



**Second Annual  
NSF EFRI-MST-GTECH WORKSHOP**

**May 16 – 19, 2010**

**4th Floor Lounge & Balcony, UA Whitaker Building  
313 Ferst Dr. NW, Atlanta GA 30332  
Biomedical Engineering Department, Georgia Tech**



**Second Annual NSF EFRI-MST-GTECH WORKSHOP  
Program**

**4th Floor Lounge, UA Whitaker Building**

**Monday, May 17, 2010**

- 7:45 am - 8:10 am Registration/Breakfast**
- 8:10 am - 8:30 am Welcome and Opening Remarks  
*Dr. Ganesh Kumar Venayagamoorthy - Missouri S&T*
- 8:30 am - 9:10 am *Paper #01: Methods for Prediction of Synchronous Generator Dynamics Using Living and Simulated Neural Networks*  
*Robert Ortman, Riley T. Zeller-Townson, Gareth Guvanasen, and Christopher Rozell - Georgia Tech, Ganesh K. Venayagamoorthy - Missouri S&T, and Steve M. Potter - Georgia Tech*
- 9:10 am - 9:50 am *Paper #02: Extracellular Stimulation Signals for the Burst-Quieting Domain*  
*Riley T. Zeller-Townson, and Steve M. Potter - Georgia Tech, and Ganesh K. Venayagamoorthy - Missouri S&T*
- 9:50 am - 10:30 am *Paper #03: Adaptive Control of a Motor Circuit*  
*Jason M. White and Gareth S. Guvanasen - Georgia Tech, Ganesh K. Venayagamoorthy - Missouri S&T, and Steve M. Potter - Georgia Tech*
- 10:30 am - 10:45 am Coffee Break**
- 10:45 am - 11:25 am *Paper #04: Encoding Real Values into Polychronous Spiking Networks*  
*Cameron Johnson and Ganesh K. Venayagamoorthy - Missouri S&T*
- 11:25 am - 12:05 pm *Paper #05: Wide Area Monitoring and Coordinated Control of a Smart Grid with SmartParks*  
*Pinaki Mitra and Ganesh K. Venayagamoorthy - Missouri S&T*
- 12:05 pm - 1:00 pm Lunch**
- 1:00 pm - 1:40 pm *Paper #06: Group Size Counting Problem in Computer Go has a Way to Autonomously Count the Size of an Undirected Graph in a Grid World*  
*Tae-Hyung Kim, Ganesh K. Venayagamoorthy, and Donald C. Wunsch II - Missouri S&T*
- 1:40 pm - 2:20 pm *Paper #07: Cellular Simultaneous Recurrent Neural Networks Based Wide Area Monitor for Smart Grid*  
*Bipul Luitel and Ganesh K. Venayagamoorthy - Missouri S&T*

- 2:20 pm - 3:00 pm *Paper #08: Indirect Adaptive Control of an Active Filter Using Echo State Networks*  
*Jing Dai - Georgia Tech, Ganesh K. Venayagamoorthy - Missouri S&T, Ronald G. Harley - Georgia Tech*
- 3:00 pm - 3:15 pm Coffee Break**
- 3:15 pm - 3:55 pm *Paper #09: Modeling and Simulation of a Grid-Connected Dish-Stirling Solar Farm*  
*Dustin Howard, and Ronald G. Harley - Georgia Tech, and Ganesh K. Venayagamoorthy - Missouri S&T*
- 3:55 pm - 4:35 pm *Paper #10: Resource Optimization for a Smart Micro-grid*  
*Ahmed Y. Saber and Ganesh K. Venayagamoorthy - Missouri S&T*
- Break – 5 minutes!**
- 4:40 pm - 5:40 pm *Paper #11: Keynote – Prediction of Complex Systems by Biological or Artificial Neurons: Obstacles and Opportunities*  
*Dr. Paul Werbos - National Science Foundation, USA*
- 6:15 pm - 8:00 pm Banquet**

## Tuesday, May 18, 2010

- 8:00 am - 8:30 am **Breakfast**
- 8:30 am - 9:10 am *Paper #12: Real-Time Study of a Current Controlled Plug-in Vehicle for Vehicle-to-Grid Transaction*  
*Pinaki Mitra, Ganesh K. Venayagamoorthy, and Keith Corzine- Missouri S&T*
- 9:10 am - 9:50 am *Paper #13: Comparison of MLP and ESN for Estimating Voltage Stability Index in a Smart Grid*  
*Joseph Makasa and Ganesh K. Venayagamoorthy - Missouri S&T*
- 9:50 am - 10:30 am *Paper #14: Simulation and Development of a Smart Microgrid*  
*Darshit (Derek) Shah and Ganesh K. Venayagamoorthy - Missouri S&T*
- 10:30 am - 10:45 am **Coffee Break**
- 10:45 am - 11:25 am *Paper #15: Dynamic Modeling of the New England-New York Power System with Wind Energy Generation and Pumped Storage*  
*Jiaqi Liang and Ronald G. Harley - Georgia Tech, and Ganesh K. Venayagamoorthy - Missouri S&T*
- 11:25 am - 12:05 pm *Paper #16: Intelligent Global Dynamic Optimization of Power Systems*  
*Diogenes D. Molina, and R. G. Harley - Georgia Tech, and Ganesh K. Venayagamoorthy - Missouri S&T*
- 12:05 pm - 1:30 pm Lunch**
- 1:30 pm - 2:10 pm *Paper #17: Real-Time Analysis of Power System Oscillations by Modified Hilbert Huang Transform*  
*Anshuman S. Vaidya and Ganesh K. Venayagamoorthy - Missouri S&T*
- 2:10 pm - 3:10 pm *Paper #18: Keynote - Distributed Intelligence for Smart Grid Operations*  
*Dr. Sunil Cherian - Spirae, Fort Collins, CO*
- 3:10 pm - 3:30 pm Coffee Break**
- 3:30 pm - 4:10 pm <http://brain2grid.com> Website  
*Sirjana Dahal and Ganesh K Venayagamoorthy - Missouri S&T*
- 4:10 pm - 5:00 pm Project Goals and Next Steps  
*Dr. Ganesh Kumar Venayagamoorthy*

## Wednesday, May 19, 2010

### **Breakfast on your own**

9:00 am - 12:00 pm PI and Co-PIs Discussions – Room 3118

9:00 am - 12:00 pm Students Networking Time – Room 4101

### **12:00 pm - 1:00 pm Lunch**

1:00 pm - 2:00 pm Bio-Medical Engineering Dept. Lab Tours – *Dr. Steve M. Potter*

2:15pm – 3.15 pm School of ECE Lab. Tours – *Dr. Ronald G. Harley*