

Jiachen Li

Durand Building, Stanford, CA 94305, USA

 [Personal Website](#)

 [LinkedIn](#)

 [Google Scholar](#)

 jiachen_li@stanford.edu

Education

University of California, Berkeley

Berkeley, CA, USA

Ph.D. in Mechanical Engineering (Robotics, Artificial Intelligence, Controls)

08/2016 – 10/2021

– Academic advisor: Prof. Masayoshi Tomizuka

– Dissertation title: Relational Reasoning for Multi-Agent Systems

– Dissertation committee: Prof. Masayoshi Tomizuka (Chair), Prof. Anca Dragan, and Prof. Mark Mueller

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 title: Partial Least Squares and Its Application to Process Control

Professional Appointments

Stanford University

Stanford, CA, USA

Postdoctoral Scholar

11/2021 - Present

Faculty mentor: Prof. Mykel J. Kochenderfer

Stanford Intelligent Systems Laboratory (SISL)

Research Experience

University of California, Berkeley

Berkeley, CA, USA

Graduate Student Researcher

08/2016 - 10/2021

Mechanical Systems Control (MSC) Laboratory & Berkeley DeepDrive (BDD) & Berkeley AI Research (BAIR)

Harbin Institute of Technology

Harbin, China

Research Assistant

03/2014 - 06/2016

Research Institute of Intelligent Control and System

Industry Work Experience

Waymo LLC

Mountain View, CA, USA

Software Engineer/Research Intern

05/2021 - 10/2021

Perception Team, Human Semantics Understanding and Trajectory Forecasting

Honda Research Institute US

San Jose, CA, USA

Research Intern

09/2019 - 05/2021

Machine Learning and Computer Vision Team, Scene Understanding and Decision Making

Toyota Research Institute

Los Altos, CA, USA

Research Intern

06/2019 - 08/2019

Machine Learning and Planning Teams, Behavior Prediction

Contributed Grants

○ NSF Artificial Intelligence Institutes Research Grant

In application

○ Open Philanthropy AI Research Grant

In application

○ Honda Research Institute Research Grant

2021-2022

○ Berkeley DeepDrive Research Grant

2017-2019

Selected Research Projects

- Dynamic Relational Reasoning for Multi-Agent Systems 2019 – Present
- Interaction-Aware Decision Making and Motion Planning for Multi-Agent Systems 2019 – Present
- Continual and Lifelong Learning for Motion Generation and Trajectory Prediction 2020 – Present
- Human Motion Forecasting and Action Recognition 2021 – Present
- Hybrid Attention for Graph Structure Learning and Key Information Selection 2020 – 2021
- Interpretable Motion Generation via Deep Generative Probabilistic and Logic Models 2018 – 2019
- Probabilistic Graphical Models for Behavior Recognition and Prediction 2018 – 2019
- Multi-Object Tracking with Learning Based Sequential Monte Carlo Methods 2017 – 2019
- Partial Least Squares and Its Application to Process Control 2015 – 2016

Publications

Preprints / Under Review

- [7] J. Li, P. Chen, J. Park and M. J. Kochenderfer, “Interactive Decision Making with Importance Estimation and Conditional Behavior Prediction”, in preparation.
- [6] J. Li, X. Shi, J. Stroud, Z. Zhang, T. Lan, J. Mao, J. Kang, K. Refaat, W. Yang, E. Le and C. Li, “Pedestrian Crossing Action Recognition and Trajectory Prediction with 3D Human Keypoints”, under review.
- [5] S. Malla, C. Choi, J. H. Choi, I. Dwivedi and J. Li, “DRAMA: Joint Risk Localization and Reasoning in Driving Scenarios”, under review.
- [4] R. Zhou*, Z. Xu*, H. Gao, M. Tomizuka and J. Li, “MATRIX: Multi-Agent Trajectory Simulation with Diverse Contexts”, under review.
- [3] M. Toyungyernsub, E. Yel, J. Li and M. Kochenderfer, “Dynamics-Aware Spatiotemporal Occupancy Prediction in Urban Environments”, under review.
- [2] S. Xie*, J. Li*, W. Zhan, S. Chen and J. Wang, “A Vehicle Trajectory Prediction Method with Featured Grid in Interactive Scenarios”, under review.
- [1] A. Dharmavaram, T. Gupta, J. Li, K.P. Sycara, “SS-MAIL: Self-Supervised Multi-Agent Imitation Learning”, under review.

