

Jianyu Chen

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PROFESSION

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

EDUCATION

PhD, Major: Control, Department of Mechanical Engineering 2015 – 2020

- Advisor: Professor Masayoshi Tomizuka

Bachelor, Mechanical Engineering 2011 – 2015

Bachelor (Second Major), Economics 2012 – 2015

EXPERIENCES

- 2015.8 – 2020.9
- Graduate Student Researcher
- 2019.6 – 9
- Research Intern
- 2018.5 – 8
- Research Intern
- 2017.6 – 7
- Visiting PhD student

PUBLICATIONS

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

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

20. L. Xin, Y. Kong, SE. Li, , 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. S. Li, and M. Tomizuka, "Interpretable End-to-end Urban Autonomous Driving with Latent Deep Reinforcement Learning", IEEE Transactions on Intelligent Transportation Systems (), 2021.
22. 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 (), 2020.
23. Y. Shimizu, W. Zhan, L. Sun, , 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 (), 2020.
24. B. Yuan, and M. Tomizuka, "Model-free Deep Reinforcement Learning for Urban Autonomous Driving", IEEE Intelligent Transportation Systems Conference (), 2019.
25. 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 (), 2019.
26. C. Tang, and M. Tomizuka, "Adaptive Probabilistic Vehicle Trajectory Prediction Through Physically Feasible Bayesian Recurrent Neural Network", International Conference on Robotics and Automation (), 2019.
27. W. Zhan, and M. Tomizuka, "Autonomous Driving Motion Planning with Constrained Iterative LQR", IEEE Transactions on Intelligent Vehicles (), 2019.
28. L. Xin, P. Wang, C-Y. Chan, , S. Li and B. Cheng, "Intention-Aware Long Horizon Trajectory Prediction of Surrounding Vehicles using Dual LSTM Networks", IEEE Intelligent Transportation Systems Conference (), 2018.
29. , C. Tang, L. Xin, and M. Tomizuka, "Continuous Decision Making for Autonomous Driving under Uncertain and Interactive Environments", IEEE Intelligent Vehicle Symposium (), 2018.
30. , Z. Wang, and M. Tomizuka, "Deep Hierarchical Reinforcement Learning for Autonomous Driving with Distinct Behaviors", IEEE Intelligent Vehicle Symposium (), 2018.
31. , C. Liu, and M. Tomizuka, "FOAD: Fast Optimization-based Autonomous Driving Motion Planner", American Control Conference (), 2018.
32. B. Yuan, , W. Zhang, and S. McMains, "Iterative Cross Learning on Noisy Labels", IEEE Winter Conf. on Applications of Computer Vision (), 2018.
33. , W. Zhan, and M. Tomizuka, "Constrained Iterative LQR for On-Road Autonomous Driving Motion Planning", IEEE Intelligent Transportation Systems Conference (), 2017.
34. W. Zhan, , C-Y. Chan, and M. Tomizuka, "Spatially-Partitioned Environmental Representation and Planning Architecture for On-Road Autonomous Driving", IEEE Intelligent Vehicle Symposium (), 2017.
35. C. Liu, , 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.