

Alexander Dean

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INTRODUCTION

I'm a software engineer with experience building and deploying large-scale distributed machine learning systems, particularly in the context of preventing credit card fraud. I'm a curious, driven, and collaborative person with strong engineering skills, and I'm passionate about building technology for good. GitHub: alexanderjdean.

EDUCATION

- **University of Illinois at Urbana-Champaign** Champaign, IL
Bachelor of Science, Mathematics and Computer Science December 2021

EXPERIENCE

- **Capital One** Chicago, IL
Senior Associate Software Engineer (as of July 2023) Feb 2022 - Present
 - **Last Performance Rating:** Above Strong (top 10-15%)
 - **Blob Storage:** Transitioned fraud detection model from Amazon EMR to ETL-style workflows on Kubeflow, storing intermittent results in Amazon S3 as Parquet files; This sped up batch execution of model by 50%.
 - **Model Training & Serving:** Led effort to create two Kubeflow pipelines for fraud model: A build & train and batch execution pipeline. These pipelines enabled model serving, saving half million dollars in 2022 in fraud costs.
 - **Hadoop Distributed File System:** Utilized Spark on Kubernetes clusters to perform MapReduce processing on millions of merchants by ZIP, allowing for model serving on detected geographic fraud rings.
 - **Publish/Subscribe:** Built Kafka-based publishing service in collaboration with senior engineers, used for streaming fraudulent credit card merchants upon model prediction once a week to fraud investigators.
 - **Microservice Architecture:** Took ownership of thorough integration testing (90%+) of API layers in Payments microservice, a large-scale heavy traffic service for call agents helping customers with payments-related tasks.
 - **Cross Team Collaboration:** Assisted multiple microservice teams with integration tests and code quality; Gave multiple presentations to large audiences on thorough integration testing and code dashboards using SonarQube.
 - **Monitoring & Alerting:** Used Splunk and thorough logging to triage incidents, fix high-priority bugs, investigate alerts, test releases, and ensure the continued high availability and low latency use of Payments microservice.
 - **Mentorship:** Served on multiple inclusion, belonging, and learning committees; Led events to encourage inclusion and learning, including Women in Tech advice panels, project demo days, and potluck dinners.
- **Capital One** Chicago, IL
Software Engineer Intern Feb 2021 - Aug 2021
 - **API Development:** Built two new APIs retrieving a customer's credit card agreement version and information, allowing for real-time access to account information instead of previous hours-long batch solution.
 - **Serverless:** Implemented serverless solution for new credit card version and info APIs using AWS Lambda, leading to 98% decrease in monthly costs for cloud computing services relative to previous solution.
 - **Databases:** Reduced size of AWS RDS data instance by removing data retrieval batch job, migrating entries to Amazon DynamoDB, and reducing engine cost of AWS RDS component.
- **Zengines** Chicago, IL
Software Engineer Intern Sep 2021 - Dec 2021
 - **Data Generation:** Built data generation tool using Python providing realistic sample fake table data given a table schema; This tool is used to test data conversion between two distributed systems.
 - **Data Augmentation:** Used scikit-learn and WordsAPI to expand capital markets dataset by 40%, allowing for evaluation of NLP-based context extractor matching between source and target systems.

PROJECTS

- **Documentation & Test Generation:** NPM package allowing for conversion of JavaScript projects to TypeScript, with automated documentation & testing generation using the GPT 3.5 API; GitHub page: type-scriptor.
- **Automated Satire:** Fully-automated satirical news site monitoring recent events and generating Onion-style headlines; Deployed on Google Cloud with Firebase database, React frontend, Node backend. GitHub page: chicagomoontimes.

PROGRAMMING SKILLS

- **Languages:** Python, TypeScript, C++, Go, Java **Technologies:** AWS, Hadoop, React, Kafka, Kubernetes