Refereed Journal Articles

- [6] J. Li, H. Ma, Z. Zhang, J. Li and M. Tomizuka, “[Spatio-Temporal Graph Dual-Attention Network for Multi-Agent Prediction and Tracking](#)”, *IEEE Transactions on Intelligent Transportation Systems*, 2021. (**Impact Factor: 6.492**)
- [5] H. Ma*, Y. Sun*, J. Li, M. Tomizuka and C. Choi, “[Continual Multi-agent Interaction Behavior Prediction with Conditional Generative Memory](#)”, *IEEE Robotics and Automation Letters*, 2021. (**Impact Factor: 3.74**)
- [4] 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. (**Impact Factor: 6.319**)
- [3] 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. (**Impact Factor: 7.515**)
- [2] 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. (**Impact Factor: 5.719**)
- [1] 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. (**Impact Factor: 4.036**)

Conference Proceedings

- [20] J. Li*, H. Gang*, H. Ma, M. Tomizuka and C. Choi, “[Important Object Identification with Semi-Supervised Learning for Autonomous Driving](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2022.

- [19] R. Zhou, H. Gao, H. Zhou, M. Tomizuka, J. Li* and Z. Xu*, “[Grouptron: Dynamic Multi-Scale Graph Convolutional Networks for Group-Aware Dense Crowd Forecasting](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2022.
- [18] H. Ma, J. Li, R. Hosseini, M. Tomizuka and C. Choi, “[Multi-Objective Diverse Human Motion Prediction with Knowledge Distillation](#)”, in *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR Oral)*, 2022.
- [17] J. Li, F. Yang, H. Ma, S. Malla, M. Tomizuka and C. Choi, “[RAIN: Reinforced Hybrid Attention Inference Network for Motion Forecasting](#)”, in *International Conference on Computer Vision (ICCV)*, 2021.
- [16] H. Gang*, H. Girase, S. Malla, J. Li, A. Kanehara, K. Mangalam and C. Choi, “[LOKI: Long Term and Key Intentions for Trajectory Prediction](#)”, in *International Conference on Computer Vision (ICCV)*, 2021.
- [15] C. Choi, J. H. Choi, J. Li and S. Malla, “[Shared Cross-Modal Trajectory Prediction for Autonomous Driving](#)”, in *Conference on Computer Vision and Pattern Recognition (CVPR Oral)*, 2021.
- [14] X. Ma, J. Li, M. J. Kochenderfer, D. Isele and K. Fujimura, “[Reinforcement Learning for Autonomous Driving with Latent State Inference and Spatial-Temporal Relationships](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2021.
- [13] D. Cao*, J. Li*, H. Ma and M. Tomizuka, “[Spectral Temporal Graph Neural Network for Trajectory Prediction](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2021.
- [12] H. Ma*, Y. Sun*, J. Li, and M. Tomizuka, “[Multi-agent Driving Behavior Prediction across Different Scenarios with Self-supervised Domain Knowledge](#)”, in *IEEE Intelligent Transportation Systems Conference (ITSC)*, 2021.
- [11] C. Gong, X. Zhou, Z. Li, J. Li, J. Gong and J. Zhou, “[Orientation-Aware Planning for Parallel Task Execution of Omni-Directional Mobile Robot](#)”, in *IEEE/RSJ International Conference on Robotics and Systems (IROS)*, 2021.
- [10] L. Wei, Z. Li, J. Gong, C. Gong, and J. Li, “[Autonomous Driving Strategies at Intersections: Scenarios, State-of-the-Art, and Future Outlooks](#)”, in *IEEE Intelligent Transportation Systems Conference (ITSC)*, 2021.
- [9] J. Li*, F. Yang*, M. Tomizuka and C. Choi, “[EvolveGraph: Multi-Agent Trajectory Prediction with Dynamic Relational Reasoning](#)”, in *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
- [8] J. Li, H. Ma, and M. Tomizuka, “[Conditional Generative Neural System for Probabilistic Trajectory Prediction](#)”, in *IEEE Conference on Robotics and Systems (IROS) (Oral)*, 2019.
- [7] J. Li*, H. Ma* and M. Tomizuka, “[Interaction-aware Multi-agent Tracking and Probabilistic Behavior Prediction via Adversarial Learning](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2019.
- [6] J. Li, H. Ma, W. Zhan and M. Tomizuka, “[Coordination and Trajectory Prediction for Vehicle Interactions via Bayesian Generative Modeling](#)”, in *IEEE Intelligent Vehicles Symposium (IV)*, 2019.
- [5] H. Ma, J. Li, W. Zhan and M. Tomizuka, “[Wasserstein Generative Learning with Kinematic Constraints for Probabilistic Interactive Driving Behavior Prediction](#)”, in *IEEE Intelligent Vehicles Symposium (IV)*, 2019.
- [4] J. Li, H. Ma, W. Zhan and M. Tomizuka, “[Generic Probabilistic Interactive Situation Recognition and Prediction: From Virtual to Real](#)”, in *IEEE International Conference on Intelligent Transportation Systems (ITSC) (Oral)*, 2018.
- [3] J. Li, W. Zhan and M. Tomizuka, “[Generic Vehicle Tracking Framework Capable of Handling Occlusions Based on Modified Mixture Particle Filter](#)”, in *IEEE Intelligent Vehicles Symposium (IV) (Oral)*, 2018.
- [2] 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 *IEEE International Conference on Intelligent Transportation Systems (ITSC) (Oral)*, 2018.
- [1] 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*, 2017.

