

ASHISH AGARWAL

Electrical and Computer Engineering
Boston University
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Objective

Role that will leverage quantitative and analytical skills with a view towards application of computational expertise in creating solutions to business and engineering problems.

Education

- **PhD**, Electrical and Computer Engineering, Boston University, May 2010
Dissertation Title: GPA 4.0/4.0
Analytical Modeling of Delay-Tolerant Data Dissemination in Vehicular Networks
Vehicular networks are targeted to interconnect vehicles on the roadway to enable safety and *telematics* applications. We develop innovative techniques for data dissemination and demonstrate gains over traditional MANET techniques. Critical density threshold conditions are demonstrated based on percolation theory. The model is adapted to suit hybrid environments with fixed access point infrastructure and created the ability to select design parameters for optimal placement.
- **M.S.**, Computer Systems Engineering, Boston University 2007
- **B.E.**, Computer Engineering, Delhi Institute of Technology (*now NSIT*) 2003

Professional Experience

- **Research Assistant**, Multimedia Communications Lab, Boston University
 - Research on *directional communications in vehicular networks* 2009-2010
Developed models for nearest neighbor communication using Free-Space Optical (FSO) communication. Prepared a feasibility and use-case analysis.
 - Research on *delay tolerant communication in vehicular networks* 2006-2009
Developed analytical model for delay tolerant message propagation in vehicular networks. Results demonstrate critical density of phase transition based on percolation theory.
 - Research on *sensor networks* 2005-2006
Programmed and networked Intel PXA-255 based embedded Linux system to interact with sensor motes. Led a team project to study environments such as bat habitat and soil moisture due to cloud occlusion for inter-disciplinary NSF grant.
- **National Priority Setting NSF Workshops**, Participated in
 - NITRD Workshop on High Confidence Automotive Cyberphysical Systems April 2008
 - NITRD Workshop on High Confidence Transportation Cyberphysical Systems Nov. 2008
- **Presenter and Reviewer** 2005-Present
Chaired panel discussions and reviewed papers for international conferences and journals.
- **Technology Support**, Boston University School of Law, Boston, MA 2003-2004
Managed, configured and installed computer and audio-visual systems.
- **Summer Intern**, Engineering Support, Hughes Electronics, New Delhi, India 2002
Provided engineering support for Interactive Distance Education Program using VSAT
- **Summer Intern**, Software Engineering, Tata Infotech (now TCS), New Delhi, India 2001
Provided support for software projects in Java and Microsoft Foundation Classes.

Refereed Publications

- A. **Agarwal** and T.D.C. Little, "Role of Directional Wireless Communication in Vehicular Networks," in *Proc. Intelligent Vehicles Symposium (IV '10)*, San Diego, CA, June 2010.
- A. **Agarwal** and T.D.C. Little, "Impact of Asymmetric Traffic Densities on Delay Tolerant Vehicular Networks," *Proc. 1st IEEE Vehicular Networking Conference (VNC '09)*, Tokyo, Japan, October 2009.
- A. **Agarwal**, "PhD Forum: Routing Protocol and Performance Modeling in Delay Tolerant Vehicular Networks," *Proc. 17th IEEE Intl. Conf. on Networking Protocols (ICNP '09)*, Princeton, NJ, Oct. 2009.
- A. **Agarwal** and T.D.C. Little, "Access Point Placement in Vehicular Networking," in *Proc. IEEE Wireless Access for Vehicular Environments (WAVE '08)*, Troy, Michigan, December 2008.
- A. **Agarwal**, D. Starobinski, T.D.C. Little, "Analytical Model for Message Propagation in Vehicular Ad Hoc Networks," *Proc. IEEE Vehicular Technology Conf. (VTC-Spring '08)*, Singapore, May 2008.
- T.D.C. Little and A. **Agarwal**, "Connecting Vehicles to 'The Grid'," in *Proc. National Workshop on High Confidence Automotive Cyber-Physical Systems*, Detroit, MI, April 2008.
- A. **Agarwal**, D. Starobinski, T.D.C. Little, "Exploiting Downstream Mobility to Achieve Fast Upstream Message Propagation in Vehicular Ad Hoc Networks," in *Proc. Mobile Networking for Vehicular Environments 2007, (INFOCOM '07)*, Anchorage, AK, May 2007.
- A. **Agarwal** and T.D.C. Little, "Prospects of Networked Vehicles of the Future," (*Position Paper*) in *Real Time Embedded Systems & Applications Conference (RTAS '07)*, Bellevue, WA, April 2007.
- T.D.C. Little and A. **Agarwal**, "An Information Propagation Scheme for Vehicular Networks," in *Proc. of IEEE Intelligent Transportation Systems Conference (ITSC '05)*, Vienna, Austria, September 2005.

