

# Zhenxin Alan Xiao

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## Education

### Zhejiang University (ZJU)

Hangzhou, China

Double Major: BSc. in Computer Science and BSc. in Automation

Sep. 2016 – Jul. 2020 (expected)

- o Member of Chu Kochen Honors College (selects top 6% of students in ZJU)
- o GPA: 3.9/4.0, Rank: 1/20 (Three consecutive years)
- o TOEFL: 110 (Speaking:27, Writing: 28)
- o Core Courses: Computer Vision (95/100), Numerical Analysis (94/100), Embedded System (94/100), Digital Logic Design (94/100), Computer Organization (93/100), Operating System (92/100)

### University of California, Los Angeles (UCLA)

Los Angeles, USA

UCLA CSST Program, Research Intern at Department of Computer Science

Jul. 2019 – Sep. 2019

- o GPA: 4.0/4.0
- o Select 90 students out of 1000+ candidates from top-tier universities in China and Japan to conduct research.<sup>1</sup>

## Preprints & Publications

- o **Zhenxin Xiao**, Puyudi Yang, Yuchen Jiang, Kai-Wei Chang, and Cho-Jui Hsieh. (2019) BOSH: An efficient meta-algorithm for decision-based attacks. *arXiv preprint arXiv:1909.04288*. (Under review of ICLR 2020)
- o Yuchen Jiang, **Zhenxin Xiao**, Haihong Yang, and Kai-Wei Chang. (2019) Learning Directional Sentence-Pair Embedding for Natural Language Reasoning. (Under review of ACL 2020)
- o Yuchen Jiang, **Zhenxin Xiao**, and Kai-Wei Chang. (2019) Learning Directional Sentence-Pair Embedding for Natural Language Reasoning. *34th AAAI Conference on Artificial Intelligence (AAAI'20 student abstract)*
- o Zhou Zhao, Zhu Zhang, Shuwen Xiao, **Zhenxin Xiao**, Xiaohui Yan, Jun Yu, Deng Cai, and Fei Wu. (2019) Long-form video question answering via dynamic hierarchical reinforced networks. *IEEE Transactions on Image Processing (TIP'19)*, 28(12):5939–5952.
- o Zhu Zhang, Zhijie Lin, Zhou Zhao, and **Zhenxin Xiao**. (2019) Cross-Modal Interaction Networks for Query-Based Moment Retrieval in Videos. *In the 42Nd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR'19)*.
- o **Zhenxin Xiao**, Jianing Yu, Huan Yin, and Rong Xiong. (2019) Visual Place Recognition with Convolutional Neural Network-based Descriptors

## Research Experience

### Research Intern, Natural Language Computing Group, Microsoft Research, Asia

Beijing, China

- o Advisor: **Shujie Liu, Ming Zhou**

Oct. 2019 – Feb. 2020

- o Project: End to End Neural Sign Language Translation

- ✓ (Ongoing) Conducting experiments to solve an End to End Neural Sign Language Translation problem.

### Research Intern, Computer Science Department, UCLA

Los Angeles, America

- o Advisor: **Cho-Jui Hsieh, Kai-Wei Chang**

Jul. 2019 – Sep. 2019

- o Project: Adversarial attack for decision-based models

- ✓ Existing decision-based attacks which depend on iterative local updates often get stuck in local minimum points and fail to generate the optimal adversarial example with the smallest distortions.
- ✓ Proposed an efficient meta-algorithm called BOSH-attack, which tremendously improves existing hard-label black-box attack algorithms through Bayesian Optimization (BO) and Successive Halving (SH).
- ✓ Showed empirically that the proposed algorithm converges to a better solution than existing approaches, while the query count is smaller than applying multiple random initializations by a factor of 10.
- ✓ Conducted experiments to attack discrete and complex models, such as Gradient Boosting Decision Tree (GBDT) and detection-based defense models.

