Hong Lu

CONTACT INFORMATION

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RESEARCH INTERESTS

Areas: mobile sensing, ubiquitous computing, context awareness, applied machine learning, and social computing.

I am an experimental computer scientist working on developing human-centric sensing systems and machine learning techniques that can reason about human behaviors, social interactions, and context in everyday environments. My recent research focuses on developing mobile sensing and inference systems for smart phones, which allow the phone to observe, understand, and retrieve human behavioral information from sensor data collected from individuals or crowdsourced from social networks. As part of my research, I create mobile applications that sense, inform and influence people, for example, about their health and well-being.

EDUCATION

Ph.D., Computer Science, **Dartmouth College** Sep. 2006 - May. 2012
Hanover NH, USA
- Advisor: Prof. Andrew T. Campbell and Prof. Tanzeem Choudhury
- Thesis: Smartphone Sensing and Inference of Human Behavior and Context

M.S., Computer Science, **Tianjin Unviersity** Sep.2003 - Jun. 2006
Tianjin, China
- Advisor: Prof. Changming Ren
- Thesis: An Enhanced Weighted Clustering Algorithm for Mobile Ad Hoc Networks

B.S., Computer Science, **Tianjin Unviersity** Sep. 1999 - Jun. 2003
Tianjin, China
- Advisor: Prof. Pilian He

PROFESSIONAL EXPERIENCE

Research Scientist May. 2012 - present
Intel Labs, Santa Clara, CA
Manager: Lama Nachman
My research is currently focused on mobile sensing and pushing AI to mobile devices and the cloud to make inferences about people's behavior, context, social interactions, and life routines. I am interested in using smartphones to develop a rich and deep understanding of people's everyday life and create mobile technologies for better user experience.

Research Intern Jun. 2010 - Sep. 2010
Microsoft Research, Redmond WA
Mentor: A.J. Brush and Bodhi Priyantha

Research Intern Oct. 2009 - Dec. 2009
Nokia Research Center, Palo Alto, CA
Supervisor: Zhigang Liu

Research Intern Jun. 2009 - Sep. 2009
Nokia Research Center, Palo Alto, CA
Supervisor: Zhigang Liu

Research Assisant Jun. 2007 - May. 2012
Smartphone Sensing Group, Computer Science Department
Dartmouth College, Hanover, NH

Teaching Assisant Sep. 2006 - Jun. 2007
Computer Science Department
Dartmouth College, Hanover, NH

BOOK CHAPTER

Jun Yang, **Hong Lu**, Zhigang Liu and Pter Pl Boda, *Physical Activity Recognition with Mobile Phones: Challenges, Methods, and Applications*, Multimedia Interaction and Intelligent User Interfaces Advances in Pattern Recognition, 2010, 185-213.

SELECTED PUBLICATIONS

My h-index is 18 and I have over 2000 citations, according to Google Scholar. For a complete list of my publications, please visit my google scholar page.

Nicholas D Lane, Mu Lin, Mashfiqui Mohammod, Xiaochao Yang, **Hong Lu**, Giuseppe Cardone, Shahid Ali, Afsaneh Doryab, Ethan Berke, Andrew T Campbell, Tanzeem Choudhury, *BeWell: Sensing Sleep, Physical Activities and Social Interactions to Promote Wellbeing*, Mobile Networks and Applications, Pages 1-15, 2014

Ye Xu, Mu Lin, **Hong Lu**, Giuseppe Cardone, Nicholas Lane, Zhenyu Chen, Andrew Campbell, Tanzeem Choudhury, *Preference, context and communities: a multi-faceted approach to predicting smartphone app usage patterns*, Proceedings of the 17th annual international symposium on International symposium on wearable computers(ISWC 2013), Sept. 2013.

Nicholas Lane, Ye Xu, **Hong Lu**, Shaohan Hu, Tanzeem Choudhury, Andrew Campbell, and Feng Zhao. *Community Similarity Networks.* The Journal of Personal and Ubiquitous Computing.

Hong Lu, Mashfiqui Rabbi, Gokul T. Chittaranjan, Denise Frauendorfer, Marianne Schmid Mast, Andrew T. Campbell, Daniel Gatica-Perez, Tanzeem Choudhury, *StressSense: Detecting Stress in Unconstrained Acoustic Environments using Smartphones* , 13th International Conference on Ubiquitous Computing (Ubicomp 2012).

Xiaochao Yang, Chuang-Wen You, **Hong Lu**, Mu Lin, Nicholas D. Lane, and Andrew T. Campbell, The Visage Face Interpretation Engine for Mobile Phone Applications, Fourth International Conference on Mobile Computing, Applications and Service (MobiCase), October 2012 [**Best Paper Award**].

Mu Lin, Nicholas D. Lane, Mashfiqui Mohammod, Xiaochao Yang, **Hong Lu**, Giuseppe Cardone, Shahid Ali, Afsaneh Doryab, Ethan Berke, Andrew T. Campbell, Tanzeem Choudhury, BeWell+: Multi-dimensional Wellbeing Monitoring with Community-guided User Feedback and Energy Optimization, Wireless Health 2012

Hong Lu, A.J. Brush, Bodhi Priyantha, Amy Karlson, Jie Liu, *Energy Efficient Unobtrusive Speaker Identification on Mobile Phones.* Proc. of the Ninth International Conference on Pervasive Computing (Pervasive 2011) [**Best Paper Nominee**].

Nicholas D. Lane, Ye Xu , **Hong Lu** , Shaohan Hu, Tanzeem Choudhury and Andrew T. Campbell, Enabling Large-scale Human Activity Inference on Smartphones using Community Similarity Networks (CSN), 13th International Conference on Ubiquitous Computing (Ubicomp 2011) [**Best Paper Nominee**].

