Jiachen Li

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Education

University of California, Berkeley **Berkeley, CA, USA**
Ph.D. in Mechanical Engineering (Robotics) *08/2016 – Present*
Academic advisor: Prof. Masayoshi Tomizuka
Specialization: machine learning, prediction, tracking, planning

Harbin Institute of Technology **Harbin, China**
B. Eng. in Automation (Honors School) *08/2012 – 07/2016*
Academic advisors: Prof. Huijun Gao and Prof. Shen Yin
Thesis: Partial Least Squares and Its Application to Process Control

Research Interests

My research interest lies at the intersection of machine learning, optimization, computer vision approaches and their applications to state estimation, behavior prediction, decision making and motion planning for multi-agent intelligent systems such as autonomous vehicles and robotics.

Research and Industry Experience

Honda Research Institute **San Jose, CA, USA**
Research Intern *09/2019 - Present*
Machine Learning and Computer Vision, Scene Understanding

Toyota Research Institute **Los Altos, CA, USA**
Research Intern *06/2019 - 08/2019*
Machine Learning and Planning Teams, Behavior Prediction

University of California, Berkeley **Berkeley, CA, USA**
Graduate Student Researcher *08/2016 - Present*
Mechanical Systems Control (MSC) Laboratory & Berkeley DeepDrive (BDD)

Harbin Institute of Technology **Harbin, China**
Research Assistant *03/2014 - 06/2016*
Research Institute of Intelligent Control and System

Publications

- **J. Li***, F. Yang*, M. Tomizuka and C. Chio, "EvolveGraph: Multi-Agent Trajectory Prediction with Dynamic Relational Reasoning", in proceedings of Advances in Neural Information Processing Systems (NeurIPS), to appear, 2020.
- **J. Li**, H. Ma, Z. Zhang, J. Li and M. Tomizuka, "Spatio-Temporal Graph Dual-Attention Network for Multi-Agent Prediction and Tracking", submitted to *IEEE Transactions on Intelligent Transportation Systems*, under review.

- **J. Li**, H. Ma, Z. Zhang and M. Tomizuka,"A2-GNN: Interaction-Aware Trajectory Prediction via Graph Double-Attention Network", *RSS Workshop on Interaction and Decision-Making in Autonomous Driving*, 2020.
- **J. Li**, W. Zhan, Y. Hu and M. Tomizuka, "Generic Tracking and Prediction Framework and Its Application in Autonomous Driving", *IEEE Transactions on Intelligent Transportation Systems*, 21(9), 3634-3649, 2020.
- **J. Li**, H. Ma, and M. Tomizuka, "Conditional Generative Neural System for Probabilistic Trajectory Prediction", in *2019 IEEE Conference on Robotics and Systems (IROS)*, 2019.
- **J. Li***, H. Ma* and M. Tomizuka, "Interaction-aware Multi-agent Tracking and Probabilistic Behavior Prediction via Adversarial Learning", in *2019 IEEE Conference on Robotics and Automation (ICRA)*, 2019.
- **J. Li**, H. Ma, W. Zhan and M. Tomizuka, "Coordination and Trajectory Prediction for Vehicle Interactions via Bayesian Generative Modeling", in *2019 IEEE Intelligent Vehicles Symposium (IV)*, 2019.
- H. Ma, **J. Li**, W. Zhan and M. Tomizuka, "Wasserstein Generative Learning with Kinematic Constraints for Probabilistic Interactive Driving Behavior Prediction", in *2019 IEEE Intelligent Vehicles Symposium (IV)*, 2019.
- **J. Li**, H. Ma, W. Zhan and M. Tomizuka, "Generic Probabilistic Interactive Situation Recognition and Prediction: From Virtual to Real", in *2018 IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2018.
- **J. Li**, W. Zhan and M. Tomizuka, "Generic Vehicle Tracking Framework Capable of Handling Occlusions Based on Modified Mixture Particle Filter", in *2018 IEEE Intelligent Vehicles Symposium (IV)(oral)*, 936-942, 2018.
- W. Zhan, L. Sun, Y. Hu, **J. Li** and M. Tomizuka, "Towards a Fatality-Aware Benchmark of Probabilistic Reaction Prediction in Highly Interactive Driving Scenarios", in *2018 IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2018.
- W. Zhan, **J. Li**, Y. Hu and M. Tomizuka, "Safe and Feasible Motion Generation for Autonomous Driving via Constrained Policy Net", in *Industrial Electronics Society, IECON 2017-43rd Annual Conference of the IEEE*, 4588-4593, 2017.
- **J. Li**, C. Duan and Z. Fei, "A Novel Variable Selection Approach for Redundant Information Elimination Purpose of Process Control", *IEEE Transactions on Industrial Electronics*, 63(3), 1737-1744, 2016.
- C. Duan, Z. Fei and **J. Li**, "A Variable Selection Aided Residual Generator Design Approach for Process Control and Monitoring", *Neurocomputing*, 171, 1013-1020, 2016.
- S. Shi, Z. Fei and **J. Li**, "Finite-time Hinf Control of Switched Systems with Mode-dependent Average Dwell Time", *Journal of the Franklin Institute*, 353(1), 221-234, 2016.

