Hong Lu

CONTACT
INFORMATION

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https://hong-lu-cv.github.io/

RESEARCH
INTERESTS

Areas: machine learning, ubiquitous computing, sensing system, context awareness.

I am a principal research scientist in Intel Labs working on developing machine learning techniques and sensing systems that collect and reason about complex multimodal data. With 10+ years of experience, I specialize in AI/ML for human behavior modeling, context understanding, and high volume manufacturing. As part of my research, I create mobile systems that sense, inform, assist, and influence people. My expertise extends to building machine learning pipelines and optimizing models for resource-constrained platforms. My work has been productized in various Intel commercial products and deployed in Intel manufacturing facilities. I published my research findings in top-tier pervasive computing and machine learning conferences. My h-index is 30 and I have over 11110 citations, according to Google Scholar.

EDUCATION

Ph.D., Computer Science, **Dartmouth College** Sep 2006 - May 2012
Hanover NH, USA
- Thesis: Smartphone Sensing and Inference of Human Behavior and Context

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

B.S., Computer Science, **Tianjin University** Sep 1999 - Jun 2003
Tianjin, China

PROFESSIONAL
EXPERIENCE

Research Scientist May 2012 - present
Intel Labs, Santa Clara, CA

I am leading research on pushing AI to mobile devices, cloud, and Intel's manufacturing process. I develop innovative systems to collect and analyze complex multimodal data with applications ranging from low-power mobile devices to sophisticated industrial manufacturing environments. I built ML stack to make inferences about human activities, context, social interactions, and life routines on Intel Integrated Sensor Hub. These systems provide a rich understanding of people's lives and create technologies for better user experience. I also deployed ML systems to see through large volume of manufacturing data to improve Intel manufacturing efficiency and product quality.

Research Intern Jun 2010 - Sep 2010
Microsoft Research, Redmond WA
I studied continuous audio sensing and speaker identification on heterogeneous multi-processor smartphone architecture. I implemented an innovative prototype on HTC HD2 smartphone with an attached LittleRock sensor hub, demonstrating the potential for significant power savings and always-on sensing capabilities. One patent was filed and the SpeakerSense paper was accepted by Pervasive 2011 (Best Paper Nominee).

Research Intern Jun 2009 - Dec 2009
Nokia Research Center, Palo Alto, CA
I designed and implemented Jigsaw, a robust context/activity recognition engine for smartphones using the on-board accelerometer, microphone and GPS sensors. Three IPs and one patent were filed and the Jigsaw paper was accepted by SenSys 2010.

PUBLICATIONS I have over 50 publications, over 11,110 citations, and my h-index is 30. For a complete list of my patents and publications, please visit my Google Scholar page.

SELECTED PROFESSIONAL ACTIVITIES

- Associate Editor of ACM, Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Journal.
- Industrial Relationship Chair of UbiComp 2021.
- Registrations Chair of MobiSys 2017.
- Program committee (TPC) member of IPSN 2017.
- Program committee (PC) member of UbiComp 2015.
- Posters and Demos Chair of MobiSys 2014.

SELECTED AWARDS AND PRESS

○ StressSense won the 2022 ACM UbiComp 10-year impact award, for "By convincingly showing how smartphone microphones could be used to unobtrusively recognize stress from the user's voice, this work paved the way for other numerous efforts in the area of stress detection from sensory data, a topic that, 10 years later, is still very relevant for both academia and industry".

○ CenceMe received the 2019 ACM SIGMOBILE Test of Time Award for "inspiring a huge body of research and commercial endeavors that has continued to increase the breadth and depth of mobile sensing".

○ CenceMe recognized for "pioneering machine learning across mobile phones and servers" with the 2018 ACM SenSys Test of Time Award.

○ Your phone can recognize you by the way you walk, VBNews, September 2013.

○ Smartphone that feels your strain, NewScientist, August 2012.

○ Voice-Stress Software Is Put to the Test, PhysOrgandACMTech, August 2012.

○ The Cyborg in us all, theNYTimesMagazine, 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 Languages: Python, Java, MATLAB, C.

Frameworks & Libraries: PyTorch, Scikit-learn, NumPy, Pandas.

Operating Systems: Linux, Android.