

Ben Zhang

Curriculum Vitae

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Research Interests

Embedded Systems, Wireless and Mobile Systems, Sensor Networks, Cyber-Physical System

Education

Tsinghua University, Beijing, China

Aug 2008 - Jul 2012

Bachelor of Engineering in Electronic Engineering

- Major GPA: 93.2/100, Cumulative GPA 91.3/100, top 10%
- Admitted as top 10 students in Shaanxi Province among more than 410,000 students

Chinese University of Hong Kong, Hong Kong, China

Sept 2010 - Jan 2011

Exchange Student in Electronic Engineering Department, GPA 3.95/4.0

Academic Experience

Mobile and Sensing Systems, Microsoft Research Asia, Beijing, China

Jun 2011 - present

Research Intern, advised by Dr. Xiaofan Fred Jiang

LiveSynergy

A novel magnetic-based wireless proximity detection platform to provide cloud-based APIs that enable real-time and rich interactions between humans and their physical environment.

- Embedded hardware system design and debugging; improved the system reliability and MCU transient immunity; manufactured 60+ boards for deployment.
- Design and development of Windows Phone 7.5 native application to enable bi-directional interaction
- Conducted experiments to measure the reliability and consistency for zone proximity sensing of current technologies (BLE, RFID, ZigBee); post-processed the raw data and compared the results with our magnetic-based platform.
- Presented several demos for UbiComp Open House Demo and MSR Technical Review Board.

PhoneWeb

The PhoneWeb project seeks to enable handheld devices to continuously and accurately discover all the people around it and to create and maintain a local neighborhood map.

- Implemented a GUI frontend for PhoneWeb - SubwayRendezVous client
- Help create a brief video to promote this project within MSRA
- Bluetooth low energy technology characteristic testing

Digital Television Laboratory (DTV), Tsinghua U, Beijing, China

Jul 2009 - Jun 2011

Research Assistant, advised by Prof. Kewu Peng

- Analyzed the iterative corporation between the demapper and the decoder in BICM-ID system based on EXIT char tool.
- Proposed a simplified criterion Hamming Euclidean Distance Spectrato evaluate the equivalence of labelings and obtain the classification of unique mappings; submitted a patent to suggest a constellation mapping and de-mapping scheme by applying this criterion on DVB-S2 coded modulation systems.
- Conducted experiments for the evaluation of set-top box over different multi-path channels for building a model of Single Frequency Network.

Other Projects:

- Data communications between DSPs, Hardware platform: Blackfin 533
- Implementation of Bloom Filter accelerated IP lookup, Hardware platform: NetFPGA
- Case study on Data Center Network

- A photo quality evaluation system based on various features extracted from photos
- HDB3 encoding/decoding, Hardware platform: FPGA
- Sudoku solver, Hardware platform: Intel 8051

Publications & Patents

1. A full paper about indoor proximity detection platform submitted to 11th ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN 2012), Apr. 2012, for review.
2. Junhao Lin, Fang Yang, Tao Cheng, **Ben Zhang**, and Kewu Peng, "Classification of Unique Mappings for BICM-ID System Design with 3D-BPSK", 2012 IEEE Wireless Communications and Networking Conference (WCNC 2012), Apr. 2012. (*under submission*)
3. **Ben Zhang**, Kewu Peng, Jian Song, Junhao Lin, "Optimal Labeling Searching based on Classification of Unique Mapping for BICM-ID with 8-APSK", 2012 IEEE International Symposium on Power Line Communications and Its Applications (ISPLC 2012), Mar. 2012. (*under submission*)
4. Xiaofan Jiang, Chieh-Jan Mike Liang, Feng Zhao, Kaifei Chen, Jeff Hsu, **Ben Zhang**, and Jie Liu, "Demo: Creating Interactive Virtual Zones in Physical Space with Magnetic-Induction", the 9th ACM Conference on Embedded Networked Sensor Systems (SenSys 2011), Nov. 2011
5. Kewu Peng, **Ben Zhang**, Junhao Lin, Hui Yang, and Changyong Pan, "A Constellation Mapping and De-mapping Scheme for DVB-S2 Coded Modulation Systems", Chinese Invention Patent, Patent Application Number: 201110216908.2

Leadership Activities

Youth Ambassador Program for Minorities, Beijing

Jun 2009-Jun 2010

Project President

YAPM is committed to preserve the culture diversity of ethnic groups by evoking and empowering the local youth, sponsored by Goldman Sachs Social Entrepreneur Foundation in 2006

- Expanded the project sites from 4 to 8, covering 6 provinces; managed to get 200,000 sponsorship from Diageo;
- Effectively improved the communications among Beijing, Shanghai and Hong Kong branches.

Awards & Honors

ACM Sensys'11 Best Demo Award, Seattle, WA (<i>among 33 demos</i>)	Nov 2011
HNA Academic Excellence Scholarship, Tsinghua U (<i>top 10%</i>)	Nov 2011
Zeng Rongsen Scholarship, Tsinghua U (<i>top 15%</i>)	Nov 2010
First Prize in Physics Competition, Beijing	May 2010
Yongwang Scholarship awarded for Academic Excellence, Tsinghua U (<i>top 15%</i>)	Nov 2009
Tongfang Scholarship for Excellent Freshman, Tsinghua U (<i>top 10 in Shaanxi Province</i>)	Sept 2008
First Prize in National Chemistry Olympic Competition, Shaanxi Division	Oct 2007

Personals & Skills

- English: TOEFL(iBT) 109; GRE 610+800+4.0
- Computer Languages: Assembly, C, C++, C#, NesC, Verilog, Matlab, Python, HTML, XAML
- Applications: Pspice, Visual DSP++, Multisim, Quartus, EAGLE PCB design, L^AT_EX, Adobe DreamWeaver, Sony Vegas