

Gayathri Chandrasekaran

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SUMMARY	Seeking a challenging full-time position in wireless industry or research laboratory. Highly skilled and motivated professional with over 5 years of research experience	
EDUCATION	WINLAB, Rutgers University, NJ Ph.D., Computer Science	GPA: 3.9/4.0 Expected: May 2011
	WINLAB, Rutgers University, NJ M.S, Computer Science	GPA: 3.9/4.0 Sep 2006-Oct 2008
	Ohio State University, OH Graduate Student	GPA: 3.7/4.0 Sep 2004-May 2006
	Birla Institute of Tech. & Science (B.I.T.S), Pilani, INDIA M.Sc. (Tech) Information Systems	GPA: 9.5/10 Aug 2000-Jun 2004
EXPERIENCE	AT&T Research Labs, Florham Park, NJ <i>Research Intern</i> <ul style="list-style-type: none">Designed Algorithms for Vehicular Speed Estimation using GSM Signal StrengthEvaluated the performance of Algorithms using Real-Experimental traces	May 2009 – Sep 2009
	Nokia Research Centre(NRC), Palo Alto, CA <i>Research Intern</i> <ul style="list-style-type: none">Designed a Privacy Preserving Scalable Infrastructure for Mobile AdvertisingImplemented a LBS called “Virtual Posting” and ported the application to Mobile DeviceProposed caching of location based data at the wireless routers for scalability and privacy.	Jun 2007- Sep 2007
	WINLAB, Rutgers University, Piscataway, NJ <i>Research Assistant</i>	Sep 2006-Aug 2009
	Department of CSE, Ohio State University, Columbus OH <i>Graduate Student</i>	Sep 2004-Jun 2006
	Department of CS, Rutgers University, Piscataway, NJ <i>Teaching Assistant</i>	Sep 2009 – Present
	Department of CSE, Ohio State University, Columbus, OH <i>Teaching Assistant</i>	Sep 2005 - Jun 2006
	Dept. of CS, Indian Institute of Science (IISc.), Bangalore, India <i>JNCASR Summer Research Fellow</i>	May 2003 - July 2003
AWARDS & HONORS	University Fellowship at The Ohio State University	Sep 2004 - Aug 2005
	JNCASR Summer Research Fellowship (one among the top 120 students selected by Indian Institute of Science)	May 2003 – Aug 2003

Merit Scholarship

Aug 2000 - Jun 2001

(Birla Institute of Technology & Science for maintaining a GPA of 10/10)

Certificate of Merit

May 2000

(In All India Senior Secondary Certificate Examination for Topping chemistry)

PUBLICATIONS

Conferences

1. *Derivative Time Warping Algorithm for Vehicular Speed Tracking*
Gayathri Chandrasekaran, Tam Vu, Alexander Varshavsky, Marco Gruteser, Rich Martin, Jie Yang, Yingying Chen
Under Submission for Percom 2011
2. *Vehicular Speed Estimation using GSM Signal Strength*
Gayathri Chandrasekaran, Tam Vu, Alexander Varshavsky, Marco Gruteser, Rich Martin, Jie Yang, Yingying Chen,
Proceedings of ACM International Conference on Ubiquitous Computing(UBICOMP), Sep 2010 [AR: 19%]
3. *Detecting Identity Spoofs in 802.11e Wireless Networks*
Gayathri Chandrasekaran, John-Austen Deymious, Vinod Ganapathy, Wade Trappe, Marco Gruteser,
IEEE GLOBECOM, December 2009 [AR: 34%]
4. *Empirical Evaluation of the Limits on Localization Using Signal Strength: Beyond Cramér-Rao Bounds*
Gayathri Chandrasekaran, Mesut Ergin, Jie Yang, Song Liu, Yingying Chen, Marco Gruteser, Rich Martin
IEEE SECON 2009, June 2009 [AR: 19%]
5. *DECODE : Detecting Co-Moving Wireless Devices*
Gayathri Chandrasekaran, Mesut Ergin, Marco Gruteser, Rich Martin, Jie Yang, Yingying Chen
IEEE MASS, Sep 2008 (short paper) [AR: 20%]
6. *HIMAC: High Throughput MAC Layer Multicasting in Wireless Networks*
Ai Chen, Gayathri Chandrasekaran, Dongwook Lee, and Prasun Sinha
IEEE MASS, Oct. 2006.

