Hai-Liang Zhao (赵海亮)

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EDUCATION

Wuhan University of Technology *Sep 2015 - Jun 2019*

School of Computer Science and Technology (Computer Science and Technology)

I switched my major from Logistics to CS after my freshman year.

GPA: 4.12 / 5.00 (Top 4%)

CET: Band 4: 610, Band 6: 576

Honors/Awards: The First Prize Scholarship (2016), Advanced Individual of Academic Records (2016), The Second Prize of National English Contest for College Students (2017), **The First Prize of Hubei Mathematics Competition** (2017), **The Second Prize of Chinese Mathematics Competition** (2017), The Third Prize of CUMCM of Province (2017), The second prize of LAN QIAO international collegiate programming contest of Province (2018), The first prize of the 11th College Students Computer Design Contest

Relevant Mathematics Coursework: Advanced Mathematics (100, 92.2), Probability Theory & Mathematical Statistics (94.3), Linear Algebra (92.2), Numerical Analysis (99)

Professional Core Curriculum: Principles of Computer Composition (96.2), Fundamentals of Compiling (94.6), Professional Assembly Language (98), Operating System (91.9), Computer Architecture (100)

RESEARCH EXPERIENCE

Design and Manufacture of Intelligent Guide Robot *May 2016 - Apr 2017*

Fuzzy Control Algorithm Design

- This is a concluded *National Undergraduate Training Program for Innovation and Entrepreneurship*.
- Designed and built an intelligent Multi-Sensor Guide Robot with functionality of autonomous obstacle avoidance to provide the blind by applying fuzzy control algorithms. Integration functionalities of speech recognition and voice reminder help to catch on user's situation and judge security.

Face Liveness Detection *Mar 2018 - Present*

Implementation of core algorithms

- This is a project which won the first prize of the 11th College Students Computer Design Contest.
- SVM classifiers were trained by different combinations of features (LBP, DoG, HSV histograms, HOOF, and so on) extracted from real images and fake photos for anti-spoofing.
- We deployed the server here. Besides, we developed the specific Android app and iOS app collectively. The code of core algorithms can be found here.

Mobile Edge Computing (MEC) *Mar 2018 - Present*

- **submitted paper #1**
  - Selecting suitable computation offloading strategies is an important issue for mobile edge computing systems. In the submitted paper (Execution Cost and Fairness Optimization for Multi-Server Mobile-Edge Computing Systems with Energy Harvesting Devices), which can be found here, I proposed LODCO-Based Greedy Algorithm and LODCO-Based epsilon-Greedy Algorithm to obtain the lowest execution cost and largest number of offloading computation modes.
  - The **major contributions** of this paper can be found in Section 1 of it. This paper has been accepted for the presentation at the 11th International Conference on Service Science (ICSS 2018). Reviewers evaluated that **the work done in this paper is comprehensive, well-researched and novel**. It has been submitted to *Chinese Journal of Computers* (CJC).
- **submitted paper #2**
  - Based on the submitted paper #1, I applied the genetic algorithm to design a better intelligent computation offloading strategy for multi-user and multi-server MEC systems with energy harvesting devices.
  - This paper (QoE Aware and Cell Capacity Enhanced Computation Offloading for Multi-Server Mobile Edge Computing Systems with Energy Harvesting Devices) can be found here. The **major contributions** of this paper can be found in Section I of it. This paper has been submitted to The 15th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2018), which is a conference recommended by CCF. **The latest information shows that it has been accepted!**
- **participated paper #1**
  - Computation offloading and resource allocation strategies for latency-tolerant applications in complicated systems are faced with several new challenges. In this paper, we proposed an online algorithm to balance the quality of user experience and the system-level revenue of network operators. This paper can be found here.
- **the latest development**
  - One online algorithm, namely, LODCO-Based Dynamic Bandwidth Allocation Algorithm, is proposed. The algorithm can make the optimal decision for multi-server multi-user system with bandwidth allocated dynamically. Manuscript can be found here.
  - A new policy based on Deep Q-Network is utilized in MEC. I am trying to apply continuous variant of the Q-learning algorithm to the current work. Slide on MEC can be found here.

The code of those submitted papers can be found here.

MATHEMATICS AND I

In my opinion, mathematics is the **major tool** for scientific research. The application of mathematical theory can be divided into 2 steps: **building the math model and finding the feasible or optimal resolution.** Before my research on MEC, I have learnt plenty of theory on mathematical modeling and the code implementation can be found here. Besides, the obtainment of resolution is closely linked to optimization theory, especially the methods which convert primal problems to convex problems. Beyond that, Machine Learning is building-up on solid mathematical theory foundation, which is beautiful and attractive to me. The MATLAB implementation of classic statistical learning algorithms can be found here.

This resume can be found and downloaded here.