

Jianyu Chen

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PROFESSION

Tsinghua University **Beijing, China**
- Assistant Professor in Institute for Interdisciplinary Information Sciences (IIIS) 2020.11 – Present
- Research Areas: Reinforcement learning, robotics, autonomous driving, control

EDUCATION

UC Berkeley **Berkeley, CA, USA**
PhD, Major: Control, Department of Mechanical Engineering 2015 – 2020

- Advisor: Professor Masayoshi Tomizuka

Tsinghua University **Beijing, China**
Bachelor, Mechanical Engineering 2011 – 2015

Tsinghua University **Beijing, China**
Bachelor (Second Major), Economics 2012 – 2015

EXPERIENCES

- **UC Berkeley** 2015.8 – 2020.9
- Graduate Student Researcher
- **Waymo (Google Self-Driving)** 2019.6 – 9
- Research Intern
- **nuTonomy (Aptiv Mobility)** 2018.5 – 8
- Research Intern
- **Denso International America** 2017.6 – 7
- Visiting PhD student

PUBLICATIONS

1. X. Zhu, S. Kang, **J. Chen**, “A Contact-Safe Reinforcement Learning Framework for Contact-Rich Robot Manipulation”, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2022.
2. Y. Lei, **J. Chen**, SE. Li, S. Zheng, “Performance-Driven Controller Tuning via Derivative-Free Reinforcement Learning”, IEEE Conference on Decision and Control (**CDC**), 2022.
3. X. Chen, Y. Mu, P. Luo, SE. Li, **J. Chen**, “Flow-based Recurrent Belief State Learning for POMDPs”, International Conference on Machine Learning (**ICML**), 2022.
4. D. Yu, H. Ma, SE. Li, **J. Chen**, “Reachability Constrained Reinforcement Learning”, International Conference on Machine Learning (**ICML**), 2022.
5. Y. Mu, S. Chen, M. Ding, **J. Chen**, R. Chen, P. Luo, “CtrlFormer: Learning Transferable State Representation for Visual Control via Transformer”, International Conference on Machine Learning (**ICML**), 2022.

6. Q. Guo, Y. Mu, **J. Chen**, T. Wang, Y. Yu, P. Luo, "Scale-Equivalent Distillation for Semi-Supervised Object Detection", IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022.
7. B. Peng, J. Duan, **J. Chen**, SE. Li, G. Xie, C. Zhang, Y. Guan, Y. Mu, E. Sun, "Model-Based Chance-Constrained Reinforcement Learning via Separated Proportional-Integral Lagrangian", IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**), 2022.
8. X. Zhu, Y. Zhou, Y. Fan, L. Sun, **J. Chen**, M. Tomizuka, "Learn to Grasp with Less Supervision: A Data-Efficient Maximum Likelihood Grasp Sampling Loss", International Conference on Robotics and Automation (**ICRA**), 2022.
9. H. Ma, C. Liu, SE. Li, S. Zheng, **J. Chen**, "Joint Synthesis of Safety Certificate and Safe Control Policy using Constrained Reinforcement Learning", Learning for Dynamics and Control Conference (**L4DC**), 2022. (**Best Paper Award Finalists**)
10. Y. Yang, **J. Chen**, SE. Li, "Learning POMDP Models with Similarity Space Regularization: a Linear Gaussian Case Study", Learning for Dynamics and Control Conference (**L4DC**), 2022.
11. Y. Mu, Y. Zhuang, B. Wang, G. Zhu, W. Liu, **J. Chen**, P. Luo, S. Li, C. Zhang, J. Hao, "Model-Based Reinforcement Learning via Imagination with Derived Memory", Advances in Neural Information Processing Systems (**NeurIPS**), 2021.
12. B. Peng, Y. Mu, Y. Guan, SE. Li, Y. Yin, **J. Chen**, "Model-Based Actor-Critic with Chance Constraint for Stochastic System", IEEE Conference on Decision and Control (**CDC**), 2021.
13. W. Cao, **J. Chen**, J. Duan, SE. Li, Y. Lyu, Z. Gu, Y. Zhang, "Reinforced Optimal Estimator", Modeling, Estimation and Control Conference (**MECC**), 2021. (**Best Student Paper Award Finalists**)
14. **J. Chen**, Y. Shimizu, L. Sun, M. Tomizuka, W. Zhan, "Constrained Iterative LQG for Real-Time Chance-Constrained Gaussian Belief Space Planning", IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2021.
15. H. Ma, **J. Chen**, SE. Li, X. Zhang, S. Zheng, J. Chen, "Model-based Constrained Reinforcement Learning using Generalized Control Barrier Function", IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2021.
16. Z. Gu, Y. Yang, J. Duan, SE. Li, **J. Chen**, W. Cao, S. Zheng, "Belief state separated reinforcement learning for autonomous vehicle decision making under uncertainty", IEEE Intelligent Transportation Systems Conference (**ITSC**), 2021.
17. Z. Lin, J. Duan, SE. Li, J. Li, H. Ma, Q. Sun, **J. Chen**, B. Cheng, "Solving Finite-Horizon HJB for Optimal Control of Continuous-Time Systems", 2021 International Conference on Computer, Control and Robotics (**ICCCR**), 2021.
18. B. Peng, Y. Mu, J. Duan, Y. Guan, SE. Li, **J. Chen**, "Separated Proportional-Integral Lagrangian for Chance Constrained Reinforcement Learning", IEEE Intelligent Vehicle Symposium (**IV**), 2021. (**Best Student Paper Award Finalists**)
19. J. Li, L. Sun, **J. Chen**, M. Tomizuka, W. Zhan, "A Safe Hierarchical Planning Framework for Complex Driving Scenarios based on Reinforcement Learning", International Conference on Robotics and Automation (**ICRA**), 2021.