Journals

7. *DECODE : Exploiting Shadow Fading to Detect Co-Moving Wireless Devices*
Gayathri Chandrasekaran, Mesut Ergin, Marco Gruteser, Rich Martin, Jie Yang, Yingying Chen
IEEE Transactions on Mobile Computing (TMC), Dec 2009, vol. 8 no. 12 (Extended Version of Mass 2008 Paper)
8. *High Throughput MAC Layer Multicasting over Time-Varying Channels*
Ai Chen, Gayathri Chandrasekaran, Dongwook Lee, and Prasun Sinha
Elsevier Computer Communications (COMCOM) , Volume 32, Number 1, pp 94-104, Jan. 2009 (Extended Version of MASS 2006 paper)

9. *GRAIL: A General Purpose Localization System*, Yingying Chen, Gayathri Chandrasekaran, Eiman Elnahrawy, John-Austen Francisco, Konstantinos Kleisouris, Xiaoyan Li, Richard P. Martin, Robert S. Moore, Begumhan Turgut, Sensor Review, special edition, Localization Systems, Vol. 28, No. 2, pp.115-124, 2008.
10. *Association Management for Data Dissemination over Wireless Mesh Networks* Dongwook Lee, Gayathri Chandrasekaran, Mukundan Sridharan and Prasun Sinha Elsevier Computer Networks, 2007

Workshops & Symposium

11. *Bootstrapping a Location Service Through Geocoded Postal Addresses* Gayathri Chandrasekaran, Mesut Ergin, Marco Gruteser, Rich Martin, 3rd Intl. Symposium on Location- and Context-Awareness (LoCA, held with UbiComp), Sep. 2007 [AR: 31%]
12. *Optimizing Broadcast Load in Mesh Networks using Dual Association* Dongwook Lee, Gayathri Chandrasekaran, and Prasun Sinha *Invited Paper, In Proc. of WiMESH (IEEE Workshop on Wireless Mesh Networks)*, Sep. 2005

SKILLS

Programming languages: C, C++, Perl, Python, Shell scripting, JAVA, J2EE, J2ME
Tools: MATLAB, Wireshark, network and OS tools on UNIX/LINUX

TEACHING EXPERIENCE

Computer Assisted Problem Solving for Business. **Sep 2005 - Jun 2006**
 Graded exam & homework problems, conducted recitation and lab sessions and held regular office hours.

Software Methodology **Sep 2009-Dec 2009**
 Graded exam & homework problems and held regular office hours

Computer Architecture **Jan 2010-May 2010**
 Graded exam & homework problems, conducted recitation/tutorial classes and held regular office hours

Computer Security **Sep 2010 - Present**
 Graded exam & homework problems, conducted recitations and held regular office hours

TALKS

Vehicular Speed Estimation Using GSM Signal Strength from Mobile Phones
 12th ACM International Conference on Ubiquitous Computing (UBICOMP 2010), Copenhagen, Denmark

DECODE: Detecting Co-Moving Wireless Devices
 Fifth IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2008), Atlanta, GA

DECODE : Exploiting Shadow Fading to Detect Co-Moving Wireless Devices
 WINLAB, Industrial Advisory Board Meeting, June 2008.

