Jonathan Spencer

j.spencer@princeton.edu, 303.525.5598

I'm a sixth year Ph.D. student at Princeton studying imitation learning and reinforcement learning with specific interests in modeling and prediction for autonomous driving applications. I love understanding and improving autonomous systems in theory and in practice. I have broad interests in all aspects of sensing, signal processing, modeling and control, and I look forward to a future full of helpful robots.

Education

Ph.D. in Electrical Engineering – Princeton University – Fall 2016 to Present
Imitation Learning, Reinforcement Learning, Probabilistic Modeling and Machine Learning
Selected Publications:
- **Spencer,** Choudhury, Barnes, Schmittle, Chiang, Ramadge, Srinivasa. "Expert Intervention Learning: An online framework for robot learning from explicit and implicit human feedback." AURO '21
- **Spencer,** Choudhury, Venkatraman, Ziebart, Bagnell. "Feedback in Imitation Learning: Three regimes of covariate shift." arXiv '21
- **Spencer,** Choudhury, Barnes, Schmittle, Chiang, Ramadge, Srinivasa. "Learning from Interventions: Human-robot interaction as both explicit and implicit feedback." RSS '20

M.S. in Electrical Engineering – Brigham Young University – 2014 to 2015
Thesis: *A Compact Phased Array Radar for UAS Sense and Avoid*
Selected Publications:
- Sahawneh, Wikle, Roberts, **Spencer,** McClain, Warnick, Beard. "A Ground-Based Sense-and-Avoid System for Small Unmanned Aircraft." JAIS 2018
- Mackie, **Spencer,** Warnick. "Compact FMCW radar for a UAS Sense and Avoid System." APSURSI 2014

B.S. in Electrical Engineering – Brigham Young University – *Magna Cum Laude* – 2009 to 2014

Experience

Work:
Motion Planning Grad Intern – Developed novel simulator-based imitation learning methods – Aurora – 2020
Technical Lead – Signal processing for pulse-oximetry – Rocojo (startup) – 2016
Technical Lead – Hardware/software development for communications devices – Wavio (startup) – 2015
Analog Design Intern – Amplifier and ADC design using Cadence – On Semiconductor – 2015

Teaching:
Sole Instructor: Electrical Circuits, Circuits I (Camden County College)
TA: Safety Critical Robotics, Networks/Optimization, Wireless Comm Circuits, Signals & Systems, Analog Circuits

Undergraduate Thesis Advising/Mentoring:
Rebekah Sichel – "Alternative Methods for Avalanche Search and Rescue" – 2017
Oliver Matthews – "Extending Classical Deep RL Techniques for use in Multi-Agent Systems" – 2020
Jovana Kondik – "Towards Socially Aware Robot Learning: Inferring Human Objectives" – 2021

Volunteer Work:
Engineering Tutor – 5+ hrs per week in undergraduate EE topics at BYU, 2013-2015
English Teacher – ESL for 600+ Elementary school kids in rural Hunan, China, 2016
Missionary – Family counseling, addiction recovery in Argentina, 2010-2012

Skills

- Imitation/Reinforcement Learning (Python)
- Radar Signal Processing (Python, MATLAB)
- People person, very outgoing, excellent in teams.
- Multilingual: Spanish (Adv.), Mandarin (Beg.)

Personal Interests

Lover of running, Ironman triathlete, Eagle Scout, accomplished cellist, avid linguist