Mark Ibrahim

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EXPERIENCE
New York, NY

Staff Research Engineer, Fundamental Artificial Intelligence Research (FAIR) Lab, Meta AI — July 2019 – Present
- Researching methods to measure and improve the common sense of deep learning vision/language models
  - Designing generalization mechanisms in self-supervised learning, led to a +10% in classification robustness
  - Authoring research papers (e.g., NeurIPS, ICLR, CVPR) to explain and structure representations
- Co-author of The Self-Supervised Learning Cookbook along with Randall Balestriero , Yann LeCun, and others
- Architected tooling to track and launch experiments with distributed multi-GPU training in PyTorch
- Manger for interns/AI Resident; instructor for Georgia Tech's Deep Learning course (+10k students)

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

Data Engineering Fellow (2016) & Technical Advisor, Insight Data Science — May 2016 – June 2018
- 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)

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

"ImageNet-X: understanding model mistakes with factor annotations"—*BY Idrissi, M Ibrahim. ICLR Spotlight 2023.*

"Grounding inductive biases: invariance stems from data"—*D Bouchacourt, M Ibrahim, A Morcos. NeurIPS 2021.*

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

"Connecting Every Bit of Knowledge: *Wikipedia's First Link Network*"—*M Ibrahim et al. J. Computational Science 2017*

Patent: *"Techniques to perform global attribution insights in neural networks"— US Patent 16/855,685*

Select Talks: ICLR Spotlight (2023), NeurIPS Spotlight (2021), PyCon (2020), AAAI Spotlight Talk (2019), NYC Python Meetup (2018), Tom Tom Machine Learning Conf (2018), *Data Driven* at George Washington U. (2017).

COMMUNITY

Researcher for the AI-Powered COVID-19 Forecasting Data for Good Program with Direct Relief non-profit org
Co-A for Columbia U. Data Science Masters Capstone (2019-2018). **Co-organizer** Vermont Python User Group (2016)

Mentor for NYU PhD Student (FAIR/NYU; 2022-present) and Columbia U. Data Science Masters Capstone (2019-2018)

EDUCATION

Statistics MicroMasters, Massachusetts Institute of Technology (MIT)

M.S. Mathematics, University of Vermont
Course Instructor: Calculus I (72 students) and Calculus II (38 students)

Honors B.A. Mathematics, *Magna Cum Laude*, Hamilton College
19th Gold Scholar for student of "highest standards." *Phi Sigma Iota*: highest honor for foreign languages