

# DONALD PIERCE

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## EDUCATION

### New York University

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

• 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

New York, NY

August 2014 — Present

## RESEARCH EXPERIENCE

### ATLAS Experiment through NYU Physics

*Data Scientist in Experimental Collider Physics at CERN*

New York, NY

May 2015 — Present

- 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 — Present

- 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 PROJECT

### Traffic

*Machine Learning in Python available at [github.com/donjpierce/traffic](https://github.com/donjpierce/traffic)*

New York, NY

November 2018 — Present

- Designing a reinforcement learning algorithm for my own simulation of traffic flow on real road networks
- Using Q-learning and  $\epsilon$ -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, 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