

Summary

Research Engineer with 7+ years of experience in ML for sequential decision making with Princeton PhD and industry leading work at Waymo. Proven expertise in applying reinforcement learning, imitation learning, and optimization techniques to solve safety-critical challenges in timing sensitive production environments.

Professional Experience

Waymo | Software Engineer, Motion Planning | Sep 2022 – Present

- Efficiently implemented end-to-end RL system for trajectory scoring. Led strategic project resource reallocation and creation of invaluable leave-behind assets
- Architected and managed two production hyperparameter optimization pipelines for behavior models, using IRL and GP, which shortened parameter launch dev time by 80%
- Delivered time-sensitive system-wide fixes to safety-critical collision avoidance logic under tight deadlines, with 100% effective regression mitigation.
- Designed and built a highly-efficient geometry generation module used in 80% of planning situations, significantly enhancing ride smoothness and enabling a 20% reduction in compute time and seamless integration of ML generators.

Other Notable Professional Experience

- **Ambient** – Co Founder/CTO – AI-enabled radar for continuous health monitoring – 2022
- **Aurora** – Motion Planning PhD Intern – Developed novel deep imitation learning methods – 2020
- **Monovo** – Technical Lead – Signal processing for pulse-oximetry – 2016
- **Wavio** – Co Founder/CTO – Hardware/software development for communications devices – 2015
- **On Semiconductor** – Analog Design Intern – Amplifier and ADC design using Cadence – 2015

Education

Princeton University | Princeton, NJ

Ph.D. in Electrical Engineering | 2016 – 2022

Dissertation: Learning from Humans: Beyond Classical Imitation Learning

Brigham Young University | Provo, UT

M.S. in Electrical Engineering, Cum Laude | 2014 – 2015

B.S. in Electrical Engineering, Magna Cum Laude | 2009 – 2014

Selected Publications

- Spencer, J., Choudhury, S., Barnes, A., et al. “Expert Intervention Learning: An online framework for robot learning from explicit and implicit human feedback.” *Autonomous Robots (AURO)*, 2021.
- Spencer, J., Choudhury, S., Venkatraman, A., et al. “Feedback in Imitation Learning: Three regimes of covariate shift.” *arXiv preprint*, 2021.
- Spencer, J., Choudhury, S., Barnes, A., et al. “Learning from Interventions: Human-robot interaction as both explicit and implicit feedback.” *Robotics: Science and Systems (RSS)*, 2020.

Skills

- Languages/Frameworks: Python, C++, SQL, TensorFlow, PyTorch
- Core Concepts: Reinforcement Learning (RL), Inverse Reinforcement Learning (IRL), Imitation Learning (IL), Learning from Demonstration (LfD), Behavior Modeling, Motion Planning, Gaussian Processes

Personal Interests

Marathoner (12), Ironman triathlete, Eagle Scout, cellist, avid linguist, baker (Hollywood Handshake winner)