Workshop Publications

- [2] J. Li*, F. Yang*, M. Tomizuka and C. Choi, “[EvolveGraph: Multi-Agent Trajectory Prediction with Dynamic Relational Reasoning](#)”, in *NeurIPS Workshop on Machine Learning for Autonomous Driving*, 2020.
- [1] J. Li, H. Ma, Z. Zhang and M. Tomizuka, “[A²-GNN: Interaction-Aware Trajectory Prediction via Graph](#)”, in *IEEE Conference on Robotics and Automation (ICRA)*, 2022.

[Double-Attention Network](#)", *RSS Workshop on Interaction and Decision-Making in Autonomous Driving*, 2020.

Patents

- [8] J. Li and C. Choi, "Systems and methods for heterogeneous multi-agent multi-modal trajectory prediction with evolving interaction graphs", *US 2021/0287531*, 2021.
- [7] B. Wulfe, J. Ge and J. Li, "Systems and Methods for Hybrid Prediction Framework with Inductive Bias", *US 2021/0370990*, 2021.
- [6] J. Li, H. Gang, H. Ma and C. Choi, "System and Method for Important Object Identification with Semi-Supervised Learning in Autonomous Driving", *US patent*, in application.
- [5] J. Li and C. Choi, "System and Method for Motion Forecasting with Reinforced Hybrid Attention Inference Network", *US patent*, in application.
- [4] H. Ma, J. Li and C. Choi, "System and Method for Continual Multi-Agent Trajectory Forecasting", *US patent*, in application.
- [3] X. Ma, J. Li, M. J. Kochenderfer, D. Isele and K. Fujimura, "System and Method of Reinforcement Learning for Autonomous Driving with Latent State Inference and Spatial-Temporal Relationships", *US patent*, in application.
- [2] H. Ma, R. Hosseini, J. Li and C. Choi, "Diverse Human Motion Prediction", *US patent*, in application.
- [1] H. Girase, H. Gang, S. Malla, J. Li, A. Kanehara and C. Choi, "System and Method for Providing Long Term and Key Intentions for Trajectory Prediction", *US patent*, in application.

Selected Press Coverage

- "LOKI: An intention dataset to train models for pedestrian and vehicle trajectory prediction", Tech Xplore
- "EvolveGraph: Dynamic Neural Relational Reasoning for Interacting Systems", Berkeley AI Research Blog

Honors and Awards

- Best Paper Award Runner Up, ICCV 2021 MAIR2 Workshop 2021
- Top Reviewer Award at ICML 2020 2020
- UC Berkeley Graduate Student Travel Grant 2018 – 2019
- Top Ten Outstanding Graduate at Harbin Institute of Technology 2016
- Chunhui Innovation Fellowship (Top 1.0%) 2016
- Suzhou Industry Fellowship (Top 3.0%) 2015
- Meritorious Winner, Mathematical/Interdisciplinary Contest in Modeling 2015
- China Renmin Scholarship (Top 5.0%) 2013 – 2016

