

# Zhen Zhao

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## SUMMARY

- **Objective:** looking for a full-time Ph.D. position in Computer Science.
- **8** years programming experiences, familiar with Java, C/C++, Python, Assembly.
- **2** years machine learning experiences, familiar with Tensorflow, Keras, sklearn, Pandas.
- Strong knowledge on mathematical modeling, optimization, queueing and game theory.

## EDUCATION

### Georgia Institute of Technology, Atlanta, Georgia, USA

- Online Master of Science in Computer Science Jan 2018 – **Present**
  - studying the specialization on machine learning and computer vision.

### University of Manitoba, Winnipeg, MB, Canada

- MSc. in Electrical and Computer Engineering Sep 2014 – Oct 2017
  - Adviser: Prof. Jun Cai Lab: Network Intelligence and Innovation (NI<sup>2</sup>) Lab
  - Cumulative GPA: **4.34 / 4.5**

### Guilin University of Electronic Technology, Guilin, Guangxi, China

- B.S. in Information and Communication Engineering Sep 2009 – Jun 2013
  - Cumulative GPA: 88.76 / 100 (rank top **2/163**)

## RESEARCH & WORKING EXPERIENCE

### Shanghai Astronomical Observatory, Shanghai, China

- **Software Engineer**, full-time Jul 2017 – **Present**
  - Applied appropriate machine learning algorithms to transients signal searching and RFI detection & removal.
  - Developed an VLBI observation and pre-evaluation platform integrating uv coverage, scheduling and dirty maps.

### Network Intelligence and Innovation (NI<sup>2</sup>) Lab, University of Manitoba, Canada

- **Research Assistant**, Faculty of Engineering Sep 2014 – May 2017
  - Based on Queueing and Optimization theories, studied the energy efficiency issues in communication networks, especially for wireless body area networks.
  - Studied image processing techniques on 2d-digital-camera images and designed human motion recognition algorithms.

### Guilin Tengyuan Information Technology Co Ltd., Guilin, China

- **Software Engineer**, full-time Aug 2013 – Jul 2014
  - Worked on the collaborative project with Shanghai Astronomical Observatory, CAS.
  - Developed a cross-platform experiment platform to process and analyze large amounts of astronomical data obtained from Very-long-baseline interferometry (VLBI).

### Communication Research Institute, Guilin University of Electronic Technology, China

- **Undergraduate Research Student**, School of Information and Communication Oct 2012 – May 2013
  - Project: Development of an OmNet++ based network simulator for network coding
  - Focus: C++ implementation, performance analysis, OmNet++.

## PROJECT EXPERIENCE

### VLBI Simulation and Evaluation Platform Development

Jan 2018 – Jul 2018

- Worked at the **Shanghai Astronomical Observatory**, Chinese Academy of Sciences.
- Developed an integrated tool with commonly-used functions as well as new space VLBI simulations.
- Designed flexible interactions for command line and graphical user interface with log reports and database management. Implemented python multiprocessing accelerations to handle large survey data.

### Medical Signal Processing & Features Extraction

Dec 2016 – Apr 2017

- Cooperated with **Getwell Co. Ltd**, Shenzhen, China.
- Processed muscle reflex signals in functional near-infrared spectroscopy (wavelet analysis).
- Developed high-accuracy algorithms of extracting critical medical information (e.g. heart rate, SMO2).

### Testbed Development for New Sensing Material

May 2016 – Aug 2016

- Cooperated with **Nanomedicine and Tissue Engineering Lab**, Winnipeg, Manitoba, Canada.
- Designed sensor testing circuits to detect and identify changes of a gum sensor (a new material).
- Developed an Android application to collect the wireless signal from a Blue-tooth Low Energy module.
- The collected data was managed via SQLite and could be forwarded to registered email directly.

