Abell Endowment Distinguished Lecture in Computer Engineering, in conjunction with the Electrical and Computer Engineering Seminar Series and the Computer Science Department Seminar Series

"Real-time, High Data-rate Wireless Sensor Networks"

by

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Abstract: We have deployed and demonstrated operations of an integrated space in-situ sensorweb for monitoring volcanic activity. This sensorweb includes a network of ground sensors deployed to the Mount Saint Helens volcano as well as the Earth Observing One spacecraft. The ground operations and space operations are interlinked in that ground-based intelligent event detections can cause the space segment to acquire additional data via observation requests and space-based data acquisitions (thermal imagery) can trigger reconfigurations of the ground network to allocate increased bandwidth to areas of the network best situated to observe the activity.

Despite being resource constrained, our wireless sensor network (sensorweb) is capable of continuously monitoring and collecting high fidelity data from volcanic environments. However, all the data cannot be trusted since data can be corrupted due to several reasons such as unreliable, faulty wireless sensors or harsh ambient conditions. Further, due to bandwidth constraints that limit the amount of data being transmitted in sensor networks, it is important that only the high priority, accurate data is transmitted. This presentation covers our experiences with this practical project and the solutions we offered in addressing challenging problems related to resource management in such real-world applications.

Biography: Behrooz A. Shirazi is the Huie-Rogers Chair Professor and the Director of the School of Electrical Engineering and Computer Science at Washington State University. Prior to joining WSU in 2005 he was on the faculty of Computer Science and Engineering at the University of Texas at Arlington and served as the department chair from 1999 to 2005. Dr. Shirazi has conducted research in the areas of pervasive computing, software tools, distributed real-time systems, and parallel and distributed systems over the past eighteen years. He is currently serving as the Editor-in-Chief for Special Issues for the Pervasive and Mobile Computing (PMC) Journal and the Sustainable Computing (SUSCOM) Journal. He has served on the editorial boards of the IEEE Transactions on Computers and Journal of Parallel and Distributed Computing in the past. He is a co-founder of the IEEE International Conference on Pervasive Computing and Communications (PerCom). He has served on the program committee of many international conferences. He has received numerous teaching and research awards and has served as an IEEE Distinguished Visitor (1993-96) as well as an ACM Lecturer (1993-97).

Please contact Prof. HJ Siegel (H.J.Siegel@colostate.edu**) with any questions.**