

The INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, Inc.
Eastern Idaho Section
Idaho Falls Informal Seminars

TOPIC: **ICIS/IEEE/ISA “Brew with the Crew” presents:** The Idiot's Guide to Modeling: A Plug-and-Chug Machine for Model Discovery
SPEAKER: **Lee Shunn, Idaho National Laboratory**
DATE: Thursday, September 16, 2010
TIME: 4:30P.M.
PLACE: Hard Hat Steakhouse and Grill, 1175 Pier View Drive (Snake River Landing), Idaho Falls, Idaho
COST: Order your drinks from the menu. Light hors d'oeuvres provided by the crew organizers.

Abstract:

IEEE members make plans to join your colleagues for the September informal technical seminar series event “Brew with the Crew*” organized by the INL’s Instrumentation, Controls and Intelligent Systems (ICIS) Distinctive Signature, the Eastern Idaho Section of the Institute for Electrical and Electronics Engineers (IEEE) and the Idaho Falls branch of the International Society of Automation (ISA).

System identification relates to building mathematical models of dynamical systems based on observed input-output data. For the case of linear models, there exist well-structured theories, methodologies, and algorithms to construct the relationships. For complex nonlinear models, however, techniques are less well established and/or robust. This presentation describes an intriguing technique for nonlinear model reconstruction based on the trajectory method of Perona et al. (Nonlinear Dynamics, 23:13-33, 2000). In the current work, Perona's method is extended to higher-dimensional systems with forced dynamics. The ability of the method to reconstruct nonlinear systems is demonstrated using a variety of numerical and experimental examples. Plans for future applications and directions are briefly discussed.

Biography:

Lee Shunn holds a B.S. in Chemical Engineering from the University of Utah and a Ph.D. in Mechanical Engineering from Stanford University. At Stanford, Shunn developed algorithms and combustion models for large-eddy simulation (LES) and was a contributor to the massively parallel, unstructured LES code at the Center for Turbulence Research. He has also worked for the Computer Science Research Institute at Sandia National Laboratories, where he developed verification methods for multi-physics computer codes. His research interests include computational fluid dynamics, reaction modeling, large-eddy simulation, and process control. Shunn is currently a R&D scientist in the Advanced Process and Decision Systems department at Idaho National Laboratory..

*Brew with the Crew is an after work event, that takes place every third Thursday of the month at the Hard Hat Steakhouse and Grill to provide an opportunity for instrumentation, control and intelligent systems researchers and practitioners to interact with others in their community.

***** VISITORS AND NON-MEMBERS ARE WELCOME *****

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