Peter Morales

Contact

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Programming Languages

♥Python
♥Julia
C++, C, CUDA,
LaTeX

Programming Tools and Frameworks

Deep Learning:
♥Pytorch
♥Flux
Tensorflow, Keras

Probabilistic Programming:
Turing, Pyro

Reinforcement Learning:
Ray, OpenAIGym

Other:
CuBLAS, CuFFT

Relevant Graduate Courses

AI,
Statistical Learning Theory (MIT),
Machine Learning,
Matrix Methods in Data Analysis (MIT),
Cognitive Robotics (MIT)

Experience

2012 — **Jefferson National Laboratory** — Tallahassee, FL
Research Associate
Performed Monte-Carlo and data analysis of nuclear physics experiments.

2012-2014
2014-2016 — **BAE Systems** — Burlington, MA
Software Engineer I -> II -> Senior Research Engineer
Developed physics simulation software and GPU accelerated signal processing algorithms. Quickly was promoted from Software Engineer I to eventually Senior Research Engineer. Research Engineer position focused on algorithms and implementation for adaptive radar countermeasures and video scene understanding.

2014,
2016-Now — **MIT Lincoln Laboratory** — Lexington, MA
Contractor -> Associate Staff -> Technical Staff
Started as computer vision contractor, was recruited to associate staff and promoted to technical staff. Primary focus has been on applications of machine learning to problems in information retrieval, autonomy, and computer vision. Founding member of MIT LL AI technology group.

Education

2012 — **B.S.** in Physics — Florida State University

2020 — **M.S.** in Electrical and Computer Engineering — Worcester Polytechnic Institute

2019 — **Advanced Study Program** Coursework towards M.S. — Massachusetts Institute of Technology

Highlighted Projects

2017-2019 — **Small Target in Clutter Detection** — MIT Lincoln Laboratory
Lead developer for computer vision systems which detect small targets in clutter. Designed and developed training, evaluation, and deployment infrastructure for CV and Camera Control algorithms. Additionally developed and published on improvements to existing algorithms. Code from this project has been utilized on several projects at MIT Lincoln Laboratory.

2019-Today — **Adaptable Reinforcement Learning and Planning** — MIT Lincoln Laboratory
Principal investigator for program focused on developing adaptable and robust multi-agent planning algorithms. Researching methods improving MARL sample efficiency and robustness. Most recently completed project on Monte Carlo Tree search methods which utilize Coordination Graphs to efficiently solve sparse coordination problems in an anytime fashion for UAV delivery coordination.

2019-Today — **Scientific Machine Learning** — MIT
Working with MIT Campus PI's as research engineer on applications of Universal Differential Equations (UDE) and physics informed learning methods. Currently working on applications in weather forecasting.