Detecting Identity spoofs in 802.11e Wireless Networks

Rutgers University/University of Helsinki Ph.D. Student Workshop on Spontaneous Networking 2008

POSTERS

Vehicular Speed Estimation using GSM Signal Strength from Mobile Phones

WINLAB 20th celebrations and Industrial Advisory Board Meeting

An Internet-wide Location Service: Design, Bootstrapping, and Data Fusion

Pervasive Computing Workshop, Oct 2006, Rutgers University, NJ

GRADUATE
RESEARCH
EXPERIENCE

Acoustic Localization of Mobile phones in Car for Driver Safety Applications

This project aims at improving the driver safety by appropriately allowing or denying calls to the driver's mobile phone. The mobile phones equipped with microphones, calibrates its location within the car to determine if it is held by the driver or the passenger and accordingly enforces call policies. The technique that we propose makes use of human in-audible acoustic signals from the car's speakers to calibrate the location of the mobile phone.

Vehicular Speed Estimation Using Received Signal Strength from Mobile Phones

This project focuses on estimating vehicular speeds with high accuracy at the base station using the mobile phones in vehicles without the explicit participation from the drivers. The work is founded on the principles that RSS from Mobile phones on the GSM network are stable over time and variable over space. We apply classic dynamic programming techniques to estimate vehicular speeds with very high accuracy.

RIDE: Reliable Identity Spoof Detection and Elimination

Wireless Networks are vulnerable to a variety of identity spoof attacks where an attacker can forge the MAC address of his wireless device to assume the identity of a legitimate user. In this work, we propose mechanisms to detect MAC address spoofing using a combination of tamper proof metrics that rely on physical layer parameters such as RSSI and MAC layer information such as the IEEE 802.11 MAC Sequence number.

Empirical Evaluation of the Limits on Localization Using Signal Strength

Wi-Fi Localization has reached a point where the accuracy limitations have to be overcome to realize its real potential in several of the ubiquitous computing applications. However, it is not clear what factors innately limit the localization accuracies to greater than 1ft as reported by several of the recent research. To understand this better, we experimentally analyze the different limiting factors in the presence of a high density wireless AP deployment. We also show that the experimentally achievable lower bounds are better than the Cramer Rao Lower Bound(CRLB) invalidating the typical assumptions behind CRLB in the real experimental environment.

DECODE: Detecting Co-Moving Wireless Devices

With the proliferation of 802.11b/g Wireless Devices, it is very common to have more than one wireless transmitter in close proximity. DECODE detects such transmitters that move together (Co-moving transmitters) by identifying correlations in communication signal strength due to shadow fading. It requires no changes in or cooperation from the tracked devices other than sporadic transmission of packets and can be detected from just a single receiver. Co-movement information can find use in applications ranging from inventory tracking, to social network

sensing, and to optimizing mobile device localization.

Bootstrapping Location Service using Geocoded postal address

Typical Wi-Fi based Outdoor Positioning systems require a process called War-Driving to build the database containing the locations of the wireless access points. In this work, we analyze the feasibility of bootstrapping a location service through geocoded postal addresses instead of war-driving. Our results show similar accuracy for geocoding in comparison to typical wardriving studies, with significantly reduced effort if postal addresses of access point positions are known.

Optimizing Broadcast Load in Mesh Networks using Dual Association

This project aimed at optimizing the broadcast traffic load in a mesh network. Traditionally, association is based on the strongest signal strength. In this project, we examine the concept of multi-association, where the client chooses the access point for broadcast traffic and unicast traffic independently by exploiting multiple coverage that are typical in mesh networks. We proposed a novel metric called normalized-cost that is advertised in the beacons from APs. We showed that greedily associating with the AP advertising the least cost can reduce the broadcast traffic load significantly in the network. We also evaluated the association algorithm using real-experiments with the sensor nodes from the Kansei testbed <http://ceti.cse.ohio-state.edu/kansei/>.

**PROFESSIONAL
SERVICE**

Peer reviewer for Pervasive 2008, ACM Mobisys 2009, ACM HotMobile 2009, IEEE Transactions on Information and Systems Security, IEEE Transactions on Mobile Computing, IEEE Communication Letters

Joint Coordinator for APOGEE-2003 (A technical festival), B.I.T.S Pilani, India

MISCELLANEOUS

Country of Citizenship : INDIA
VISA Status in US : Permanent Resident