### Research Assistant, Digital Media Computing & Design Lab, Zhejiang University

Hangzhou, China

- o Advisor: **Zhou Zhao**

Jul. 2018 – Jun. 2019

- o *Project: Long-Form Video Question Answering*
  - ✓ The existing work for Video Question Answering mainly focuses on short-form video question answering, due to the lack of modeling for semantic representations from long-form video contents.
  - ✓ Introduced a dynamic hierarchical reinforced network for open-ended long-form video question answering, which employs an encoder–decoder architecture with a hierarchical encoder and a reinforced decoder.
- o *Project: Query-Based Moment Retrieval in Videos*
  - ✓ Introduced a novel framework called Cross-Modal Interaction Network (CMIN).
  - ✓ Devised a syntactic Graph Convolutional Network (GCN) to leverage the syntactic structure of queries for fine-grained representation learning.
  - ✓ Proposed a multi-head self-attention to capture long-range semantic dependencies from video context.
  - ✓ Employed a multi-stage cross-modal interaction to explore the potential relations of video and query contents.

#### **Research Assistant, Robotics Laboratory, Zhejiang University**

Hangzhou, China

- o Advisor: **Rong Xiong** Mar. 2018 – Jun. 2019
- o *Project: Visual Place Recognition With Convolutional Neural Network-Based Descriptors*
  - ✓ Visual place recognition is a crucial part of loop closure algorithms in Simultaneous Localization And Mapping (SLAM) systems.
  - ✓ Used a Faster-RCNN network to detect multiple bounding boxes corresponding to the natural objects in the image. Each bounding boxes were separately fed into a resnet-101 network to generate the descriptors. Later, I built an inverted index table for faster searching in the database.
  - ✓ Experimental results with multiple accessible datasets (KITTI, V4RL, etc.) suggested that the method is an effective approach to detect the loop closure pairs and improve accuracy compared to traditional pipelines.

## **Research Competitions & Projects**

### **China Datathon (Big Data Competition)**

Shanghai, China

*Silver Medal Winner (¥40000), Second Place of 30+ teams, Youngest Winner*

Nov. 2018

- o Processed national census data from China for the past 50 years (millions of entries).
- o Found that social mobility decreases as society develops, and one's education level is strongly related to family background. I also predicted possible future trends of China's social mobility using Time-Series Analysis (LSTM, Hidden Markov Model, etc.).

### **MIPS Assembler/Disassembler (Open-Source Project)**

Apr. 2018

- o The MIPS assembler/disassembler is designed to convert MIPS constructions to binary codes or revert this process. It uses QT (Python) as GUI design and supports nearly 200 MIPS instructions.
- o The project has been adopted by the Computer Organization course as an example project at Zhejiang University.

**Other Open-Source Projects:** MiniSQL (SQL database engine), Operating System on FPGA (Written in MIPS C and Assembly language), ROS Navigation Global Planner, FPGA-based Ball-Maze Game<sup>2</sup>

## **Selected Awards & Scholarships**

- o First-Class Scholarship for Outstanding Students, Zhejiang University (top 2%), 2018 & 2019
- o First Prize, Scholarship for Outstanding Merits, Zhejiang University (top 3%), 2018 & 2019
- o Provincial Fellowship, Zhejiang University (top 2%), 2018
- o First-Class Scholarship for Excellence in Research and Innovation, 2017 & 2018 & 2019
- o First Prize, Mathematical Contest in Modeling of Zhejiang University (Top 8 out of 150+), 2018
- o First Prize, Chinese Physics Olympiad (Fujian Province) (Top 30 out of 10, 000+), 2015

## **Extracurricular Activities**

Student Union in Chu Kochen Honors College, **Etiquette Team Manager**

Sep. 2016 – Jul. 2017

QiuShiChao Association, Zhejiang University, **Photographer**

Sep. 2016– Mar. 2017

<sup>1</sup> Program's website: <https://www.csst.ucla.edu/summer-program-csst>

<sup>2</sup> The codes of projects mentioned can be found at: <https://github.com/AlanShaw-GitHub>. All projects are completed on my own.