

Ben Zhang

SOFTWARE ENGINEER AT GOOGLE

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Education

University of California, Berkeley

Berkeley

PH.D. IN COMPUTER SCIENCE

Aug. 2012 – August, 2018

- Thesis Title: Adapting Swarm Applications: A Systematic and Quantitative Approach
- Thesis Advisor: Prof. Edward A. Lee
- GPA: 3.9/4.0. Expected to graduate: Summer 2018.

Tsinghua University

Beijing

B.S. IN ELECTRONIC ENGINEERING

Aug. 2008 – July, 2012

- Major GPA: 93.2/100, Cumulative GPA: 91.3/100, top 10%.
- Admitted as top 10 in Shaanxi Province (of 410,000 students).

Chinese University of Hong Kong

Hong Kong

EXCHANGE STUDENT IN ELECTRONIC ENGINEERING

Aug. 2010 – Dec. 2010

- GPA: 3.95/4.0.

Work Experience

Google, Network Infrastructure

Sunnyvale

SOFTWARE ENGINEER

From Aug. 2018

U.C. Berkeley, TerraSwarm Research Center

Berkeley

GRADUATE STUDENT RESEARCHER, ADVISED BY PROF. EDWARD A. LEE

Aug. 2012 – Jul. 2018

System research for mobile and Internet of Things (IoT) applications (see research projects for details).

Google Research

Mountain View

SOFTWARE ENGINEER INTERN, HOSTED BY DR. ROY WANT, DR. BILL SCHILIT

Jun. 2015 – Aug. 2015

An exploration of using Android and Bluetooth LE to implement a wireless-sensor Data Mule system.

Google, Search Infrastructure

Mountain View

SOFTWARE ENGINEER INTERN, HOSTED BY DR. LIANG JIN

May. 2014 – Aug. 2014

Optimized wide-area crawling scheduling. Designed and implemented a global DNS sharding system based on target locality rather than hash partition. The system runs in production and has effectively reduced 99-percentile latency and cross-datacenter traffic.

Microsoft Research Asia (MSRA)

Beijing

RESEARCH INTERN, MENTORED BY DR. XIAOFAN FRED JIANG

May. 2011 – Mar. 2012

- **LiveSynergy.** Evaluated various technologies (802.15.4, Bluetooth Low Energy, and RFID) on metrics like boundary sharpness, consistency, range, power consumption for indoor localization. Led the design and implementation of a magnetic-based proximity detection hardware platform.
- **SEPTIMU.** Designed the hardware platform (1cm by 1cm) which integrates 3-axis accelerometer, gyroscope, thermometer, photo-diode and microphone.

Research Projects

- AWStream** AWStream is a stream processing system for wide-area streaming analytics. It integrates application adaptation as a first-class programming abstraction and automatically learns an accurate profile that models accuracy and bandwidth trade-off. Using the profile, the runtime system simultaneously achieves low latency and high accuracy.
- ESP** Example-based Sensor Prediction (ESP) system leverages expert-authored machine learning pipelines to drive an auto-generated interface that allows machine-learning novices to modify and adapt the pipelines for use in their own projects. ESP allows novices to visualize pipeline performance; manage training data; and configure pipeline parameters.
- GDP** Global Data Plane (GDP) is a data-centric abstraction focused around the distribution, preservation, and protection of information. It offers the same application model as the cloud but better matches the needs and characteristics of the IoT by utilizing heterogeneous computing platforms, such as small gateway devices, moderately powerful nodes in the environment and the cloud, in a distributed manner.
- HOBS** Head Orientation-Based Selection (HOBS) is a novel technique for interacting with smart devices at a distance. We augment a commercial wearable device, Google Glass, with an infrared (IR) emitter to select targets equipped with IR receivers, achieving “what you see is what you can control.”

