Tianyang Zhao

tyzhao@ucla.edu • +1 (310) 926-4931 • https://programminglearner.github.io

EDUCATION

University of California, Los Angeles

Ph.D. student in Statistics, GPA: 3.92/4.00 — Sep 2019 – Present

Advisor: Prof. Ying Nian Wu, *Center for Vision, Cognition, Learning and Autonomy (VCLA)*

Peking University

B.S. in Data Science and Big Data Technology; *Yuanpei College* — Sep 2015 – Jul 2019

Advisor: Prof. Yizhou Wang, *School of EECS*

INTERESTS

Machine learning, computer vision, especially deep unsupervised and generative learning

PUBLICATIONS

[1] Tianyang Zhao, Yifei Xu, Mathew Monfort, Wongun Choi, Chris Baker, Yibiao Zhao, Yizhou Wang, Ying Nian Wu. "Multi-Agent Tensor Fusion for Contextual Trajectory Prediction". *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. *ICML Workshop on AI for autonomous driving*, 2019.

[2] Yifei Xu, Jianwen Xie, Tianyang Zhao, Chris Baker, Yibiao Zhao, Ying Nian Wu. "Energy-Based Continuous Inverse Optimal Control". *ArXiv*:1904.05453.

PROFESSIONAL SERVICES

Peer-reviewed Journals and Conferences

- International Conference on Intelligent Robots and Systems (IROS), 2020

WORK EXPERIENCE

Twitter Inc, Cortex Applied Research | *Software Engineering Intern* — Jun 2020 – Sep 2020

- Explored sparse attention networks for ads recommendation system and achieved significant offline gains over model currently used in production.

RESEARCH EXPERIENCE

Inhibition Neurons for Representation Learning

Center for Vision, Cognition, Learning and Autonomy, UCLA — Mar 2020 – Present

Multi-Agent Trajectory Prediction for Autonomous Driving

UCLA & ISEE Inc. (an MIT autonomous driving start-up) — Jun 2018 – Nov 2018

Advisors: Ying Nian Wu, Wongun Choi, Chris Baker, Yibiao Zhao

- Proposed, implemented, and trained novel Multi-Agent Convolutional Tensor Fusion networks to reason about social interactions among varying numbers of agents & about constraints from scene contexts, which retains the spatial structure of agents and the scene;
- Conducted ablative studies on Stanford Drone and NGSIM datasets, outperformed *Social GAN*;
- Paralleled Multi-Agent code on GPU; presented at CVPR 2019; released the code on Github;
- Participated in proposing another Inverse Optimal Control (IOC) based prediction approach, which learns non-Markovian cost functions defined over entire trajectories; participated in extending weighted feature-based cost functions to neural network augmented ones.

Automatic Music Generation

School of EECS, Peking University | Advisor: Yizhou Wang — Jun 2017 – Jun 2018

- Trained hierarchical LSTM to generate music with long-range consistency, and proposed to incorporate domain knowledge into reinforcement learning rewards to encourage long-term structure.

OPEN SOURCE PROJECTS

Chinese Chess Game and AI with Heuristic α-β Tree Search — Feb 2018

- Developed a Chinese Chess game and AI program from scratch; 3000+ lines in C++.
- Proposed and implemented a novel approach of α-β tree search based on heuristic methods;
- Proved its superiority over conventional α-β search w.r.t. time complexity and empirical winning rate;

Automatic Back-Propagation — Mar 2018

- Implemented automatic BP algorithm for any given DAG and Neural Nets from scratch

AWARDS AND HONORS

Merit Student (top 10%), Peking University — Nov 2017

Meritorious Winner (top 15%), Mathematical Contest in Modeling (MCM) — Feb 2018

3rd Prize, ACM Programming Contest in Peking University — May 2017