Zhenxin Xiao

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Education

Zhejiang University (ZJU), Chu Kochen Honors College *(Select Top 7% Students in ZJU)* Hangzhou, China
Double Major: BSc. in Computer Science and BSc. in Automation *Sep. 2016 – Jul. 2020*

- Overall GPA: 3.9/4.0, Rank: 1/20 *(Top 5%)*
- Core Courses: Computer Vision (95), Numerical Analysis (94), Embedded System (94), Object-Oriented Programming (98), Physics (93), Digital Logic Design (94), Computer Organization (93)

University of California, Los Angeles (UCLA) Los Angeles, USA
UCLA CSST Program, Research Intern at Department of Computer Science *July. 2019 – Sep. 2019*

- Select students from top-tier universities in China and Japan to conduct research in Cross-disciplinary areas. (90 out of 1000+ candidates). Program website: https://www.csst.ucla.edu/summer-program-csst

Research Interests

Natural Language Processing: Machine translation, BERT, Common Sense, Dialog System
Robustness & Adversarial Attack: Hard-Label Black-Box attack, Robustness of Neural Network
Language and Vision: Video Question Answering, Video Moment Retrieval

Experience

Research

Research Intern, Natural Language Computing Group, Microsoft Research, Asia Beijing, China
Advisor: **Yu Wu, Ming Zhou** *Oct. 2019 – Feb. 2020*

- *Project: Reasoning and Common Sense in NLP*

Research Assistant, Computer Science Department, UCLA Los Angeles, America
Advisor: **Kai-Wei Chang, Cho-Jui Hsieh** *July. 2019 – Sep. 2019*

- *Project: Adversarial attack for decision-based models*
  Abstract: Existing decision-based attacks based on iterative local updates often get stuck in a local minimum and fail to generate the optimal adversarial example with the smallest distortion. To remedy this issue, we propose an efficient meta algorithm called BOSH-attack, which tremendously improves existing algorithms through Bayesian Optimization (BO) and Successive Halving (SH).

Research Assistant, Digital media Computing & Design Lab, Zhejiang University Hangzhou, China
Advisor: **Zhou Zhao** *July. 2018 – June. 2019*

- *Project: Video Question Answering*
  Abstract: The existing work for Video Question Answering mainly focuses on short-form video question answering, due to the lack of modeling semantic representations from long-form video contents. In this work, we introduce a dynamic hierarchical reinforced network for open-ended long- form video question answering, which employs an encoder–decoder architecture with a dynamic hierarchical encoder and a reinforced decoder.
- *Project: Query-Based Moment Retrieval in Video*
  Abstract: In this work, we introduce a novel Cross-Modal Interaction Network (CMIN). We devise a syntactic GCN to leverage the syntactic structure of queries for fine-grained representation learning, propose a multi-head self-attention to capture long-range semantic dependencies from video context, and next employ a multi-stage cross-modal interaction to explore the potential relations of video and query contents.

- *Project: Non-Autoregressive Transformer for Machine Translation*
  Abstract: In this work, I try to adopt Google transformer to machine translation tasks with a non-autoregressive decoder.

Competitions

China Datathon (Big Data competition) Shanghai, China
Second Place out of 30+ teams, Youngest Winner *Nov. 2018*

- I processed national census of China in the past 50 years. I observed that the social mobility become lower when the society progresses and the unignorable link between one's education level and his/her family background. Finally, I try to predict the possible further of China's social mobility using Time-Series Analysis.

16th Mathematical Contest in Modeling of Zhejiang University Hangzhou, China
First Prize (Top 8 out of 150+) *June. 2018*

- I design algorithms to solve a real problem in factory production lines, as requested in the Competition. I use Python and data analysis techniques to yield accurate results and offer a possible solution.

"Challenge Cup" in Zhejiang University Hangzhou, China
Crawl and Analysis Weibo (Chinese Blog) Users *June. 2018*

- I crawl millions of Weibo Users' blogs and their information registered in the platform, and use the data to build personal figures. I also try to find the ones who may suffer from depression or may conduct crimes based on the huge amount of data crawled.