Selected Publications

- **Ben Zhang**, Xin Jin, Sylvia Ratnasamy, John Wawrzynek, Edward A. Lee, “AWStream: Adaptive Wide-Area Streaming Analytics,” in SIGCOMM’2018. (acceptance rate: 18%)
- David A. Mellis, **Ben Zhang**, Audrey Leung, Björn Hartmann, “Machine Learning for Makers: Interactive Sensor Data Classification Based on Augmented Code Examples,” in Designing Interactive Systems (DIS’2017). (**Honorable Mention Award**, acceptance rate: 24%)
- **Ben Zhang**, Nitesh Mor, John Kolb, Douglas S. Chan, Nikhil Goyal, Ken Lutz, Eric Allman, John Wawrzynek, Edward A. Lee, and John Kubiawicz, “The Cloud is Not Enough: Saving IoT from the Cloud,” in HotCloud 2015. (acceptance rate: 30%)
- **Ben Zhang**, Yu-Hsiang Chen, Claire Tuna, Achal Dave, Yang Li, Edward A. Lee and Björn Hartmann, “HOBS: Head Orientation-Based Selection in Physical Spaces,” in Spatial User Interaction (SUI’14). (acceptance rate: 30%)
- Shahriar Nirjon, Robert F. Dickerson, Qiang Li, Philip Asare, John A. Stankovic, Dezhi Hong, **Ben Zhang**, Xiaofan Jiang, Guobin Shen, and Feng Zhao, “MusicalHeart: A hearty way of listening to music,” In SenSys 2012. (acceptance rate: 19%)
- **Ben Zhang**, Kaifei Chen, Yun Cheng, Chieh-Jan Mike Liang, Xiaofan Jiang, and Feng Zhao, “Location-log: Bringing Online Shopping Benefits to the Physical World with Magnetic-based Proximity Detection,” in Mobile Sensing 2012.
- Xiaofan Jiang, Chieh-Jan Mike Liang, Kaifei Chen, **Ben Zhang**, Jeff Hsu, Bin Cao, Jie Liu, and Feng Zhao, “Design and Evaluation of a Wireless Magnetic-based Proximity Detection Platform for Indoor Applications,” in IPSN 2012. (acceptance rate: 15%)
- Xiaofan Jiang, Chieh-Jan Mike Liang, Kaifei Chen, **Ben Zhang**, Jeff Hsu, Jie Liu, Feng Zhao, “Demo: Creating Interactive Virtual Zones in Physical Space with Magnetic-Induction,” in SenSys 2011. (**Best Demo Award**)

Teaching

- 2018 **CS 61C**, Great Ideas in Computer Architecture (Machine Structures)
Instructors: Dr. Nicholas Weaver, Prof. John Wawrzynek
- 2014 **EECS 149/249A**, Introduction to Embedded Systems
Instructors: Prof. Edward A. Lee, Prof. Alberto Sangiovanni-Vincentelli
- 2014 **CS 294-84**, Interactive Device Design
Instructors: Prof. Björn Hartmann, Prof. Paul Wright

Service

- 2018 **Faculty Liaison**, Computer Science Graduate Student Association (CSGSA)
- 2018 **Member**, EECS Peers
- 2018 **Reviewer**, CHI Late Breaking Work
- 2017 **TPC**, Workshop on Smart and Connected Indoor Environments
- 2016 **TPC**, SenSys Demo/Poster
- 2016 **TPC**, IPSN Demo/Poster
- 2015 **Inventioneer and Super User**, CITRIS Invention Lab

Skills

Programming	Rust, C/C++, Go, Python, R, Javascript, \LaTeX , Java, Erlang, Matlab, Bash
Platforms & Framework	Amazon AWS, OpenCV, GStreamer, DASH, HLS, Ptolemy, TensorFlow, OpenFrameworks
Networking & OS	TCP/IP, OSI stack, CDN, DNS, HTTP(S), Ubuntu Linux, OS X
Languages	Chinese (native), English (professional)

References

Available upon request.