

Ayush Bharadwaj

Data Scientist - Machine Learning, Optimization

ayusbhar2.github.io

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SKILLS

Supervised / Unsupervised Learning, Anomaly Detection, Ensemble Learning, Feature Engineering, Experiment Design & Analysis, ML System Design | Convex / Non-convex Optimization, Robust Optimization, Network Optimization, Linear / Mixed-Integer / Quadratic / Semidefinite Programming, Metaheuristics

Languages: Python, Julia, SQL, Bash

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

EDUCATION

M.A. Mathematics | Optimization, Algebraic Geometry 2022

San Francisco State University

San Francisco, CA

M.S. Operations Research 2014

Case Western Reserve University

Cleveland, OH

B.Tech. Civil Engineering 2004

Indian Institute of Technology

Varanasi, India

PROJECTS

Robustness Verification of Neural Networks using Optimization Methods | Python, CVXPY 2023

Python implementation of optimization methods to verify robustness of classifier networks

Complex Critical Points of Deep Linear Neural Networks | Julia, HomotopyContinuation.jl 2022

Research paper exploring the loss landscape of neural networks using computational algebraic geometry

EXPERIENCE

Data Scientist, Risk / Fraud Detection

May 2016 – Oct 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 forests to mimic human "judgment" in the absence of ground truth.
- Introduced better error metrics for model diagnosis 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 control-group based simulation framework to accurately measure model performance.

Risk Analyst, Consumer Risk

May 2014 – May 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)

Oct 2013 – Jan 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

Jun 2004 – Jul 2012

Infosys Limited | Software Services

Bangalore, India

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