this talk is to visit various technical building blocks that ultimately lead to such a coordinated control system for small ROVMs. Several model-based control methodologies are proposed to realize the desired motion produced by the redundancy resolution. For a unified system (redundancy resolution and controller), a new human-machine interface (HMI) is designed that can facilitate the coordinated control of ROVM systems.

In the first phase of implementation, a small inspection-class ROV is adopted. To improve navigation, a navigation skid is designed that containing a Doppler Velocity Log, a compass, an inertial measurement unit, and acoustic position data. The theoretical and practical results illustrate that the proposed tools can transform, a small, low-cost ROVM system into a highly capable, time-efficient system that can complete complex subsea tasks.



Dr. Serdar Soylu received his B.E. degree (with honors) in mechanical engineering from the Dokuz Eylul University, Turkey in 2002, and his M.A.Sc and Ph.D. degrees in mechanical engineering from the University of Victoria, Canada, in 2005 and 2011, respectively. He's been working for Cellula Robotics as a Control System Engineer since 2011 where he also held his NSERC Industrial and Research and Development Fellowship (IRDF) from 2012 to 2014 on the automation of seafloor drills.

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