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Arvind Giridhar

Education

Currently enrolled as a Ph.D. student at the University of Illinois, Urbana-Champaign.
GPA: 3.95/4.0
Advisor: Prof. P.R. Kumar.

May 05 Master of Science in Mathematics;
University of Illinois, Urbana-Champaign.

Dec 02 Master of Science in Electrical and Computer Engineering;
University of Illinois, Urbana-Champaign.

May 00 Bachelor of Technology in Electrical Engineering;
Indian Institute of Technology (IIT), Bombay, India.
GPA : 8.63/10.00

Areas of interest

Sensor networks, wireless networks, wireless communication.

Research Work

Current Research

- Distributed Computation over Sensor Networks: Studying maximum rate of computing functions over single hop and multi hop sensor network topologies, as well as maximum delay for one shot reliable computation, with and without noise in the underlying communication links.
- Functional Lifetime of Sensor Networks: Characterization of optimal flow routing to maximize the functional lifetime, i.e., the number of communication task repetitions possible given energy constraints, in simple sensor network topologies. Results hold implications for structure of flow routing in more general settings.

Masters thesis: Scheduling automated traffic

Design and implementation of a guaranteed deadlock free algorithm for scheduling vehicular traffic, applied to a vehicular testbed in the IT Convergence Lab at UIUC.

Publications

- A. Giridhar and P.R. Kumar, “*Maximizing the Functional Lifetime of Sensor Networks*”, Information Processing in Sensor Networks (IPSN), 2005.
- A. Giridhar and P.R. Kumar, “*Computing and Communicating Statistics in Sensor Networks*”, ISIT-2004.
- A. Giridhar and P.R. Kumar, “*Computing and Communicating Functions of Measurements over Sensor Networks*”, IEEE Journal on Selected Areas in Communication, special issue on Sensor Networks, April 2005.
- A. Giridhar and P.R. Kumar, “*Scheduling automated traffic on a network of roads*”, accepted for publication in IEEE Transactions on Vehicular Technology. Downloadable at <http://www.decision.csl.uiuc.edu/~prkumar>.
- A. Giridhar and P.R. Kumar, “*Scheduling Algorithms for Automated Traffic*”, Conference on Decision and Control (CDC), 2004.

Selected Courses

ECE 434: Random Processes	ECE 463: Information Theory
ECE 361: Digital Communications	ECE 461: Signal Detection and Estimation
ECE 459: Communications 3: Wireless Communications	ECE 417: Adaptive Control
ECE 560: VLSI in DSP and Communications	ECE 459: Modelling of High-speed Networks
ECEE 467: Communication Network Analysis	ECE 390: Introduction to Optimization
ECE 480: Optimization by Vector Space Methods	ECE 415: Control Theory
ECE 455: Stochastic Control	MATH 441: Real Analysis
MATH 451: Probability 1	MATH 562: Probability 2
MATH 470: Combinatorics	MATH 312: Graph Theory

Awards

- Vodafone graduate fellowship, 2004-05.