

Mark Ibrahim

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TECHNICAL

- Python (scikit-learn, numpy, object-oriented, PyTest), Git, TensorFlow, Linux bash, SQL, JavaScript, LaTeX, VIM
familiar: Java, AWS, Neo4j, ElasticSearch, D3.js, Spark. Interests: Deep Learning Interpretability, Knowledge Graphs

EXPERIENCE

New York, NY

Senior Machine Learning Engineer, Center for Machine Learning at Capital One

Sep 2016 – Present

- Leading Explainable AI team to build tools and research for explaining black-box deep learning models
 - Building open-source Python [library](#) to generate global explanations for neural network predictions
 - Published 2 interpretability research papers (NeurIPS workshop 2018 and ACM AAAI 2019)
- Engineering a real-time [notification](#) system for predicting mistaken charges on 10 million transactions per day
 - Architecting Lambda microservices in Java and Python to serve machine learning predictions in production
- Developing recurrent neural network (RNN) + LDA customer archetype model in partnership with Columbia U.

Data Engineering Fellow (2016) & Technical Advisor, Insight Data Science

May 2016 – Present

- Developed a graph-based knowledge search engine (knowledgesearch.us) powered by Wikipedia
 - Distributed parsing of all 5 million articles using Spark on Amazon Web Services (AWS)
- Designed a D3.js user interface powered by a graph database (Neo4j), Elasticsearch, and Python (Flask)

Freelance Software Engineer, Condé Nast

Oct 2014 – Aug 2015

- Created an Applescript and Python [app](#) to tag and shorten Facebook/Twitter posts reaching 4 million followers
- Built a Google Calendar Extension to sync production sheet across team of writers/editors at ArchDigest

Quantitative Portfolio Risk Analyst, UBS

Jun 2012 – Aug 2014

- Applied unsupervised machine learning (PCA) to identify \$570k in uncaptured sensitivity to 0.01% move in rates
- Automated daily 2½ hour manual risk calculation for \$658 million trading portfolio in Python

SELECT RESEARCH

“Towards Explainable Deep Learning for Credit Lending”—C Modarres, M Ibrahim, M Louie, J Paisley. *NeurIPS 2018*.

“Global Explanations of Neural Networks: Mapping the Landscape of Predictions”—M Ibrahim et al. *AAAI 2019*.

“Mixed Membership Recurrent Neural Networks”—G Fazel, M Ibrahim, C Modarres, K Wu, J Paisley. *Preprint 2019*.

“Connecting Every Bit of Knowledge: [Wikipedia's First Link Network](#)”—M Ibrahim et al. *J. Computational Science 2017*

Select Talks: AAAI Spotlight Talk (2019), NeurIPS FEAP Spotlight Workshop Talk (2018), NYC Python Meetup (2018), Tom Tom Machine Learning Conf (2018), [Data Driven](#) at George Washington U. (2017), NYC Data Wranglers (2017).

COMMUNITY

Reviewer for academic journal *IEEE Transactions on Network Science and Engineering*, 2017-2018.

Mentor for Columbia U. Data Science Masters Capstone (2018). **Co-organizer** Vermont Python User Group (2016)

EDUCATION

M.S. Applied Mathematics, University of Vermont (2016)

Burlington, VT

Course Instructor: [Calculus I](#) (72 students) and [Calculus II](#) (38 students)

Honors B.A. Mathematics, *Magna Cum Laude*, Hamilton College (2012)

Clinton, NY

[19th Gold Scholar](#) for student of “highest standards.” *Phi Sigma Iota*: highest honor for foreign languages