Temple University Mathematics Colloquium

Jie Gao

Stony Brook University

will speak on

Routing with guaranteed delivery using Ricci flow

ABSTRACT: Greedy forwarding with geographical locations in a wireless sensor network may fail at a local minimum. In this talk we propose to use conformal mapping to compute a new embedding of the sensor nodes in the plane such that greedy forwarding with the virtual coordinates guarantees delivery. In particular, we extract a planar triangulation of the sensor network with non-triangular faces as holes, and deform the network shape by using Ricci flow such that all the non-triangular faces are mapped to perfect circles. Thus greedy forwarding will never get stuck at an intermediate node. The computation of the conformal map and the virtual coordinates is performed at a preprocessing phase and can be implemented by local gossip-style computation.

This is joint work with Xianfeng David Gu, Feng Luo, Rik Sarkar, Xiaotian Yin, and Wei Zeng.

Friday, 26 March 2010
Lecture at 11:00 am
Coffee, tea, and refreshments from 10:30 am
Room 617, Wachman Building
Department of Mathematics