

Jinning Li

2103 Etcheverry Hall, Berkeley, CA 94709, USA

+1 (510)-697-7720 • [✉ jinning_li@berkeley.edu](mailto:jinning_li@berkeley.edu) • [🌐 jinning-li.github.io/](https://github.com/jinning-li)

Education

University of California, Berkeley

Ph.D. Candidate in Robotics

Berkeley, CA

08/2019 – 05/2024(Expected)

- Academic advisor: Prof. Masayoshi Tomizuka | Major: Control; Minor: Machine Learning, Optimization | GPA: 3.96/4.0

University of California, Berkeley

M.S. in Robotics

Berkeley, CA

08/2019 – 12/2022

Harbin Institute of Technology

B.Eng. in Automation

Harbin, China

09/2015 – 07/2019

- Academic advisor: Prof. Huijun Gao, and Prof. Weichao Sun | Major GPA: 4.0/4.0 | Ranking: 1/150

Skills

- Research:** Deep Reinforcement Learning, Optimization, Machine Learning, Control, and their applications on Prediction & Planning for Robotics and Autonomous Driving with an Emphasis on Safety
- Deep learning framework:** Pytorch, Tensorflow, JAX, ONNX | **Programming:** Python, C/C++, MATLAB
- Cloud Computing:** Google Cloud Platform, Amazon Web Services S3 EC2

Work Experiences

Honda Research Institute USA, Inc.

Student Associate / Research Intern

San Jose, CA

08/2023 – Present

- Designed algorithms to improve safe generalization of prediction models, incorporating behavior planning modules of the vehicles
- Captured invariant information between different traffic scenes across partitions of training datasets by unsupervised learning
- Evaluated the proposed algorithm on large-scale datasets, e.g., Waymo Open Motion Dataset & Argoverse 2 Dataset, which are preprocessed and unified to the same format

Google LLC

Software Engineer Intern, Machine Learning Infrastructure Team

Sunnyvale, CA

05/2023 – 08/2023

- Designed and built a JAX-ONNX backend library: Jaxonnruntime. Github: <https://github.com/google/jaxonnruntime>
- Passed more than 700 unit tests in both ONNX backend test suites and customized scenarios including Large Language Models
- Transformed the original Pytorch LLaMA model to JAX
- Exported and served the transformed models by the JAX ecosystem on Google Cloud internal server platforms
- Benchmarked the inference of JAX Transformers on model servers with different parallel partition rules on GPUs and TPUs
- Customized the library based on the needs of users at Google

Google LLC

Software Engineer Intern, Discover Ads Auction Team

Mountain View, CA

05/2022 – 08/2022

- Designed and built an offline reinforcement learning infrastructure under Tensorflow for discover ads auction
- Trained deep NNs to optimize auction long term values from real-world data to achieve better advertiser/user value trade-off
- Conducted A/B testing of the trained algorithm on production traffic and polished the models accordingly
- Drove weekly meetings with the host teams and the research teams with effective communication
- Documented the design and implementation details for future iterations by the team

Academic Services

- Co-chair** of Presentation Sessions at *2021 IEEE Conference on Robotics and Automation (ICRA)*
- Graduate Student Instructor** of *UC Berkeley ME C232/EE C220A (Advanced Control Systems I)* Fall 2021
- Academic Publication Reviewer** for *IEEE RA-L, IEEE T-SMC:Systems, CoRL, ICRA, IROS, NeurIPS workshops*

