

DONALD PIERCE

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EDUCATION

New York University

B.A. Physics, B.A. Mathematics | Courant Institute

New York, NY

September 2014 - May 2019

- Treasurer of the Society of Physics Students (2016-2017)
- **Relevant Coursework:** Linear Algebra, Ordinary and Partial Differential Equations, Multivariate Calculus, Computational Modeling and Simulation, Combinatorics with Graph Theory, Probability Theory

RESEARCH EXPERIENCE

ATLAS Experiment through NYU Physics

Data Scientist in Experimental Particle Physics at CERN

New York, NY

May 2016 - May 2019

- Developed a novel method to optimize algorithm efficiency by weighting results from different algorithms
- The hybrid algorithm approach using bisection optimization was approved for testing and is currently in use in three data-collection chains at the Large Hadron Collider ATLAS experiment as of April 2018, filters TBs / sec
- Gave more than 12 talks presenting on algorithm efficiency, correlation between ATLAS algorithms, and hybrid algorithm approaches to the Missing Transverse Momentum (MET) Group at CERN
- Work has contributed to both the [ATLAS 2017 PUB Note](#) and the upcoming Run 2 Performance Note
- Used C++ with the ROOT Data Analysis Framework to design new data-collection algorithms
- Became an authorized CERN cloud user; compile data into ROOT trees over globally-distributed Linux servers

Center for Quantum Phenomena at NYU Physics

Study in Quantum Computing

New York, NY

May 2018 - March 2019

- Developing course notes for a class on quantum computing using Rigetti's Forest SDK
- Studying the foundations of quantum machine learning
- Running optimization experiments in Labber which tune microwave frequencies for 5mK QBit measurements

WORK EXPERIENCE

Spheryx, Inc.

Software Developer and Scientific Research Intern

New York, NY

May 2018 - August 2018

- Designed algorithms which process large pandas data-frames and extract scientific plots for users
- Gave three talks presenting on new methods to computationally profile nano-particle flows suspended in chemical solutions from video data; using better logic and fit algorithms
- Built a user-friendly web app using Dash by Plotly for scientists at the company to more easily process videos
- Studied potential applications of TensorFlow in company software, such as for learning particle type and position

SELECTED INDEPENDENT PROJECTS

Traffic

Machine Learning in Python available at github.com/donjpierce/traffic

New York, NY

November 2018 - February 2019

- Designing a reinforcement learning algorithm for my own simulation of traffic flow on real road networks
- Using Q-learning and ϵ -greedy techniques to allow cars to try alternate routes until shortest time is found
- Using TensorFlow and Keras to train a three-layer learning architecture

AWARDS

- **NYU DURF Grant** — Awarded \$1,000 for “compelling and significant” research

November, 2017

SKILLS & INTERESTS

- **Languages** Proficient in Python, Pandas, Scikit-Learn, NumPy, C++, ROOT; familiar with TensorFlow, Amazon Web Services (RDS, S3, Neptune, EC2), Gremlin, SQL, Jinja2, HTML; experienced with Git, Unix/Linux, Flask, Mathematica, MATLAB, Vim, LaTeX

Python 

C++ 

TensorFlow 

- **Hobbies** Stargazing, playing jazz sax, writing philosophy, thinking about how to design the cities of the future