Gayathri Chandrasekaran

Phone: 616-635-8303  
Email: [chandrga@cs.rutgers.edu](mailto:chandrga@cs.rutgers.edu)  
www.winlab.rutgers.edu/~chandrga

WINLAB, Rutgers University  
New Jersey Technology Center  
671 Route 1 South  
North Brunswick, NJ 08902

SUMMARY Seeking a challenging full-time R&D position in wireless industry or research laboratory. Highly skilled and motivated professional with over 5 years of research experience

EDUCATION **WINLAB, Rutgers University, NJ** GPA: 3.9/4.0  
Ph.D., Computer Science Expected: May 2011  
  
**WINLAB, Rutgers University, NJ** GPA: 3.9/4.0   
M.S, Computer Science Sep 2006-Oct 2008

**Ohio State University, OH** GPA: 3.7/4.0  
Graduate Student Sep 2004-May 2006  
  
**Birla Institute of Tech. & Science (B.I.T.S), Pilani, INDIA** GPA: 9.5/10  
M.Sc. (Tech) Information Systems Aug 2000-Jun 2004

EXPERIENCE **AT&T Research Labs**, Florham Park, NJ **May 2009 – Sep 2009***Research Intern*

* Designed Algorithms for Vehicular Speed Estimation using GSM Signal Strength
* Evaluated the performance of Algorithms using Real-Experimental traces

**Nokia Research Centre(NRC),** Palo Alto, CA **Jun 2007- Sep 2007**

*Research Intern*

* Designed a Privacy Preserving Scalable Infrastructure for Mobile Advertising
* Implemented a LBS called “Virtual Posting” and ported the application to Mobile Device
* Proposed caching of location based data at the wireless routers for scalability and privacy.

**WINLAB, Rutgers University,** Piscataway, NJ **Sep 2006-Aug 2009**

*Research Assistant*

**Department of CSE, Ohio State University,** Columbus OH **Sep 2004-Jun 2006**

*Graduate Student*

**Department of CS, Rutgers University**, Piscataway, NJ **Sep 2009 – Present***Teaching Assistant***Department of CSE, Ohio State University,** Columbus, OH **Sep 2005 - Jun 2006***Teaching Assistant***Dept. of CS, Indian Institute of Science (IISc.)**, Bangalore, India**May 2003 - July 2003***JNCASR Summer Research Fellow*

AWARDS & ***University Fellowship*** at The Ohio State University **Sep 2004 - Aug 2005**HONORS  
 ***JNCASR Summer Research Fellowship*** **May 2003 – Aug 2003** (one among the top 120 students selected by Indian Institute of Science)   
 ***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%]

* + - 1. *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%]

* + - 1. *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%]

* + - 1. *HIMAC: High Throughput MAC Layer Multicasting in Wireless Networks*

Ai Chen, Gayathri Chandrasekaran, Dongwook Lee, and Prasun Sinha   
IEEE MASS*,* Oct. 2006.

**Journals**

* + - 1. *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, Dec 2009, vol. 8 no. 12 (Extended Version of Mass 2008 Paper)

* + - 1. *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)

* + - 1. *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.
      2. *Association Management for Data Dissemination over Wireless Mesh Networks*

Dongwook Lee, Gayathri Chandrasekaran, Mukundan Sridharan and Prasun Sinha   
Elsevier Computer Networks, 2007

**Workshops & Symposium**

* + - 1. *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%]
      2. *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, PHP, J2EE, J2ME

**Tools**: MATLAB, Wireshark, network and OS tools on UNIX/LINUX

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

***Software Methodology*** Sep 2009-Dec 2009Graded 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  
 Grade exam & homework problems, conduct recitations and hold 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 BoardMeeting

*An Internet-wide Location Service: Design, Bootstrapping, and Data Fusion* Pervasive Computing Workshop, Oct 2006, Rutgers University, NJ

GRADUATE ***Acoustic Localization of Mobile phones in Car for Driver Safety Applications***RESEARCH This project aims at improving the driver safety by appropriately allowing or denying   
EXPERIENCE 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.

***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 boostrapping 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 signif- icantly 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 Peer reviewer for Pervasive 2008, ACM Mobisys 2009, ACM HotMobile 2009, IEEE SERVICE 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