Invited Talks and Oral Presentations

- Towards Interactive Autonomy with Relational Reasoning, *ECE Department Seminar, NUS* 03/2022
- Towards Interactive Autonomy with Relational Reasoning, *BAIR Seminar, UC Berkeley* 03/2022
- Towards Interactive Autonomy with Relational Reasoning, *Safe AI Lab Seminar, CMU* 02/2022
- MAIR2: Multi-Agent Interaction and Relational Reasoning, *Waymo LLC* 08/2021
- Multi-Agent Interaction and Relational Reasoning for Autonomous Driving, *IV 2021 Workshop* 07/2021
- Relational Reasoning for Multi-Agent Systems, *BAIR/BDD Seminar, UC Berkeley* 04/2021
- Relational Reasoning for Multi-Agent Systems, *VASC Seminar, CMU* 03/2021
- Relational Reasoning for Multi-Agent Systems, *Honda Research Institute US* 02/2021
- Relational Reasoning for Multi-Agent Systems, *Intelligent Control Lab, CMU* 02/2021
- A^2 -GNN: Interaction-Aware Trajectory Prediction, *RSS 2020 Workshop* 07/2020
- Conditional Generative Neural System for Trajectory Prediction, *IROS 2019* 11/2019

- Incorporating Relational Reasoning in Multi-agent Trajectory Prediction, *IROS 2019 Workshop* 11/2019
- Inductive Bias in Behavior Prediction Models, *Intelligent Control Lab, CMU* 08/2019
- Generative Models for Probabilistic Trajectory Prediction, *IV 2019 Workshop* 06/2019
- Probabilistic Interactive Situation Recognition and Prediction, *ITSC 2018* 11/2018
- Generic Vehicle Tracking Framework Capable of Handling Occlusions, *IV 2018* 06/2018

Teaching Experience

Stanford University <i>Guest Lecture: Linear Constrained Optimization</i> Engineering Design Optimization	Stanford, CA, USA 04/2022 (scheduled)
Stanford University <i>Guest Lecture: Decision Making for Multi-Agent Systems</i> Advanced Topics in Sequential Decision Making	Stanford, CA, USA 02/2022
University of California, Berkeley <i>Course Assistant</i> Optimization Models in Engineering	Berkeley, CA, USA 01/2021 - 05/2021
University of California, Berkeley <i>Course Assistant</i> Advanced Control Systems	Berkeley, CA, USA 08/2020 - 01/2021
University of California, Berkeley <i>Course Assistant</i> Dynamic Systems and Feedback	Berkeley, CA, USA 01/2017 - 05/2017
Harbin Institute of Technology <i>Teaching Assistant</i> Introduction to Circuits	Harbin, China 05/2016 - 07/2016
Harbin Institute of Technology <i>Teaching Assistant</i> Automatic Control Theory	Harbin, China 08/2014 - 01/2015

Academic Services

Student Mentoring

- [Fan-Yun Sun](#) (Ph.D. candidate at Stanford CS) 2022 – Present
- [Sean Roelofs](#) (Graduate research assistant at Stanford AA) 2022 – Present
- [Victoria Dax](#) (Ph.D. candidate at Stanford AA) 2021 – Present
- [Phil Chen](#) (Graduate research assistant at Stanford AA) 2021 – Present
- [Maneekwan Toyungyernsub](#) (Ph.D. candidate at Stanford ME) 2021 – Present
- [Rui Zhou](#) (Undergraduate at UC Berkeley EECS) 2021 – Present
- [Akshay Dharmavaram](#) (M.S. student at CMU RI) 2021 – Present
- [Hengbo Ma](#) (Ph.D. candidate at UC Berkeley ME) 2020 – 2021
- [Yaofeng Sun](#) (Undergraduate intern at UC Berkeley, now at Pony.ai) 2020 – 2021
- [Fan Yang](#) (Undergraduate intern at UC Berkeley, now M.S. student at CMU RI) 2020 – 2021
- [Defu Cao](#) (Master intern at UC Berkeley, now Ph.D. student at USC CS) 2020 – 2021
- [Shefali Goel](#) (Undergraduate at UC Berkeley EECS) 2020 – 2021
- [Zhihao Zhang](#) (Undergraduate intern at UC Berkeley , incoming Ph.D. student at CMU MLD) 2019 – 2020

