

# Ben Zhang

## Curriculum Vitae

January 2012

Address: Room 117B, Zijing 1st Bldg  
Tsinghua University, Beijing, China.  
Phone: +86 151 2000 3948  
Email: nebnahz@gmail.com  
WWW: benzhang.name

### 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 Spectra – to 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. 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", to appear in the Proceedings of the 11th ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN 2012), Apr. 2012.
2. **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*)
3. 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
4. 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> )	<i>Nov 2011</i>
HNA Academic Excellence Scholarship, Tsinghua U ( <i>top 10%</i> )	<i>Nov 2011</i>
Zeng Rongsen Scholarship, Tsinghua U ( <i>top 15%</i> )	<i>Nov 2010</i>
First Prize in Physics Competition, Beijing	<i>May 2010</i>
Yongwang Scholarship awarded for Academic Excellence, Tsinghua U ( <i>top 15%</i> )	<i>Nov 2009</i>
Tongfang Scholarship for Excellent Freshman, Tsinghua U ( <i>top 10 in Shaanxi Province</i> )	<i>Sept 2008</i>
First Prize in National Chemistry Olympic Competition, Shaanxi Division	<i>Oct 2007</i>

## 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,  $\LaTeX$