Ayush Bharadwaj

Data Scientist - Machine Learning, Optimization

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SKILLS

Machine Learning: Supervised / Unsupervised Learning, Deep Learning, Ensemble Learning, Anomaly Detection, Feature Engineering, Experiment Design & Analysis, ML Ops, ML System Design

Optimization: Convex / Non-convex Optimization, Network Optimization, Linear / Mixed-Integer / Quadratic / Semidefinite Programming, Metaheuristics, Queuing Theory, Markov Processes

Languages: Python, SQL, Julia, Bash

Tools: Numpy, SciPy, Scikit-Learn, Pandas, Jupyter, Git, PostgreSQL, AWS, GCP, CVXPY

EDUCATION

M.A. Mathematics | Optimization, Algebraic Geometry   01/2020 – 01/2023
San Francisco State University   *San Francisco, CA*

M.S. Operations Research   08/2012 – 01/2014
Case Western Reserve University   *Cleveland, OH*

B.Tech. Civil Engineering   06/2000 – 07/2004
Indian Institute of Technology   *Varanasi, India*

PROJECTS

Robustness Verification of Neural Networks using Optimization Methods   01/2022 - 01/2023
 Python implementation of optimization methods to verify robustness of classifier networks

Complex Critical Points of Deep Linear Neural Networks   01/2022 - 01/2023
 Research exploring the loss landscape of neural networks using computational algebraic geometry

EXPERIENCE

Data Scientist, Risk / Fraud Detection   05/2016 – 10/2019
Postmates (acquired by Uber) | On-demand delivery   *San Francisco, CA*

- As the first data scientist, bootstrapped the company's ML system for payment fraud detection.
- Trained random forest models to mimic human judgment in the absence of ground truth.
- Introduced a new error metric for diagnosing model ensembles under very high class skew.
- Wrote the decision engine for model-informed as well as rule-based real time decisions.
- Developed data pipelines for online and offline feature generation and storage.
- Built a simulation based experiment design framework to measure model performance in production.

Risk Analyst, Consumer Risk   05/2014 – 05/2016
PayPal | Fintech   *San Jose, CA*

- Investigated payment fraud trends by identifying anomalous events in financial transaction data.
- Optimized decision thresholds to reduce the Risk system's overall cost of misclassification.
- Researched the information value of new variables to include in machine learning models.

Data Scientist, Informatics (Intern)   10/2013 – 01/2014
Explorys (acquired by IBM) | Healthcare Analytics   *Cleveland, OH*

- Wrote software to clean, combine and ingest data from various external sources.
- Evaluated the effectiveness of classifier algorithms via AUC-ROC analysis.

Software Engineer / Consultant   06/2004 – 07/2012
Infosys Limited | Software Services   *Bangalore, India*

- Software development • Query optimization • Systems Integration • Incident management