Book Chapter

- A. **Agarwal** and T.D.C. Little, "Opportunistic Networking in Delay Tolerant Vehicular Ad Hoc Networks," in *M. Watfa (Ed.) Advances in Vehicular Ad Hoc Networks: Developments and Challenges*, IGI Global, 2010.

Journal Publications

- A. **Agarwal** and T.D.C. Little, "Access Point Placement in Vehicular Networking," in *International Journal of Ultra Wide Band Communications*, March, 2010. (*under submission*)
- A. **Agarwal**, D. Starobinski and T.D.C. Little. "Phase Transition Behavior of Message Propagation Speed in Delay Tolerant Vehicular Networks," in *Special Issue of IEEE Transactions on Intelligent Transportation Systems: Exploiting Wireless Communication Technologies in Vehicular Transportation*, July 2009. (*under submission*)

Other Publications

- A. **Agarwal** and T.D.C. Little, "Evaluation of Nearest Neighbor Communication Using Free Space Optics," (Poster and Abstract) in *NSF Seminar on Smart Lighting - Lighting Innovation for a Smarter Tomorrow*, Boston, MA, February 2010.
- A. **Agarwal** and T.D.C. Little, "Exploiting Locality in Vehicular Networking: A Case for VLC," (Poster and Abstract) in *NSF Seminar on Smart Lighting - Lighting Innovation for a Smarter Lighting Communication*, Troy, NY, June 2009.
- T.D.C. Little, A. **Agarwal**, J. Tang, "Prototype Wireless Sensor Network for Ecological Study: REU Report," *MCL Technical Report TR-12-31-2005*, September 2005.
- T.D.C. Little and A. **Agarwal**, "A New Information Propagation Scheme for Vehicular Networks," (Abstract and Poster) in *Proc. 3rd Intl. Conf. on Mobile Systems, Applications and Services (Mobisys '05)*, Seattle, WA, June 2005.

Honors and Awards

Semi-finalist ICE (Ignite Clean-Energy Competition)	2009
Winner (2nd position) at the EDC (Entrepreneur Design Contest - Business plan competition)	2009
Graduate Teaching Fellowship, College of Engineering, Boston University.	2008
Research Assistantship, Multimedia Communications Lab, Boston University.	2005
Grant from College of Engineering for travel to ITSC '05, USENIX for travel to MobiSys '05.	2005
Graduate Teaching Fellowship, College of Engineering, Boston University.	2004
All India Certificate of Merit in Mathematics for scoring among top 0.1% candidates.	1997
Junior Science Talent Search Scholarship.	1996
“Most Innovative Design of a Recycled Product” Award	1995

Professional Activities

- Technical Program Committee (TPC) WEIA '09
- Reviewer for Journal of Selected Areas in Communications-Special Issue-Vehicular Communication Networks (JSAC '10), Transactions on Intelligent Transportation Systems (ITS), Vehicular Technology Conference (VTC '10), (VTC '09), (VTC '08), Wireless Access in Vehicular Environments (WAVE '09), (WAVE '08).
- Volunteer with American India Foundation (AIF - New England Young Professionals Chapter)
- Track Chair, BU Technology Entrepreneurship Night '08
- Sponsorship Committee, BU Technology Entrepreneurship Night ('08, '09), raised \$2000
- Events Organization Committee, TiE, Boston Chapter (The Indus Entrepreneurs)

Technical Competence

Operating Systems - Proficient in operating Windows, Linux and Mac OS X

Programming Languages - Python, Java, C, C++, C#, .Net

Packages - MATLAB, L^AT_EX, TinyOS, MySQL

Spoken Languages - English, Hindi, German

References

Prof. Thomas D.C. Little
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