Hong Lu, Jun Yang, Zhigang Liu, Nicholas D. Lane, Tanzeem Choudhury, Andrew T. Campbell, *The Jigsaw Continuous Sensing Engine for Mobile Phone Applications.* Proc. of 8th ACM Conference on Embedded Networked Sensor Systems (SenSys 2010).

Andrew T. Campbell, Tanzeem Choudhury, Shaohan Hu, **Hong Lu**, Matthew K. Mukerjee, Mashqui Rabbi, and Rajeev D. S. Raizada, *NeuroPhone: Brain-Mobile Phone Interface using a Wireless EEG Headset.* Proc. of The Second ACM SIGCOMM Workshop on Networking, Systems, and Applications on Mobile Handhelds (MobiHeld'10).

Daniel Peebles, **Hong Lu**, Nicholas D. Lane, Tanzeem Choudhury, Andrew Campbell, *Community-Guided Learning: Exploiting Mobile Sensor Users to Model Human Behavior.* Proc. of 24th AAAI Conference on Artificial Intelligence (AAAI '10).

Hong Lu, Nicholas D. Lane, Shane B. Eisenman and Andrew T. Campbell, *Bubble-sensing: Binding sensing tasks to the physical world*, Journal of Pervasive and Mobile Computing.

Hong Lu, Wei Pan, Nicholas Lane, Andrew Campbell, Tanzeem Choudhury, *SoundSense: Scalable Sound Sensing for People-Centric Applications on Mobile Phones*. Proc. of the 7th international conference on Mobile systems, applications, and services(Mobisys 2009).

Emiliano Miluzzo, Nicholas D. Lane, Kristof Fodor, Ronald Peterson, **Hong Lu**, Mirco Musolesi, Shane B. Eisenman, Xiao Zheng, Andrew T. Campbell, *Sensing Meets Mobile Social Networks: The Design, Implementation and Evaluation of the CenceMe Application*, Proc. of Seventh ACM Conference on Embedded Network Sensor Systems (Sensys 2008).

Nicholas D. Lane, **Hong Lu**, Shane B. Eiseman and Andrew T. Campbell, *Cooperative Techniques Supporting Sensor-based People-centric Inferencing*, Proc. of Pervasive 2008.

Hong Lu, Xuemei Sun, Changming Ren, *EWCA: An Enhanced Weighted Clustering Algorithm for Mobile Ad Hoc Networks*, Proc. of ICWN 2005, June 2005.

Professional Activities

A. Committee Activities

- Posters and Demos Co-Chair of The 12th International Conference on Mobile Systems, Applications, and Services (MobiSys 2014), Bretton Woods, NH, USA.
- Technical program committee (TPC) member of The International Workshop on Distributed Mobile Systems & Services (DMSS 2014), Madeira, Portugal.
- Technical program committee (TPC) member of 5th International Conference on Sensor Systems and Software (S-cube 2014), Warwick, Great Britain.
- Program committee (TPC) member of The 12th IEEE International Conference on Embedded and Ubiquitous Computing (EUC 2014), Milan, Italy.
- Technical program committee (TPC) member of 10th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2013), Hangzhou, China.
- Program committee (PC) Members of Nokia Mobile Data Challenge (MDC) 2012, Newcastle, UK.
- Technical program committee (TPC) member of MobiSense, in conjunction with Pervasive 2011, San Francisco, USA.

B. Reviewing Activities

- **Reviewer for journals**: ACM Transactions on Intelligent Systems and Technology (ACM TIST), ACM Transactions on Sensor Networks, IEEE Transactions on Mobile Computing, IEEE Communications Magazine, IEEE Sensors, IEEE Internet Computing Magazine, Pervasive and Mobile Computing, Ad Hoc Networks, MDPI Sensors, Distributed and Parallel Databases, International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC).

- **Reviewer for conferences**: International Conference on Ubiquitous (Ubicomp), International Conference on Pervasive Computing (Pervasive), ACM Conference on Human Factors in Computing Systems (CHI), International Symposium on Wearable Computers (ISWC), ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), IEEE International Conference on Sensing, Communication, and Networking (SECON), International Conference on Mobile and Ubiquitous Multimedia (MUM), The IEEE Pervasive Computing and Communication Conference (PerCom), International Conference on Mobile Computing, Applications and Services (MobiCASE), ACM Symposium on Applied Computing (RACS), IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS), AMIA (the American Medical Informatics Association) Annual Symposium, International Workshop on Emerging Mobile Sensing Technologies, Systems, and Applications (MobiSense).

Selected News and Press

- Smartphone that feels your strain, New Scientist, August 2012.
- Voice-Stress Software Is Put to the Test, PhysOrg and ACM Tech, August 2012.
- Neural Phone is featured in The Cyborg in us all, the NYTimes Magazine, September 2011.
- Nokia toys with context-aware smartphone settings switch, Jigsaw provides better context for apps like this, `Engadget`, Nov 2010.
- Smartphone app monitors your every move, `NewScientist`, 26 November 2010.
- Mobile Phone Mind Control, `TechnologyReview`, March, 2010.
- Cell phones that listen and learn, `TechnologyReview`, June, 2009.
- Cell Phones That Learn the Sounds of Your Life, `Slashdot`, July, 2009.

Expertise

Programming Language: C, JAVA, MATLAB.

Environments: Eclipse, Xcode, VI/GCC.

Operating Systems: Linux, Windows, iOS, Nokia Maemo, Android.