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

Facebook Artificial Intelligence Research, *Research Engineer* July 2019 – Present

- Member of AI research lab focused on open research

Center for Machine Learning at Capital One, *Senior Machine Learning Engineer* Sep 2016 – June 2019

- Led Explainable AI team to build tools and research for explaining black-box deep learning models
  - Built open-source Python library to generate global explanations for neural network predictions
  - Published 2 interpretability research papers (NeurIPS workshop 2018 and ACM AAAI 2019)
- Engineered a real-time notification system for predicting mistaken charges on 10 million transactions per day
- Developed deep learning (RNN + LDA) customer archetype model in collaboration with Columbia Prof. John Paisley

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

Condé Nast, *Freelance Software Engineer* Oct 2014 – Aug 2015

- Built custom G Suite JavaScript extension and Python app to manage social/article flow at ArchDigest

UBS, *Quantitative Portfolio Risk Analyst* 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