

SHENAO ZHANG

Wushan Campus, South China University of Technology

(+86)17727619062 | sazhangscut@163.com

EDUCATION

South China University of Technology

Guangzhou, China

B.Eng. Information Engineering (Expected in July 2020)

August 2016 - Present

School of Electronic and Information Engineering

Innovation class (40 students elected from more than 450 students in the whole school)

Overall GPA: 3.56/4.00, [transcripts](#)

Major GPA (weighted average on 100 scale): 90.0/100 (Ranking: 2/40)

Sophomore ranking: 3/40, Junior ranking: 2/40

University of California, Berkeley

Berkeley, CA

Visiting student

January 2019 - May 2019

Department of Electrical Engineering and Computer Sciences

GPA: 3.90/4.00, [transcripts](#)

PUBLICATIONS

- [1] **Shenao Zhang**, Li Shen, Mingkui Tan, Li Shen. [Multi-task multi-agent reinforcement learning with latent space intention](#), will be submitted to Advances in Neural Information Processing Systems (**NeurIPS**), 2020.
- [2] **Shenao Zhang**, Xin He, Bo Wu, Delu Zeng. [Coarse-to-fine Attention for Object Detection](#), will be submitted to ACM Multimedia (**MM**) 2020.
- [3] **Shenao Zhang**, Li Shen, Zhifeng Li, Wei Liu. [Structure-Regularized Attention Networks](#), under review at European Conference on Computer Vision (**ECCV**), 2020.
- [4] Dazheng Hu, Huabiao Qin, Hongmei Liu, **Shenao Zhang**. [Gaze Tracking Algorithm Based on Projective Mapping Correction and Gaze Point Compensation in Natural Light](#), accepted by IEEE International Conference on Control and Automation (**ICCA**), 2019.

RESEARCH EXPERIENCE

Multi-task multi agent reinforcement learning

January 2020 - Present

[Tencent AI Lab](#)

Shenzhen, China

Research Intern, advised by Senior Research Scientist [Li Shen](#) and [Li Shen](#)

- Proposed an algorithm for multi-task multi-agent reinforcement learning with latent variable.
- With the help of latent space skill set and mutual information, a generalized graph (relation) predictor will be learned in an unsupervised manner
- The predicted graph can be used in both critic and policy, and such policies can generalize to unseen tasks with predicted latent code distribution
- Experiment has shown SOTA performance with less parameters (same policy with different latent skill for agents with same role) in single task setting. Multiple explainable strategies are obtained with corresponding relationships.
- Experiment has shown the generalization ability benefited from latent skill and task encoder, which will decide common skill subsets between different tasks

Structure-Regularized Attention

August 2019 - December 2019

[Tencent AI Lab](#)

Shenzhen, China

Research Intern, advised by Senior Research Scientist [Li Shen](#)

- Proposed a new attention mechanism which includes a novel formulation of local attention and a novel mode attention to capture long-range dependencies through a structural manner

- Conducted a series of empirical ablation studies and visualized to validate the approach outperforms state-of-the-art algorithms on person re-identification and face recognition tasks
- Wrote paper as first author, which has submitted to European Conference on Computer Vision (ECCV), 2020
- Wrote invention patents, under review for authorization

Coarse-to-fine Attention for Object Detection

May 2019 - July 2019

Department of Computer Science, Columbia University

New York, NY

Research Assistant, co-advised by Professor Delu Zeng and Research Scientist [Bo Wu](#)

- Proposed a coarse-to-fine attention mechanism
- Validate our approach with proof
- Conducted experiments to validate our attention mechanism on CIFAR-10 and object detection tasks
- Wrote paper as first author, which will submit to ACM MM 2020.

Gaze Tracking Algorithm

October 2018 - February 2019

Smart Vision Research Lab, South China University of Technology

Guangzhou, China

Research Assistant, advised by Prof. Huabiao Qin

- Proposed a head posture projective correction method
- Contributed to experiments of gaze point compensation
- Wrote experiment part of our paper, which has been accepted by IEEE International Conference on Control and Automation (ICCA), 2019

Reversible Data Hiding Scheme for Encrypted JPEG Bitstreams

May 2018 - November 2018

Information Security Lab, South China University of Technology

Guangzhou, China

Research Assistant, advised by Prof. Junhui He

- Contributed to developing the reversible data hiding scheme for encrypted JPEG images based on invariant zero-run length in the zero-run value pairs
- Implemented the program in C, contributed over 3,000-line high-quality codes, and enabled the program to work in both Windows and Ubuntu systems
- Analyzed computational complexity and file size change of different schemes

Smart Home System

September 2017 - September 2018

Smart Vision Research Lab, South China University of Technology

Guangzhou, China

Research Group Leader, Student Research Program, advised by Prof. Huabiao Qin

- Conducted publishing two datasets containing face images and sound recording of the elderly under different conditions, designing neural networks to identify their physical and emotional conditions
- Proposed an energy based graph convolutional networks to help model motion abnormalities
- Implemented signal processing and deep learning algorithms
- Contributed to UI program in C++ on the Qt platform and led system code testing

INTERNSHIP EXPERIENCE

Tencent

August 2019 - Present

Research Intern at Computer Vision Group, [Tencent AI Lab](#)

Shenzhen, China

GoldenSun Co.

June 2017 - August 2017

Software Engineer Intern, Cloud and Industries Department

Zhengzhou, China

- Contributed more than 2,000 lines of code for robust robot arm control

SELECTED CURRICULUM PROJECT EXPERIENCE

Computer Graphics

January 2019 - May 2019

Advisor: Prof. Ren Ng, Prof. Jonathan Ragan-Kelley

University of California, Berkeley

- Final project: Cloth Simulation using OpenGL Shader, [project website](#)
- Projects of Rasterizer, MeshEdit, PathTracer, Physical Simulation, code and reports can be found [here](#)

Artificial Intelligence

January 2019 - May 2019

Advisor: Prof. Stuart Russell, Prof. Sergey Levine

University of California, Berkeley

- Projects including Searching algorithms, Multi-Agent Pacman, Reinforcement Learning, Probabilistic Graphical Models, Game Tree. Code can be found [here](#)

Fingerprint Recognition

November 2018 - January 2019

Final project of Machine Vision & Intelligent Detection

South China University of Technology

- Used MATLAB to implement algorithms for feature extracting and image processing
- Designed and implemented fingerprint matching algorithm

Parking Lot Information Management System

September 2017 - November 2017

Advisor: Prof. Jianwei Zhang

South China University of Technology

- Developed information management system for parking lots to manage drivers' information
- Used C++ to implement the programs for access management and developed a friendly UI

HONORS AND REWARDS

Second Prize in 2018 Undergraduate Electronics Design Contest	<i>2018</i>
Third Prize in 2018 Intel Cup AI theme Undergraduate Embedded System Design Contest	<i>2018</i>
First Prize in 2017 Robot Cup Undergraduate Robotics Competition	<i>2017</i>
Outstanding Freshmen Scholarships (Awarded to 20 among 6,500 students)	<i>2016</i>

SKILLS

Programming skills: Python, C, C++, MATLAB, PyTorch, TensorFlow, Caffe, OpenCV, LaTeX
Experienced in software development on Linux and Windows

COMMUNITY ENGAGEMENT

Teaching Assistant of Signals & Systems	<i>Spring 2018</i>
Head Teaching Assistant of Digital Signal Processing	<i>Fall 2018</i>
Vice-minister at Social Practice Department of Student Union	
Being awarded the title of Star-level Volunteer for 100+ hours of volunteering	