

William Beckman

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Software engineer by trade with a heavy focus on machine learning and data.

EDUCATION

Georgia Institute of Technology

Atlanta, GA

Master of Science in Computer Science; Specialization in Machine Learning; GPA: 3.9

Aug. 2019 – Dec. 2021

Relevant coursework: Machine Learning, Reinforcement Learning, Deep Learning

University of Maryland, College Park

College Park, MD

Bachelor of Science in Computer Science; GPA: 3.76

Aug 2012 – May. 2016

EXPERIENCE

Appalachian Trail Thru-hike

April 2022 – August 2022

Successfully completed a thru-hike of the Appalachian Trail.

Capital One Financial Corporation

July 2016 – March 2022

Senior Machine Learning Engineer

Feb 2019 - Mar 2022

- **Risky Merchant Detection:** Worked to valuate and productionize a model to identify and flag risky merchants, estimated to save \$5-10M/yr under various reasonable assumptions. Model valuation numbers were dependent on ranges of encoded operational assumptions (population subsets, restriction rules, best/worst case scenarios). Model features primarily included information directly on a merchant level and on an aggregated customer/account level per merchant. The model was executed in batch every day, and batches of risky merchants were sent to be manually reviewed by fraud investigators.
- **Ring-based Fraud Detection:** Improved and productionized an algorithm to detect credit card ring fraud, resulting in an estimated incremental savings of \$10M/yr. Improvements were mostly achieved by propagating updated risk scores through a graph of accounts and by intentionally targeting risky population subsets.
- **Third-Party Fraud Model:** Developed a new account takeover credit card fraud prevention model resulting in over \$15M/year in savings. Expanded feature sets to include additional user actions, optimized data ETL jobs for faster model iterations, ran online and offline model experiments, and validated model stability in production. Additional responsibilities included working with product and analytics teams to scope project, partnering with other fraud engineering and infrastructure teams to ensure accurate deployment, and mentoring junior engineers.
- **Fraudbook Data Pipeline:** Productionized batch data pulls to populate Fraudbook, an internal application to aid manual fraud investigation. Wrote system tests to guarantee batch load functionality upon code changes and converted the existing data update model from complete database overwrites to delta batch updates, saving tens of GBs of database writes/updates per day and significant hours of compute costs.

Software Engineer

Feb 2018 - Feb 2019

- **Corporate Strategy Data Pipeline:** Worked on a data pipeline for credit bureau data for the Corporate Strategy division. Data pipelines processed 100s of GBs of raw data and converted them into formats consumable by analysts. Implemented a light domain-specific language in Scala for business analysts to use in order to simplify their code and reduce the burden of having them learn Spark.

Associate Software Engineer

July 2016 - Feb 2018

- **Athena:** Briefly assisted in the development of a React front-end of an in-house ontology-based graph database.
- **AWS Network Debugger:** Created a CLI utility using Boto3 that diagnosed network connections between two AWS resources from an AWS infrastructure standpoint (security groups, NACLs, VPC peering). Diagnostic issues were printed to the terminal in a human readable format to explain what was misconfigured between the instances. The tool was used by company-wide staff architects to quickly validate whether or not AWS resources were able to communicate on particular ports across VPCs. This automation greatly reduced the human effort and human error of a once-very-tedious process.

PROGRAMMING SKILLS

Software/Infrastructure: Python, Scala, AWS, git, Airflow, Docker

ML/Data: SQL, pyspark, pandas, numpy, scikit-learn, pytorch, Databricks, Snowflake