

# Tianyang Zhao

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EDUCATION	<b>University of California, Los Angeles</b> Ph.D. student in Statistics, GPA: 3.94/4.00 Sep 2019 – Present Advisor: Prof. Ying Nian Wu, <i>Center for Vision, Cognition, Learning and Autonomy (VCLA)</i>
	<b>Peking University</b> 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	<ul style="list-style-type: none"><li>[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.</li><li>[2] Bo Pang, Tianyang Zhao, Xu Xie, Ying Nian Wu. “Trajectory Prediction with Latent Belief Energy-Based Model”. <i>Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2021.</li><li>[3] Yifei Xu, Jianwen Xie, Tianyang Zhao, Chris Baker, Yibiao Zhao, Ying Nian Wu. “Energy-Based Continuous Inverse Optimal Control”. <i>NeurIPS Workshop on Autonomous Driving</i>, 2020.</li></ul>
WORK EXPERIENCE	<b>Twitter Inc, Cortex Applied Research</b>   <i>Software Engineering Intern</i> Jun 2020 – Sep 2020 <ul style="list-style-type: none"><li>Explored sparse attention networks for ads recommendation system and achieved significant offline gains over the model currently used in production.</li></ul>
ACADEMIC EXPERIENCE	<b>Peer-reviewed Journals and Conferences:</b> CVPR, ICCV, IROS, IEEE-TITS <b>Teaching Assistant</b>   <i>Department of Statistics, UCLA</i> : Intro to Probability (100A), Theoretical Stats (200B)
RESEARCH EXPERIENCE	<b>Inhibition Neurons for Representation Learning</b> <i>Center for Vision, Cognition, Learning and Autonomy, UCLA</i> Mar 2020 – Present
	<b>Multi-Agent Trajectory Prediction for Autonomous Driving</b> <i>UCLA &amp; 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"><li>Proposed, implemented, and trained novel Multi-Agent Convolutional Tensor Fusion networks to reason about social interactions among varying numbers of agents &amp; about constraints from scene contexts, which retains the spatial structure of agents and the scene;</li><li>Conducted ablative studies on Stanford Drone and NGSIM datasets, outperformed <i>Social GAN</i>;</li><li>Paralleled Multi-Agent code on GPU; presented at CVPR 2019; released the code on Github;</li><li>Participated in proposing another Inverse Optimal Control (IOC) based prediction approach, which learns non-Markovian cost functions defined over entire trajectories.</li></ul>
	<b>Automatic Music Generation</b> <i>School of EECS, Peking University</i>   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	<b>Chinese Chess Game and AI with Heuristic <math>\alpha</math>-<math>\beta</math> Tree Search</b> Feb 2018 <ul style="list-style-type: none"><li>Developed a Chinese Chess game and AI program from scratch; 3000+ lines in C++.</li><li>Proposed and implemented a novel approach of <math>\alpha</math>-<math>\beta</math> tree search based on heuristic methods;</li><li>Proved its superiority over conventional <math>\alpha</math>-<math>\beta</math> search w.r.t. time complexity and empirical winning rate;</li></ul>
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