

Tianyang Zhao

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EDUCATION	University of California, Los Angeles Ph.D. student in Statistics Sep 2019 – Present Advisor: Prof. Ying Nian Wu, <i>Center for Vision, Cognition, Learning and Autonomy</i> Peking University B.S. in Data Science and Big Data Technology; <i>Yuanpei College</i> Sep 2015 – Jul 2019 Advisor: Prof. Yizhou Wang, <i>School of EECS</i>
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”. <i>Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i> , 2019. <i>ICML Workshop on AI for autonomous driving</i> , 2019. [2] Yifei Xu, Jianwen Xie, Tianyang Zhao, Chris Baker, Yibiao Zhao, Ying Nian Wu. “Energy-Based Continuous Inverse Optimal Control”. <i>ArXiv:1904.05453</i> .
RESEARCH EXPERIENCE	Inhibition Neurons for Representation Learning <i>Center for Vision, Cognition, Learning and Autonomy, UCLA</i> Mar 2020 – Present Advisor: Ying Nian Wu Multi-Agent Trajectory Prediction for Autonomous Driving <i>UCLA & ISEE Inc. (an MIT autonomous driving start-up)</i> Jun 2018 – Nov 2018 Advisors: Ying Nian Wu, Wongun Choi, Chris Baker, Yibiao Zhao <ul style="list-style-type: none">Proposed, implemented, and trained 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 <i>Social GAN</i>;Paralleled the Multi-Agent code on GPU; presented the paper at CVPR 2019; published the source 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 <i>School of EECS, Peking University</i> Jun 2017 – Jun 2018 Advisor: Yizhou Wang <ul style="list-style-type: none">Proposed hierarchical LSTM architectures to learn long-range consistency for sequence modeling;Designed the architecture as follows: a higher level learns correlations across measures and patterns for chord progressions, and a lower level learns a distribution over the notes to generate within a measure; the two operate at different clock rates while communicating with each other.
WORK EXPERIENCE	Twitter Inc, Cortex Applied Research <i>Software Engineering Intern</i> Jun 2020 – Present
PROFESSIONAL SERVICES	Peer-reviewed Journals and Conferences <ul style="list-style-type: none">International Conference on Intelligent Robots and Systems (IROS), 2020
OPEN SOURCE PROJECTS	Chinese Chess Game and AI with Heuristic α-β Tree Search Feb 2018 <ul style="list-style-type: none">Developed a Chinese Chess game program from scratch;Proposed and implemented a novel approach of α-β tree search based on heuristic methods;Proved its superiority over conventional α-β tree search w.r.t. time complexity and winning rate;3k+ lines in C++. Automatic Back-Propagation Mar 2018 <ul style="list-style-type: none">Implemented automatic BP algorithm for any given DAG and Neural Nets from scratchThe program calculates backward path automatically, given any forward path.

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
	5 of 318, Botzone AI contest (Reversi Bots) in Peking University	Feb 2016
SKILLS	C/C++, Python, R, SQL, PyTorch, TensorFlow Fluent in Chinese and English	