## Chronic Disease Health Monitoring System

May 2015 – Nov 2015

- Cooperated with **Canada Wellness Institute**, Winnipeg, Manitoba, Canada.
- Developed a monitoring system to evaluate and record patients' daily training conditions through 2D cameras / Kinect sensors and to help doctors give timely feedback to patients with chronic diseases.
- Designed tree-based motion recognition algorithms and developed a QT and a Unity based GUI demos.

## SCHOLARSHIPS

- Graduate Student Travel Award, University of Manitoba. Dec 2016  
For graduate students to present their papers in recognized international conferences.
- International Graduate Student Scholarship, University of Manitoba 2014 – 2015  
To reward the excellence of international graduate students pursuing graduate degrees with high GPA.
- **The National Scholarship**, Guilin University of Electronic Technology Nov 2012  
To reward 5 top students in the faculty.
- **First class Scholarship of China Aerospace Science and Technology Corporation** Oct 2012  
To rewarded 5 top students in the university by China Aerospace Science and Technology Corporation.
- First class Scholarship, Guilin University of Electronic Technology 2010 – 2013  
To reward 3 top students in the department.

## AWARDS

- Invited paper, IEEE 86th Vehicular Technology Conference (VTC2017-Fall) Sep 2017
- **National First Prize in the Mathematical Contest in Modeling**, China Oct 2011  
Award-winning Rate: 1.2%.
- **Provincial Third Prize in Electronic Design Competition**, Guangxi, China Nov 2010  
Award-winning Rate: 20% in the Guangxi province.
- Second Prize in Mathematics Contest, Guilin University of Electronic Technology 2010 – 2011  
One of 15 awardees in the university. 3 for first prize, 4 for second prize, 8 for third prize.
- Outstanding Student, Guilin University of Electronic Technology 2010 – 2013  
To reward 15 students in the faculty every year.

## PUBLICATIONS

### JOURNALS

- [6] **Z. Zhao**, H. Zhang, T. An, X. Liu, B. Lao, "Pulsar Candidate Selection by An Ensemble Learning Method", submitted to Astronomy and Computing.
- [5] H. Zhang, **Z. Zhao**, T. An, et al., "Pulsar Candidate Recognition with Convolutional Neural Network", Computer & Electrical Engineering, vol. 73, pp. 1-8, January 2019..
- [4] **Z. Zhao**, T. An, B. Lao, "VLBI network simulator: an integrated simulation tool for radio astronomers", Journal of The Korean Astronomical Society, accepted.
- [3] **Z. Zhao**, S. Huang, J. Cai, "An analytical framework for IEEE 802.15.6-based wireless body area networks with instantaneous delay constraints and shadowing interruptions," *IEEE Trans. Vehicular Technology*, vol. 67, no. 7, pp. 6355-6369, 2018.
- [2] C. Yi, **Z. Zhao**, J. Cai, R. L. Faria, G. Zhang, "Priority-aware pricing-based capacity sharing scheme for beyond-wireless body area networks," *Computer Networks*, vol. 98, pp. 29-43, Apr 2016.
- [1] X. Chen, J. Wang, **Z. Zhao**, "An overview of network performance optimization based on network coding and multirate multicast" *Journal of Guilin University of Electronic Technology*, vol. 2, pp. 110-113, Oct 2014.

### CONFERENCES

- [3] **Z. Zhao**, S. Huang, J. Cai, " (Invited) Energy efficient packet transmission strategies for wireless body area networks with rechargeable sensors," *IEEE VTC 2017-Fall*, Toronto, Canada, Sep 2017.
- [2] **Z. Zhao**, C. Yi, J. Cai, and H. Cao, "Queueing analysis for medical packet transmission with delay-dependant packet priorities in WBANs," *WCSP'16*, Yangzhou, China, Oct 2016.
- [1] H. Cao, J. Cai, A. S. Alfa, **Z. Zhao**, "Efficient resource allocation scheduling for MIMO OFDMA CR downlink systems," *WCSP'16*, Yangzhou, China, Oct 2016.

## ADDITIONAL INFORMATION

### Interests

Badminton, Basketball, Programming, Technology, Chinese chess, Traveling.

**References** Available upon request.