

Arman Dave

Portfolio: armandave.com

Email: arman.dave.1@gmail.com

EDUCATION

- **Massachusetts Institute of Technology** Cambridge, MA
Bachelor of Science and Engineering - Computer Science and Engineering; GPA: 4.7 Aug 2018 - Dec 2022
CS Courses: Performance Engineering of Software Systems, TinyML and Efficient Deep Learning, Advances in Machine Vision, Applied Cryptography and Security, Machine Learning, Database Systems, Software Construction, Design and Analysis of Algorithms, Computer System Engineering, Computation Structures
Math Courses: Real Analysis, Algebra, Statistics, Probability and Random Variables, Automata and Complexity Theory, Differential Equations, Linear Algebra
- **Carroll Senior High School** Southlake, TX
Valedictorian: Ranked 1 in class of 700 Aug 2014 - May 2018
ACT: 36

EXPERIENCE

- **Block (Square)** San Francisco, CA
Software Engineering Intern May 2022 - Aug 2022
 - **Team:** Worked on Automation Machine Learning Infrastructure
 - **Project:** Created merchant state embedding as input to several different product recommendation models to transfer knowledge across surfaces while also easing workload on models. Developed wrapper in Pytorch around Tabnet, a transformer-based architecture from Google AI.
 - **Other Work:** Re-tuned and cleaned up codebase of several models
- **Meta (Facebook)** Menlo Park, CA
Applied Research Science Intern June 2021 - Sep 2021
 - **Team:** Worked on the Ads Auction and Delivery Team with focus on ecommerce
 - **Project:** Built rule-based model to create a user segment for Facebook marketplace and then ran experiment to validate hypothesis on over 10 million users
 - **Other Work:** Drove exploratory work to validate the need to mitigate drop-shipping in Marketplace ecosystem and identified need for text-based clustering in addition to image clustering
- **Evavi** Dallas, Texas
Software Engineering Intern June 2020 - Aug 2020
 - **Team:** Worked on Supply Chain Forecasting team.
 - **Project:** Built pipeline using Airflow to run Facebook Prophet forecasting model on GCP and dump prediction data into SQL database.
 - **Other Work:** Added several widgets to Evavi frontend dashboard UI.
- **Arches** Boulder, Colorado
Quantitative Trading Intern June 2019 - Aug 2019
 - **Team:** Worked on Commodities Options Desk
 - **Project:** Analyzed natural gas futures for profit opportunities. Focused on spreads and options with strategy involving use of straddles/strangles.
 - **Other Work:** Drove exploratory work on a CNN to analyze satellite imaging data to predict natural gas supply.

RESEARCH

- **Optical Character Recognition Document Processing Lab (MIT CSAIL)** Cambridge, MA
Undergraduate Research Assistant January 2022 - Dec 2022
 - **Project:** Worked under Prof Amar Gupta's supervision developing pipelines to extract key-value pairs from machine spec documents using an ensemble of machine vision and OCR techniques

PROJECTS

- **Abstract Frame Query Language (AFQL): A User-Friendly End-to-End Video Database System:** Proposed SQL-like query language to run on video data. Implemented language with YOLOv5 as object detection algorithm in the backend. White Paper Repo (Spring '22)
- **Professor Marvin: Efficient Keyword Spotting via Knowledge Distillation and Quantization:** Created a keyword spotting algorithm utilizing less than 1 MB of memory and successfully deployed to an edge device. White Paper Repo (Fall '22)
- **Exhaustive Trust Algorithm (ETA): Mitigation to Flood and Loot Attack of Lightning Network:** Designed algorithm known as ETA in order to make the security problem of Lightning Network called Flood and Loot unprofitable for attackers. Further proposed experimental design to validate the algorithm. White Paper (Spring '22)
- **Pokerbots:** Developed autonomous AI bot for MIT 30grand PokerBot competition (placed 7 out of 60) (Jan 2020)

SKILLS SUMMARY

- **Languages:** Python, Java, JavaScript, SQL
- **Frameworks:** Pytorch, Flask, Pandas, MySQL, React Native, Spring
- **Technologies:** GCP, Docker, Kubernetes, Spark, Git, Airflow