



Power Systems Engineering Research Center

An Online Dynamic Security Assessment Scheme Using Phasor Measurements and Decision Trees (Project S-27)

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**Project Tele-Seminar for PSERC Industry and University Members Only.
You must register to participate, even by webcast (special media login required)!**

February 19, 2008

2:00-3:00 p.m. Eastern Time

(11am-noon Pacific, noon-1pm Mountain, 1-2pm Central)

Description

This talk describes an online dynamic security assessment scheme for large-scale interconnected power systems using phasor measurements and decision trees which was developed as a part of the PSERC project S-27. The scheme builds and periodically updates decision trees offline to decide critical attributes as security indicators. Decision trees provide online security assessment and preventive control guidelines based on real-time measurements of the indicators from phasor measurement units. The scheme uses a new classification method involving each whole path of a decision tree instead of only classification results at terminal nodes to provide more reliable security assessment results for changes in system conditions. The approaches developed are tested on a 2100-bus, 2600-line, 240-generator operational model of the Entergy system. The test results demonstrate that the proposed scheme is able to identify key security indicators and give reliable and accurate online dynamic security predictions.

Biography

Vijay Vittal is the Ira A. Fulton Chair Professor in the Electrical Engineering department at Arizona State University. From 1982 – 2004 he served as a faculty member at Iowa State University. His research interests are in the area of power system dynamics, dynamic security assessment of power systems, power system operation and control, and application of robust control techniques to power systems. He is the author and co-author of several papers in his field. In 1992 he co-authored the textbook entitled *Power System Transient Stability Assessment Using the Transient Energy Function Method* with A. A. Fouad, and in 1999 he co-authored the textbook entitled *Power System Analysis* with A. R. Bergen. He currently is the director of PSERC. He is a recipient of the 1985 Presidential Young Investigator Award. In 1997, he was elected as a Fellow of IEEE. He was also the recipient of the 2000 IEEE Power Engineering Society Outstanding Power Engineering Educator Award. From 1998-2000 he was the Chairman of the IEEE Power Engineering Society System Dynamic Performance Committee. He was elected to the U.S. National Academy of Engineering in 2004. He is the Editor in Chief of the IEEE Transactions on Power Systems.

Participation by Webcast (Login required for this project tele-seminar): You can participate in this PSERC project tele-seminars via webcast, but you must register to get the login information. Before the tele-seminar, click [here](#), login with the login information provided after you register (see below), and then on 2/19/08 when the status is "In Progress". Equivalently, you can go to <http://tinyurl.com/28kvqv>, login, and click on 2/19/08. Note that the web page at that address does not automatically refresh. The webcast will include the audio and the slides so you will not have to download the slides in advance. If you want to ask questions, you should register for phone participation so that you will have the information to call in when the Q&A begins.

Participation by Phone: Live audio will be provided via a teleconference phone bridge. After registering, you will be sent connection information for the conference phone bridge. You will need to follow along with the presentation slides. The presentation slides will be emailed to you on February 19; the slides will not be available on the website.

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Professional Development Hour Certification: PDH certification is available for PSERC members (only). Send an email requesting PDH certification to Theresa.Herr@asu.edu with the subject "PDH" after the seminar. *Include the name and title of each participant.*

Seminar Logistics and Assistance

Connection information will be emailed to you after you submit your request. If you have any questions, please contact Theresa Herr, PSERC's administrative assistant, at 480-965-1643 or Theresa.Herr@asu.edu. You can also contact Dennis Ray, PSERC Executive Director, at 608-265-3808 or djray@engr.wisc.edu.

Speaker Contact Information

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