20. L. Xin, Y. Kong, SE. Li, **J. Chen**, Y. Guan, M. Tomizuka, B. Cheng, "Enable faster and smoother spatio-temporal trajectory planning for autonomous vehicles in constrained dynamic environment", Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, 2021.
21. **J. Chen**, S. Li, and M. Tomizuka, "Interpretable End-to-end Urban Autonomous Driving with Latent Deep Reinforcement Learning", IEEE Transactions on Intelligent Transportation Systems (**T-ITS**), 2021.
22. **J. Chen**, Z. Xu, and M. Tomizuka, "End-to-end Autonomous Driving Perception with Sequential Latent Representation Learning", IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2020.
23. Y. Shimizu, W. Zhan, L. Sun, **J. Chen**, S. Kato and M. Tomizuka, "Motion Planning for Autonomous Driving with Extended Constrained Iterative LQR", ASME Letters in Dynamic Systems and Control, also presented in Dynamic Systems and Control Conference (**DSCC**), 2020.
24. **J. Chen**, B. Yuan, and M. Tomizuka, "Model-free Deep Reinforcement Learning for Urban Autonomous Driving", IEEE Intelligent Transportation Systems Conference (**ITSC**), 2019.
25. **J. Chen**, B. Yuan, and M. Tomizuka, "Deep Imitation Learning for Autonomous Driving in Generic Urban Scenarios with Enhanced Safety", IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2019.
26. C. Tang, **J. Chen**, and M. Tomizuka, "Adaptive Probabilistic Vehicle Trajectory Prediction Through Physically Feasible Bayesian Recurrent Neural Network", International Conference on Robotics and Automation (**ICRA**), 2019.
27. **J. Chen**, W. Zhan, and M. Tomizuka, "Autonomous Driving Motion Planning with Constrained Iterative LQR", IEEE Transactions on Intelligent Vehicles (**T-IV**), 2019.
28. L. Xin, P. Wang, C-Y. Chan, **J. Chen**, S. Li and B. Cheng, "Intention-Aware Long Horizon Trajectory Prediction of Surrounding Vehicles using Dual LSTM Networks", IEEE Intelligent Transportation Systems Conference (**ITSC**), 2018.
29. **J. Chen**, C. Tang, L. Xin, and M. Tomizuka, "Continuous Decision Making for Autonomous Driving under Uncertain and Interactive Environments", IEEE Intelligent Vehicle Symposium (**IV**), 2018.
30. **J. Chen**, Z. Wang, and M. Tomizuka, "Deep Hierarchical Reinforcement Learning for Autonomous Driving with Distinct Behaviors", IEEE Intelligent Vehicle Symposium (**IV**), 2018.
31. **J. Chen**, C. Liu, and M. Tomizuka, "FOAD: Fast Optimization-based Autonomous Driving Motion Planner", American Control Conference (**ACC**), 2018.
32. B. Yuan, **J. Chen**, W. Zhang, and S. McMains, "Iterative Cross Learning on Noisy Labels", IEEE Winter Conf. on Applications of Computer Vision (**WACV**), 2018.
33. **J. Chen**, W. Zhan, and M. Tomizuka, "Constrained Iterative LQR for On-Road Autonomous Driving Motion Planning", IEEE Intelligent Transportation Systems Conference (**ITSC**), 2017.
34. W. Zhan, **J. Chen**, C-Y. Chan, and M. Tomizuka, "Spatially-Partitioned Environmental Representation and Planning Architecture for On-Road Autonomous Driving", IEEE Intelligent Vehicle Symposium (**IV**), 2017.
35. C. Liu, **J. Chen**, T-D. Nguyen and M. Tomizuka, "The Robustly-Safe Automated Driving System for Enhanced Active Safety", SAE World Congress, SAE Technical Paper 2017-01-1406, 2017.