Zhenxin Alan Xiao

https://www.zhenxinxiao.com
(+86) 188-6810-6383 | alanshawzju@gmail.com

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), *MyBest*^{TM} Scores: 114
- Core Courses: Computer Vision (95), Numerical Analysis (94), Embedded System (94), Digital Logic Design (94), Computer Organization (93), Operating System (92)

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 (12 units)
- Select 90 students out of 1000+ candidates from top-tier universities in China and Japan to conduct research.

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'20)* *[link]*
- Yuchen Jiang, **Zhenxin Xiao**, and Kai-Wei Chang. (2019) Learning Directional Sentence-Pair Embedding for Natural Language Reasoning. *Published in AAAI' 20 (SA)* *[link]*
- Yuchen Jiang, Haihong Yang, **Zhenxin Xiao**, and Kai-Wei Chang. (2019) Learning Directional Sentence-Pair Embedding for Natural Language Reasoning. *(Long Paper summited to ACL'20)* *[link]*
- Zhou Zhao, Zhu Zhang, Shuwen Xiao, **Zhenxin Xiao**, Xiaohui Yan, Jun Yu, Deng Cai, and Fei Wu. (2018) Long-form video question answering via dynamic hierarchical reinforced networks. *Published in IEEE Transactions on Image Processing (TIP' 19), 28(12):5939–5952.* *[link]*
- Zhu Zhang, Zhijie Lin, Zhou Zhao, and **Zhenxin Xiao**. (2018) Cross-Modal Interaction Networks for Query-Based Moment Retrieval in Videos. *Published in the 42Nd International ACM SIGIR (SIGIR'19).* *[link]*

RESEARCH EXPERIENCE

INTERESTS:

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

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

- Advisor: Ming Zhou *Oct. 2019 – Present*
- *Project: End to End Neural Sign Language Translation*
  - ✓ Built a demo program that can translate videos of sign language into spoken languages.
  - ✓ Used Connectionist temporal classification (CTC) to align the video segments.
  - ✓ Applied language models to assist the decoding of sign language.
  - ✓ Achieved state-of-the-art performance on various publicly available datasets (e.g. PHOENIX14T).

Research Intern, Computer Science Department, UCLA Los Angeles, USA

- Advisor: Cho-Jui Hsieh, Kai-Wei Chang *Jul. 2019 – Sep. 2019*
- *Project: Adversarial attack for decision-based models*
  - ✓ Showed empirically that current decision-based attacks often converge to a local optimum.
  - ✓ Designed an efficient meta-algorithm BOSH-attack, which improves existing hard-label black-box attack algorithms through Bayesian Optimization (BO) and Successive Halving (SH).
  - ✓ Reduced the computation cost by 10x for both neural networks and discrete models (e.g. GBDT and detection-based defense models.)

- *Project: Directional Sentence-Pair Embedding for Commonsense Causal Reasoning*
  - ✓ Proposed a new large-scale causal sentence pair dataset CER and analyzed the inadequate capability of current language encoder techniques at modeling directional inter-sentence relations.
  - ✓ Proposed a mutual attention mechanism and empirically demonstrated the effectiveness hereof.
  - ✓ Improved existing commonsense reasoning benchmarks by proposed approaches and corpus.

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)*
  - ✓ Devised a hierarchical structure that can encode the semantic meanings of long-form videos.
  - ✓ Employed a frame-level adaptive LSTM with a binary gate to segment a long video into small sections.
  - ✓ Used another LSTM to encode the videos in the section level, and adopted a highway network to control the information flow.
- *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*
  - ✓ 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.

SELECTED OPEN-SOURCE PROJECTS

MIPS Assembler/Disassembler [code]
- Converted MIPS constructions to binary codes or revert this process. (support nearly 200 MIPS instructions.)
- GUI program available on all popular platforms like Windows and MacOS.

Operating System Design (MIPS SDK on C) [code]
- Developed an Operating System on FPGA-based hardware (supporting MIPS instructions).
- Designed the complete fair schedule (CFS) for process scheduling, system calls, and loading user programs.

MiniSQL Database Engine [code]
- Implemented a SQL database engine using B+ trees and supported storing and loading of the data.
- Simulated the MySQL database using minimizing codes (less than 2, 000 lines).

Book Management System [code]
- Used C# and UWP to design a GUI program of book management system for libraries.
- Included new features (e.g. navigation bar, acrylic design) first introduced in Windows Fall Creator Updates 2017.

ROS Navigation Global Planner [code]
- Rewrote source code of ROS Navigation Global Planner Package to implement RRT and optimized A* algorithms.

SELECTED AWARDS & SCHOLARSHIPS

- First-Class Scholarship for Outstanding Students, Zhejiang University (top 2%), 2018 & 2019
- **Silver Medal Winner (¥40000), China Datathon (Big Data Competition), 2nd out of 30+, Youngest Winner**
- 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) (Top 30 out of 10, 000+), 2015**

EXTRACURRICULAR ACTIVITIES

Etiquette Team Manager, Student Union in Chu Kochen Honors College *Sep. 2016 – Jul. 2017*
Photographer, QiuShiChao Association, Zhejiang University *Sep. 2016 – Mar. 2017*