Activities

Student Union in Chu Kochen Honors College, Zhejiang University Hangzhou, China
Member, Etiquette Team Manager *Sep. 2016 – July. 2017*

- Serve as manager of College's etiquette team, arrange daily affairs for the etiquette team.

QiuShiChao (QSC) Association, Zhejiang University Hangzhou, China
Member in Photography Apartment *Sep. 2016 – July. 2017*

- Take photos for various school activities like sport meets and evening parties

Preprints & Publications

Zhenxin Xiao, Puyudi Yang, Yuchen Jiang, Kai-Wei Chang, and Cho-Jui Hsieh. Bosh: An efficientmeta algorithm for decision-based attacks. *arXiv preprint arXiv:1909.04288*, 2019.

Zhou Zhao, Zhu Zhang, Shuwen Xiao, **Zhenxin Xiao**, Xiaohui Yan, Jun Yu, Deng Cai, and Fei Wu. Long-form video question answering via dynamic hierarchical reinforced networks. *IEEE Transactions on Image Processing (TIP' 19),* 28(12):5939–5952, 2019.

Zhu Zhang, Zhijie Lin, Zhou Zhao, **Zhenxin Xiao**. "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)*.

Awards & Scholarships

- First-Class Scholarship for Outstanding Students, Zhejiang University (Top 3%)
- Provincial Fellowship (¥6000), Zhejiang University
- Innovation Research Fellowship (¥2000), Zhejiang University
- First Price (Top 8 out of 150+) in the 16th Mathematical Contest in Modeling of Zhejiang University
- Silver medal winner (¥40000) in the China Datathon in Shanghai on *Nov. 2018* (Big Data competition)

Open-Sourced Projects

(except for special notation, the following works are all done alone)

Operating system Design (MIPS SDK on C)

Source Code: https://github.com/AlanShaw-GitHub/OS_Exp/tree/sched

Dec. 2018

I design a MIPS Operating system on FPGA-based hardware (supporting MIPS instructions), it is written in MIPS assembly and C. My major contribution is to design the complete fair schedule algorithm (CFS) for process scheduling, system calls and loading user programs.

MIPS assembler/disassembler (Python)

Source Code: https://github.com/AlanShaw-GitHub/MiniMIPS

April. 2018

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

ROS Navigation Global Planner (rewrite source code on ROS)

Source Code: https://github.com/AlanShaw-GitHub/ROS-Navigation-GlobalPlanner

March. 2018

I extend the source code of ROS Navigation Global Planner to implement RRT and optimized A* algorithms, and also add some visualizations to the simulation environment. The code is adopted by the Robotics course in Control Science College as example course project.

Ball-Maze Game (based on Xilinx Nexys 4 and Verilog HDL)

Source Code: https://github.com/AlanShaw-GitHub/FPGA-verilog-GAME

Dec. 2017

Being a member in Computer Hardware Group of Computer Science College of ZJU, I design a Ball-Maze game using Verilog HDL and Vivado 2017.4 toolkit, the hardware is Xilinx Nexys 4 board, it uses VGA output to visualize and on-board three-axis accelerometer to control the ball.

MiniSQL Database (Python)

Source Code: https://github.com/AlanShaw-GitHub/MiniSQL/tree/master/miniSQL

July. 2018

The MiniSQL database is a command-line database written by Python, it uses B+ tree and many other features as background engine to store and load the data. It is designed to simply simulate the MySQL using minimizing codes (only less than 2000 lines).

Book Management System (Windows UWP version)

Source Code: https://github.com/AlanShaw-GitHub/MiniSQL/tree/master/bookmanagement

June. 2018

The Book Management System is designed for the course project of Database Systems. It uses C#/UWP and using some new features like navigation bar and acrylic design first introduced in Windows Fall Creator Updates 2017.