

Faculty Candidate Seminar

Monitoring Problems in Large Scale Networks

Simone Silvestri, Pennsylvania State University

Friday, April 25th 12:00 to 1:00pm

Venue: CS205

(Refreshments will be served at 11:45 a.m.)

Abstract –Mobile wireless sensor networks are an attractive technology to monitor remote and even hostile environments, where manual sensor positioning is not feasible. Sensors are usually sent from a safe location or dropped from an aircraft, and then reposition themselves to provide the required sensing coverage. A sensor deployment algorithm is necessary to automate the positioning activity. Traditional deployment strategies are specifically designed for homogeneous networks. Nevertheless, network and device homogeneity is an unrealistic assumption in most practical scenarios. In this talk I introduce VorLag, a deployment algorithm which makes use of an elegant generalization of the Voronoi diagrams in the Laguerre geometry. We formally prove the correctness of this generalization and show that VorLag is able to efficiently meet the coverage requirements even in the presence of heterogeneous devices. I will also discuss some network management problems, and focus in particular on the use of network tomography to monitor large scale networks prone to failures.

Bio - Simone Silvestri is a Post-Doctoral Research Associate in the Department of Computer Science and Engineering at Pennsylvania State University. Before joining Penn State, Dr. Silvestri was a Post-Doctoral Research Associate in the Department of Computer Science at Sapienza University of Rome, Italy, where he also received his Ph.D. in Computer Science in 2010. His research interests lie in the area of sensor networks, interdependent networks, network tomography, network recovery and inference, green small cell networks, and complex web systems.