



THE UNIVERSITY OF GEORGIA  
DEPARTMENT OF STATISTICS

## *Colloquium Series*

**Thursday, September 21st, 2023  
4:00 PM, Room 204, Caldwell Building**

### **Dr. WenZhan Song**

Professor in the department of Electrical and Computer Engineering  
at the University of Georgia

#### **CONNECTING THE DOTS FOR HEALTH AND SECURITY MONITORING**

This talk introduces our research on sensor web for health and security monitoring. In concern of cyber-physical security, we have created sensor web systems that utilize the spatio-temporal electrical signals in power networks, together with cyber signals, for the security and health monitoring of devices, machines and infrastructures. Electrical devices (including computers, appliances, machines) draw energy from power networks and must leave traces of their security and health information in the electrical signals, but this fact was unexplored in the cyber-security literature before our research. In response to the needs of continuous and engagement-free point of care, we invented a series of privacy-preserving seismic sensor web to monitor human and animal health and security. For example, BedDot, attached underneath a bed, senses micro-seismograms from heartbeats and movements and estimates vital signs and activities. FloorDot, placed on a floor, senses seismograms generated by footsteps and other activities to identify the intrusions and activities of daily living (ADL). CageDot, placed under an animal cage, monitors animal activities and vital signs.

#### **About the Speaker**

Dr. WenZhan Song is Georgia Power Mickey A. Brown Professor in Computer Engineering and Founding Director of the Center for Cyber-Physical Systems (CCPS) at the University of Georgia. He also holds the courtesy appointment in UGA computer science and statistics. He is a world leading expert on pervasive sensing, computing, networking and security and has created and deployed various innovative sensor network systems for health, energy, environment and security monitoring. Dr. Song's research was featured in national media and received numerous awards and recognitions including NSF CAREER Award, Outstanding Research Contribution Award, Chancellor Research Excellence Award, IEEE Mark Weiser Best Paper Award, and three times Most Promising Technology awards from industry. Dr. Song served General Chair, TPC member and Associate Editor of the most prestigious conferences and journals at computer science and engineering, including IEEE INFOCOM, IEEE PERCOM, IEEE Internet of Things, ACM Transaction on Sensor Networks. His research has been funded by numerous grants from the NSF, NASA, USGS, DOE, USDA, NIH, DOD and industry.



For more information, please contact us at:

Phone: 706.542.5232 E-Mail: [stat@uga.edu](mailto:stat@uga.edu)

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