Organizing Committee

- Co-organizer, [ICRA 2022 Workshop on Long-Term Human Motion Prediction](#) 2022
- Co-organizer, [IV 2022 Workshop on Behavior Prediction and Generation in Autonomous Driving](#) 2022
- Co-organizer, [ITSC 2022 Workshop on Behavior Prediction and Generation in Autonomous Driving](#) 2022
- Lead-organizer, [ICCV 2021 Workshop on Multi-Agent Interaction and Relational Reasoning](#) 2021
- Co-organizer, [NeurIPS 2021 Workshop on Machine Learning for Autonomous Driving](#) 2021
- Co-organizer, [IROS 2021 Workshop on Multi-Agent Interaction and Relational Reasoning](#) 2021
- Co-organizer, [IV 2021 Workshop on Behavior Prediction and Generation in Autonomous Driving](#) 2021
- Co-organizer, [ITSC 2021 Workshop on Social and Interactive Behavior Modelling](#) 2021
- Co-organizer, [IV 2020 Workshop on Benchmarking Behavior Prediction in Autonomous Driving](#) 2020
- Co-organizer, [IV 2019 Workshop on Prediction and Decision Making for Autonomous Driving](#) 2019

Program Committee

- Program Committee, [ICLR 2022 Workshop on Gamification and Multiagent Solutions](#) 2022
- Program Committee, [4th Annual Learning for Dynamics & Control Conference \(L4DC\)](#) 2022
- Program Committee, [ICLR 2022 Workshop on Gamification and Multiagent Solutions](#) 2022
- Program Committee, [NeurIPS 2021 Workshop on Cooperative AI](#) 2021
- Program Committee, [IJCAI 2021 Workshop on AI for Autonomous Driving](#) 2021
- Associate Editor, [IEEE Intelligent Vehicles Symposium \(IV\)](#) 2020 – 2022

Journal Reviewer

- [IEEE Transactions on Neural Networks and Learning Systems \(T-NNLS\)](#) 2022 – Present
- [Transactions of Machine Learning Research](#) 2022 – Present
- [Neurocomputing](#) 2021 – Present
- [Signal Processing](#) 2021 – Present
- [IEEE Intelligent Systems](#) 2021 – Present
- [IEEE Robotics and Automation Letters \(RA-L\)](#) 2021 – Present
- [IEEE Transactions on Vehicular Technology \(T-VT\)](#) 2021 – Present
- [IEEE Transactions on Pattern Analysis and Machine Intelligence \(T-PAMI\)](#) 2020 – Present
- [Neural Computing and Applications \(NCAA\)](#) 2020 – Present
- [IEEE Transactions on Mechatronics \(T-MECH\)](#) 2019 – Present
- [IEEE Transactions on Intelligent Vehicles \(T-IV\)](#) 2018 – Present
- [IEEE Transactions on Intelligent Transportation Systems \(T-ITS\)](#) 2017 – Present
- [IEEE Transactions on Industrial Electronics \(T-IE\)](#) 2017 – Present

Conference Reviewer

- [European Conference on Computer Vision \(ECCV\)](#) 2022
- [IEEE/CVF Conference on Computer Vision and Pattern Recognition \(CVPR\)](#) 2022
- [International Conference on Learning Representations \(ICLR\)](#) 2022
- [Advances in Neural Information Processing Systems \(NeurIPS\)](#) 2020 – 2022
- [International Conference on Machine Learning \(ICML\)](#) 2020 – 2022
- [International Conference on Computer Vision \(ICCV\)](#) 2021
- [IEEE International Conference on Robotics and Automation \(ICRA\)](#) 2019 – 2022
- [IEEE/RSJ International Conference on Intelligent Robots and Systems \(IROS\)](#) 2019 – 2022
- [IEEE Intelligent Vehicles Symposium \(IV\)](#) 2019 – 2022
- [IEEE Conference on Intelligent Transportation Systems \(ITSC\)](#) 2019 – 2022
- [IEEE International Conference on Systems, Man, and Cybernetics \(SMC\)](#) 2021

Workshop Proposal Reviewer

- [IEEE International Conference on Robotics and Automation \(ICRA\)](#) 2021

Outreach Activities

- Cal Day at UC Berkeley 2018, 2019
- NASA University Leadership Initiative Outreach Program at Stanford University 2022

Academic Society Affiliations

- Member of *Institute of Electrical and Electronics Engineers (IEEE)* 2017 – Present
- Member of *IEEE Intelligent Transportation Systems Society (ITSS)* 2017 – Present
- Member of *IEEE Robotics and Automation Society (RAS)* 2017 – Present