SEAN CONDON

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EDUCATION

Massachusetts Institute of Technology   *Aug 2017 - Expected 2021*
Candidate for Bachelor of Science   Cambridge, MA
Major in Physics – Minor in Computer Science   GPA: 4.8/5.0
Computer Courses   Algorithm Design, Math for Computer Science, Intro to Data Science

RESEARCH EXPERIENCE

Large Hadron Collider Research Group - *Research Intern* - Remote   *May 2020 - Present*
· Researched machine learning algorithms to filter out interesting particle decays from CERN LHCb data.
· Optimized boosted decision tree models in Python using CatBoost and scikit-learn to have high signal detection efficiency with low enough latency to operate at LHCb's data output rate of 40 TBit/s.
· Implemented best performing models onto CUDA-enabled GPU clusters.

LIGO Laboratory MIT - *Research Intern* - Cambridge, MA   *Jan 2019 - Jan 2020*
· Developed a machine learning algorithm to detect gravitational wave signals in noisy time series data.
· The algorithm, a convolutional neural network trained on Google Cloud using the TensorFlow library in Python, showed computational speeds thousands of times faster than traditional detection algorithms.
· Debugging algorithm involved using TensorBoard and analyzing overfitting via t-SNE visualization.

Laboratoire d'Astrophysique de Marseille - *Research Intern* - France   *June 2018 - Aug 2018*
· Characterized three new extrasolar planets by combined analysis of multiple datasets in Python.
· Deduced most likely exoplanet parameters with a Markov Chain Monte Carlo algorithm.
· Analysis of datasets involved standard Python toolkit - scipy, numpy, matplotlib, pandas, scikit-learn.

TECHNICAL SKILLS

Software   Python, C++ (Arduino), Swift, TensorFlow, PyTorch, scikit-learn, Google Cloud
                 Platform, Command-Line (Shell), IOS Development, CUDA, Adobe Creative Suite
Hardware   Arduino & Teensy programming, FPGA, GPU & TPU interfacing for Machine Learning

WORK EXPERIENCE

Learn Ventures - *Machine Learning Engineer* - Remote   *Sept 2020 - Present*
· Developed graph convolutional neural networks to predict shape of proteins with synthetic amino acids.
· Created course material for college students to study the basics of machine learning and data science.

ClimaCell Weather Company - *Software Engineer* - Boston, MA   *Jan 2020 - Feb 2020*
· Implemented machine learning to incorporate unconventional data sources into rainfall estimates.
· Analyzing signal strength changes between cellphone towers with an LSTM greatly improved accuracy and resolution of rainfall predictions, especially in areas with few ground-based weather stations.

PUBLICATIONS & PRESENTATIONS

Convolutional Neural Networks as a Detection Algorithm for Binary Black Hole Mergers
Publication in preparation - Cambridge, MA   *Aug 2019 - Present*
Machine Learning for Gravitational Wave Science   *Aug 2019*
Presentation - LIGO Laboratory MIT, Cambridge, MA