DONALD PIERCE

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EDUCATION

New York University   New York, NY
B.A. Physics, B.A. Mathematics | Courant Institute   *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

Center for European Nuclear Research (CERN)   New York, NY
Student Data Science Researcher   *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; compiled data into ROOT trees over globally-distributed Linux servers

WORK EXPERIENCE

Elementus, Inc.   New York, NY
Data Scientist   *July 2019 - October 2019*

· Wrote and published a comprehensive analysis of the PlusToken cryptocurrency scam, which later went viral
· Contributed to the company's core data analysis pipeline by designing cloud computing processes in SQL \ C++
· Worked with graph visualization software to tell stories with big data, used Node JS (functional programming)
· **References**: Max Galka (CEO) max@elementus.io   Alex Robnett (Deployment Strategist) alex@elementus.io

Spheryx, Inc.   New York, NY
Scientific Research Intern   *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 profile nano-particle flows suspended in fluids
· 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   New York, NY
Machine Learning in Python available at github.com/donjpierce/traffic   *November 2018 - February 2019*

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

AWARDS

• **NYU DURF Grant** — Awarded \$1,000 for "compelling and significant" research   *November, 2017*

SKILLS & INTERESTS

• **Languages** Proficient in SQL, Python, Pandas, Scikit-Learn, NumPy, Node JS, C++, ROOT, Google Cloud Services, Google BigQuery; familiar with TensorFlow, Amazon Web Services (RDS, S3, Neptune, EC2), Gremlin, Jinja2, HTML; experienced with RESTful web apps, Git, Unix/Linux, Flask, Django, Mathematica, MATLAB

Python ▭ **C++** ▭ **Node JS** ▭

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