

Dylan Labatt Randle

dylanrandle.github.io

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EDUCATION

- **Harvard University, School of Engineering & Applied Sciences** Cambridge, MA
Master of Science in Data Science; GPA: 4.0 Sep 2018 – Present
 - **Distinctions:** Scholarship in Applied Computation
- **University of California at Berkeley, College of Engineering** Berkeley, CA
Bachelor of Science in Industrial Engineering & Operations Research; GPA: 3.9 Sep 2012 – May 2016
 - **Distinctions:** High Honors at Graduation, Dean's Honors List, Phi Beta Kappa, Tau Beta Pi

RELEVANT EXPERIENCE

- **Harvard University** Cambridge, MA
Graduate Researcher Nov 2018 – Present
 - **Deep Learning in Physics:** Researched and developed methods for solving Reynolds-Averaged Navier-Stokes equations using unsupervised neural networks. Currently researching methods for training Generative Adversarial Networks to solve differential equations
- **Amazon Robotics** Boston, MA
Data Science Intern Jun 2019 - Aug 2019
 - **Data Engineering:** Built automated, scalable data pipeline for big data queries (100+ billion rows), data merging, data cleaning, and data transformation. Tech stack: Python, Apache Spark/Hive/Hadoop, AWS EMR/S3/Athena, Boto, Dask, Pandas
 - **Data Science:** Developed modular, flexible machine learning library for internal use. Built API for data filtering, feature selection, training, tuning, and testing models (e.g. linear models, random forests, gradient boosted trees, feedforward neural networks). Included interpretability algorithms (e.g. feature importance, accumulated local effects, Shapley additive explanations) and visualizations for model explanations. Tech stack: Python, AWS SageMaker, Pandas, NumPy, scikit-learn, XGBoost, Keras
 - **Data Product:** Built user-interface allowing non-technical users to easily train machine learning models for a broad set of tasks. Demonstrated efficacy and efficiency through targeted internal use cases. Reduced analysis time from weeks to hours. Tech stack: IPython, Jupyter
- **Hubdoc** Toronto, Canada
Lead Data Scientist Jan 2017 – Jul 2018
 - **Production Deep Learning:** Developed and deployed production deep learning system using LSTMs & CNNs for entity extraction and text classification of financial documents. Models trained on over 10 TB of text and image documents. Reduced extraction time from 24 hours to 5 seconds with highly scalable, asynchronous pipeline. Cost savings estimated at \$2MM/year. Tech stack: Python, Keras, Tensorflow-Serving, AWS EC2/S3/KMS, PostgreSQL, RabbitMQ
 - **Data Science:** Conducted business and engineering analyses: e.g. prediction of labor requirements and anomaly detection of web scrapers. Wrote reports and built data visualizations for company intranet. Tech stack: Python, NumPy, scikit-learn, JavaScript, D3.js
 - **Leadership:** Regularly presented results and recommendations to C-suite. Integral in crafting team strategy and roadmap. Involved in fundraising and presentations to investors. Delivered machine learning lecture to 60+ people
- **Taylor Statten Camps** Ontario, Canada
Canoe Trip Guide Summers 2015, 2016
 - **Canoe Trips:** Led 36 and 50-day canoe trips through remote Canadian wilderness. Responsible for groups of 7 teenage boys. In charge of route and food drops, safety and wellbeing, and thousands of kilometers of navigation through lakes, rivers, and forests
 - **Camp Maintenance:** Led crew of 3 roofers. Built dock, renovated and painted cabins
- **Bank of Montreal, Capital Markets** Toronto, Canada
Financial Products Analyst Summer 2014
 - **Fixed Income:** Conducted analyses of debt products (e.g. swaps, swaptions). Wrote custom C# algorithm to analyze relationship between delta-hedging frequency and returns. Backtested results indicated trading opportunities
 - **Sales & Trading:** Compiled daily summaries of sales & trading activity. Reviewed and analyzed trade pitches to clients. Supported both sales and trading desks with data analyses

RELEVANT PROJECTS

- **Deep Learning for Differential Equations:** Research work completed as member of Protopapas research group on deep learning in physics. Investigated unsupervised learning of solutions to differential equations using neural networks
- **Twitter Troll Classification:** Project achieving 96% accuracy classifying Twitter trolls using tweets scraped from accounts indicted for meddling in the 2016 U.S. elections
- **Automatic Differentiation:** Python package implementing automatic differentiation, supporting both forward and reverse modes; stochastic gradient descent and Adam optimizers implemented as example use-case
- **Bayesian GANs:** Paper review, implementation, and demo of Bayesian generative adversarial networks (GANs)
- **Tensorflow on Spark:** Training neural networks on a 1.5 TB dataset with Tensorflow on a Spark/Hadoop cluster with AWS Elastic Map Reduce
- **Microbiome Dynamics:** Modeling Granger causality with causal-LSTM model of high-dimensional experimental microbiome time-series data from mice
- **Safe Autonomous Vehicles:** Critical thinking project demonstrating methods (federated learning, differential privacy, secure multi-party computation) and evaluating policies for achieving safe autonomous vehicles

PROGRAMMING SKILLS

Languages: Python (NumPy, Pandas, matplotlib, scikit-learn, Keras, PyTorch, PyMC3), SQL, C, LaTeX
Technologies: AWS (EC2, EMR, S3, Athena), Apache Spark/Hadoop, OpenACC, OpenMP, MPI, Git, Jupyter, Ansible