

# Tim Hopper

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I'm an experienced machine learning engineer and Python developer specializing in machine learning platforms, feature stores, and developer tooling. I aim to build tools that enable fast iteration on machine learning products that will drive business value and make customers happy.

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## Experience

### Spotify

Machine Learning Infrastructure Engineer, *October 2024 – present*

- Support the music information retrieval researchers and productionize audio machine learning products

### Varo Bank

Sr. Staff Software Engineer, Machine Learning, *March 2024 - October 2024*

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

- Developed 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
- Guided 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

## 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` · `Ida` · `Pandas`

## Education

2010-2012

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

*Research area: Reinforcement learning methods for healthcare operations*

*Instructor: Calculus 2*

2004-2008

**BS, Mathematics;** Grove City College, Grove City, PA

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

## 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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