Publications

- [1] **Jinning Li**, Xinyi Liu, Banghua Zhu, Jiantao Jiao, Masayoshi Tomizuka, Chen Tang, Wei Zhan. "Guided Online Distillation: Promoting Safe Reinforcement Learning by Offline Demonstration," *arXiv:2309.09408 (Submitted to ICRA 2024)*, 2023.
- [2] Yuxin Chen, Chen Tang, Ran Tian, Chenran Li, **Jinning Li**, Masayoshi Tomizuka, Wei Zhan. "Quantifying Agent Interaction in Multi-agent Reinforcement Learning for Cost-efficient Generalization," *arXiv preprint arXiv:2310.07218*, 2023.
- [3] **Jinning Li**, Chen Tang, Masayoshi Tomizuka, Wei Zhan, "Hierarchical Planning Through Goal-Conditioned Offline Reinforcement Learning," in *IEEE Robotics and Automation Letters*, 2022.
- [4] **Jinning Li**, Chen Tang, Masayoshi Tomizuka, Wei Zhan. "Dealing with the Unknown: Pessimistic Offline Reinforcement Learning," in *2021 Conference on Robot Learning (CoRL)*, 2021.
- [5] Jiachen Li, Hengbo Ma, Zhihao Zhang, **Jinning Li**, Masayoshi Tomizuka. "Spatio-Temporal Graph Dual-Attention Network for Multi-Agent Prediction and Tracking," in *IEEE Transactions on Intelligent Transportation Systems*, 2021.
- [6] **Jinning Li**, Liting Sun, Jianyu Chen, Masayoshi Tomizuka, Wei Zhan. "A Safe Hierarchical Planning Framework for Complex Driving Scenarios based on Reinforcement Learning," in *2021 IEEE Conference on Robotics and Automation (ICRA)*, 2021.
- [7] **Jinning Li**, Liting Sun, Wei Zhan, Masayoshi Tomizuka. "Interaction-aware behavior planning for autonomous vehicles validated with real traffic data," in *Dynamic Systems and Control Conference (DSCC)*. American Society of Mechanical Engineers, 2020.
- [8] **Jinning Li**. "A novel integrated SVM for fault diagnosis using KPCA and GA," in *Journal of Physics: Conference Series*. IOP Publishing, 2019.

Selected Research Experiences

Trustworthy Reinforcement Learning Algorithms for Real-World Application

UC Berkeley

Advisor: Prof. Masayoshi Tomizuka

01/2023 – Present

- Designed a guided online distillation algorithm for safe reinforcement learning (RL): extracted skills from human demonstrations by Decision Transformer, and distilled them into a lightweight network in online interactive funetuning for safety enhancement
- Proposed a metric to quantify the interaction intensity for multi agent RL, which guides resource allocation for training diverse policies under a constraint budget
- Develop a generative model (Diffusion) based simulator producing human like interactions, which can be trained concurrently and accept feedback from planning modules for better sample efficiency and final performance on safety

Machine Learning Framework and Algorithms Design for Decision Making

UC Berkeley

Advisor: Prof. Masayoshi Tomizuka

09/2020 – 04/2023

- Designed a spatio-temporal graph dual-attention network for multi-agent prediction, considering context information, trajectories of interactive agents, and physical feasibility constraints
- Proposed a Pessimistic Offline Reinforcement Learning algorithm, which palliates the distributional shift problem by explicitly handling out-of-distribution states
- Built a hierarchical planning framework especially for long horizon tasks, with a high-level module reasons about long-term strategies and plan sub-goals, and low-level goal-conditioned offline reinforcement learning algorithms to achieve sub-tasks

Interaction-Aware Behavior Planning for Autonomous Vehicles

UC Berkeley

Advisor: Prof. Masayoshi Tomizuka

08/2019 – 01/2021

- Built an interaction-aware behavior planning algorithm, which predicts the cooperativeness of the surrounding vehicles and solves a POMDP problem by MCTS
- Proposed a general hierarchical planning framework, which handles various complex urban traffic conditions with safety guarantees
- Built a simulator based on Python and OpenAI Gym that reproduces real traffic scenarios, and the proposed algorithms achieved both high completion rate of around and low collision rate

Machine Learning Based Fault Diagnosis for Industrial Processes

Harbin Institute of Technology

Advisor: Prof. Huijun Gao

03/2018 – 10/2018

- Built an integrated SVM model with KPCA to extract and compress information, and GA to optimize the model parameters
- Evaluated the algorithm on Tennessee Eastman process benchmark. Ablation studies showed that KPCA and GA both boost the performance of the SVM