Patent Applications

- **J. Li** and C. Choi, "System and Method for Trajectory Prediction with Evolving Interaction Graphs", Application pending.
- B. Wulfe, J. Ge and **J. Li**, "Systems and Methods for Hybrid Prediction Framework with Inductive Bias", Application pending.

Awards and Honors

- Top Reviewer for ICML 2020 *09/2020*
- Top Ten Outstanding Graduate at Harbin Institute of Technology *06/2016*
- Chunhui Innovation Fellowship (Top 1%) *03/2016*
- Meritorious Winner, Mathematical/Interdisciplinary Contest in Modeling *2015*
- China Renmin Scholarship *2013-2016*

Talks and Oral Presentations

- A^2-GNN: Interaction-Aware Trajectory Prediction, *RSS Workshop* *07/2020*
- Conditional Generative Neural System for Trajectory Prediction, *IROS* *11/2019*
- Incorporating Relational Reasoning in Multi-agent Trajectory Prediction, *IROS Workshop* *11/2019*
- Inductive Bias in Behavior Prediction Models, *Carnegie Mellon University* *08/2019*
- Generative Models for Probabilistic Trajectory Prediction, *IV Workshop* *06/2019*
- Probabilistic Interactive Situation Recognition and Prediction, *ITSC* *11/2018*
- Generic Vehicle Tracking Framework Capable of Handling Occlusions, *IV* *06/2018*

Professional Activities

- Associate Editor of *IEEE Intelligent Vehicles Symposium (IV)* *2020*
- Co-organizer of Workshops at *IEEE Intelligent Vehicle Symposium (IV)* *2019, 2020*
- Reviewer of *Adcances in Neural Information Processing Systems (NeurIPS)* *2020*
- Reviewer of *International Conference on Machine Learning (ICML)* *2020*
- Reviewer of *IEEE Transactions on Industrial Electronics* *2017 – Present*
- Reviewer of *IEEE Transactions on Intelligent Transportation Systems* *2017 – Present*
- Reviewer of *IEEE Transactions on Intelligent Vehicles* *2018 – Present*
- Reviewer of *IEEE Transactions on Mechatronics* *2019 – Present*
- Reviewer of *IEEE Transactions on Robotics* *2020 – Present*
- Reviewer of *Neural Computing and Applications* *2020 – Present*
- Reviewer of *IEEE International Conference on Robotics and Automation (ICRA)* *2019 – Present*
- Reviewer of *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* *2019 – Present*
- Reviewer of *IEEE Intelligent Vehicles Symposium (IV)* *2018 – Present*
- Reviewer of *IEEE Conference on Intelligent Transportation Systems (ITSC)* *2018 – Present*

Affiliations

- Member of *IEEE Intelligent Transportation Systems Society (ITSS)* *2016 – Present*
- Member of *IEEE Robotics and Automation Society (RAS)* *2016 – Present*

Computer Skills

- **Programming**: Python, C & C++, MATLAB/Simulink
- **Deep Learning Framework**: PyTorch, TensorFlow, Caffe
- **Design and Simulation**: ROS, Multisim, AutoCAD, OrCAD