Zhenxin Alan Xiao

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EDUCATION

Zhejiang University (ZJU) Hangzhou, China

Double Major: B.Eng in Computer Science and B.Eng in Automation *Sep. 2016 – Jul. 2020 (expected)*

- Member of Chu Kochen Honors College (selects top 6% of students in ZJU)
- GPA: 3.9/4.0, Rank: 1/20 (Three consecutive years)
- TOEFL: 110 (Speaking:27, Writing: 28), Best Score: 114
- 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*

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

PREPRINTS & PUBLICATIONS

- **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)*
- 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)*
- Yuchen Jiang, **Zhenxin Xiao**, and Kai-Wei Chang. (2019) Learning Directional Sentence-Pair Embedding for Natural Language Reasoning. *Published in 34th AAAI Conference on Artificial Intelligence (AAAI' 20 student abstract)*
- 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. *Published in IEEE Transactions on Image Processing (TIP' 19), 28(12):5939–5952.*
- Zhu Zhang, Zhijie Lin, Zhou Zhao, and **Zhenxin Xiao**. (2019) Cross-Modal Interaction Networks for Query-Based Moment Retrieval in Videos. *Published in the 42Nd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR'19)*.
- **Zhenxin Xiao**, Jianing Yu, Huan Yin, and Rong Xiong. (2019) Visual Place Recognition with Convolutional Neural Network-based Descriptors

RESEARCH INTEREST

- **Machine Learning**: Adversarial Attack, Optimization
- **Natural Language Processing**: Dialog System, Machine Translation, Language Reasoning
- **Video-Language Joint Models**: Sign Language Translation, Video Question Answering

RESEARCH EXPERIENCE

Research Intern, Natural Language Computing Group, Microsoft Research, Asia Beijing, China

- Advisor: **Shujie Liu, Ming Zhou** *Oct. 2019 – Feb. 2020*
- *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

- Advisor: **Cho-Jui Hsieh, Kai-Wei Chang** *Jul. 2019 – Sep. 2019*
- *Project: Adversarial attack for decision-based models*
  - ✓ 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

- Advisor: **Zhou Zhao** *Jul. 2018 – Jun. 2019*
- *Project: Long-Form Video Question Answering (VQA)*
  - ✓ The existing work for Video Question Answering mainly focuses on short-form VQA, 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 VQA, which employs an encoder–decoder architecture with a hierarchical encoder and a reinforced decoder.
- *Project: Query-Based Moment Retrieval in Videos*
  - ✓ 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

- Advisor: **Rong Xiong** *Mar. 2018 – Jun. 2019*
- *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 and generate descriptors. Later, 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.

RESEARCH COMPETITIONS & PROJECTS

China Datathon (Big Data Competition) Shanghai, China

Silver Medal Winner (¥40000), Second Place of 30+ teams, Youngest Winner *Nov. 2018*

- Processed national census data from China for the past 50 years (millions of entries).
- 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*

- 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.
- 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[2]

SELECTED AWARDS & SCHOLARSHIPS

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

[1] Program's website: https://www.csst.ucla.edu/summer-program-csst

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