Tim Hopper

Experienced machine learning engineer and Python developer

Experience

Varo Bank

Sr. Staff Software Engineer, Machine Learning, *March 2024 - present*
Staff Software Engineer, Machine Learning, *December 2021 - March 2024*

- Develop machine learning platform for fraud detection, risk mitigation, lending, and marketing
- Lead development of batch feature store using Tecton, enabling democratized feature creation and discovery
- Guide team in implementing engineering best practices

DTN

Data Science Architect, *August 2020 – December 2021*

- Built and maintained data science infrastructure with AWS and CloudFormation
- Enabled machine learning product development by building tools and platforms for data scientists
- Trained and mentored data scientists in Python tooling and software engineering practice
- Strategized and led the development of AWS infrastructure for big data usability and accessibility

Blackberry | Cylance

Senior Data Scientist, *Nov 2017 – May 2020*

- Led development of feature store using serverless AWS infrastructure
- Developed and maintained Python packages for data ingestion, cleaning, and standardization
- Guided data science team in best practices for Python development and software testing
- Researched machine learning techniques for dynamic detection of malware

Distil Networks

Data Scientist, *Oct 2015 – Nov 2017*

- Led research for validation of JavaScript-based client fingerprinting technique
- Constructed hierarchical Bayesian models for analysis of internet user behavior
- Lead development of real-time identification platform for malicious web bots on Apache Storm
- Introduced team to best practices in Python development and data analysis

Qadium

Data Scientist, *Feb 2015 – Oct 2015*

- Built **open-source tools** in C++ and Python for topic modeling and inference on nonparametric Bayesian models
- Wrote **instructional material** for inference on nonparametric Bayesian models in with IPython notebooks
- Maintained continuous integration with Travis-CI and automated deployment to Anaconda.org

Parse.ly
Software Engineer, *Jan 2014 – Feb 2015*

- Developed algorithms in Python for aggregation of large-scale, streaming, time-series data
- Built and maintained lambda architecture on AWS using Storm, Elasticsearch, Redis, and Cassandra
- Contributed to **streamparse**, an open-source library for real-time stream processing in Python

RTI International
Data Scientist, *Oct 2012 – Jan 2014*

- Provided analytics and computational support for one of the nation's leading nonprofit research institutions
- Contributed to projects on social media analysis for public health, environmental GIS modeling, nonlinear mixed effect modeling, and text-mining-based crime forecasting

Education

2010-2012 **Master of Operations Research**; North Carolina State University, Raleigh, NC

Research area: Reinforcement learning methods for healthcare operations

Instructor: Calculus 2

2009-2010 **PhD Student in Mathematics**; University of Virginia, Charlottesville, VA

No degree received

Instructor: Calculus 1 and Calculus 2

2004-2008 **BS, Mathematics**; Grove City College, Grove City, PA

Minor in Applied Physics; Minor in Computer Science; Summa Cum Laude

Technical Experience

Technical Tools

I have an experience with a breadth of tools for machine learning, software development, and backend engineering.

- **Programming Languages (high proficiency):** Python
- **Programming Languages (some proficiency):** C++, Go, C#, Mathematica, R, SQL, Java, Javascript
- **Machine Learning Tools:** Scikit-Learn, PyTorch, MLFlow
- **Cloud Services:** Amazon Web Services (Batch, Lambda, ECS, S3, SQS, Glue)
- **Infrastructure and Configuration Tools**: Terraform, Cloud Formation, Ansible, Saltstack

Open source contributions

Contributor to a variety of Python libraries, including

cpython · **datamicroscopes** · **Streamparse** · **Conda** · **lda** · **Pandas**

Personal Projects

- **pydevtools.com**: Ebook on Python developer tooling
- **pythonplot.com**: A Rosetta Stone of Python plotting libraries for exploratory data analysis
- **Notes on Dirichlet Processes**: Notes on Dirichlet processes for nonparametric Bayesian methods
- **Into the Hopper**: Podcast about machine learning and software engineering

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