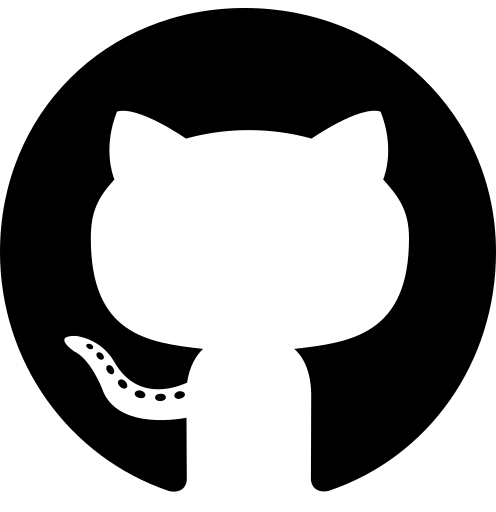
Charles E. Gormley

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SUMMARY

Software Engineer with expertise in Machine Learning, Data Pipelines, and System Architecture, passionate about Entertainment, VR/AR, Geospatial, and FinTech Industries, seeking challenging problems.

EDUCATION

Bachelor of Science in Data Science, Bachelor of Science in Economics

Minor in Computer Science, Machine Learning • Drexel University • Philadelphia, PA • 2024 • 3.74

• Completed 185 credits for my undergraduate degree.

SKILLS

Languages: Python, C++,  GoLang, R, MATLAB, SQL, JavaScript, Java, Bash, SQL  
Cloud: AWS, Azure, GCP, Docker, Kubernetes, EC2, ECS, Lambda, AWS Glue, EMR, Splunk, Lambda, S3, Amazon Lex, Amazon Direct Connect  
 Machine Learning/Deep Learning: Sci-Kit Learn, Tensorflow/Keras, Pytorch, Deep Reinforcement Learning, Transformers, Sagemaker  
Data Science: Pandas, Numpy, Scipy, Stata,  PySpark, Seaborn, Matplotlib, Dash, Tableau, Dataiku  
Computer Vision: OpenCV, ORB-SLAM2, Unreal Engine, Pose Estimation, Object Detection  
NLP: Milvus, Pinecone, Bert, HuggingFace, Replicate, nltk, spark-nlp, OpenAI  
Web: Node, React, Figma, Kong, API development  
    

EXPERIENCE

Software Engineer, Cloud

Vanguard September 2022 - September 2023, Malvern, PA

• Automated the management of robust cloud infrastructure utilizing technologies such as Docker Containers, Kubernetes, Amazon ECS, EC2, Lambda, Event bridge, RDS, Step Functions, API Gateway, and CloudFormation Stacks.  
 • Automated the building of scalable cloud infrastructure and distributed systems to operate Vanguard's instance of Kong API Gateway & Kong Konnect, enhancing efficiency.  
 • Developed automated scripts for lambdas, helper functions inside containers, and user management logic using Golang, Python, Node.js, and Java, ensuring smooth operation and optimal performance.  
 • Proactively developed internal side-projects aimed at reducing developers' workload and improving efficiency. Notably, implemented bots using Amazon Lex with Microsoft Teams integration to automate internal communication and issue resolution.  
 • Designed and developed an internal analytics product utilized by over 20 teams, providing actionable insights into the effectiveness of the company's technical documentation.  
 • Spearheaded efforts to identify and address significant cost overruns in AWS usage, resulting in proposed solutions that automated processes and saved the department approximately $200,000 annually.  
 • Pioneered the integration of docker container structure tests into the open-source community, automating testing processes and ensuring the reliability of deployments.

Machine Learning Engineer - Consultant

Kredit September 2022 - December 2022, New York, NY

• Designed and implemented a comprehensive MLOps workflow, automating the systematic analysis of customer-bot interactions. This structured approach informed developers on editing strategies for future bot iterations, enabling them to adjust parameters and conversational branches more effectively.  
 • Automated the building of the customer-bot using Amazon Lex, integrating features such as slot types, intents, and external NLP tools to understand and appropriately respond to the user's request. Implemented a system to detect the confusion matrix of Amazon Lex's responses and iterated development based on the confusion matrices' feedback.  
 • Significantly enhanced user experience by automating the boosting of customer engagement with the virtual assistant by 45%, while also achieving an impressive 92% accuracy rate in Natural Language Understanding tasks.

Machine Learning Engineer

Strados Labs September 2021 - April 2022, Philadelphia, PA

• Automated the orchestration of the data science pipeline to integrate accelerometer and gyroscope data. This automated process involved meticulous data cleaning, comprehensive exploratory data analysis, inventive feature engineering, efficient feature optimization, strategic model selection, and meticulous model tuning.  
 • Automated the engineering and fine-tuning of Machine Learning feature generation functions to maximize efficiency. Leveraging memoization, vectorization, parallel computing, AWS, and efficient data structures, I significantly enhanced the system's speed and computational usage, achieving a staggering 19x improvement in runtime.  
 • Regularly automated the communication of key data science findings to senior executives, including the COO, CTO, CEO, and other managerial leaders within the organization. Leveraging the agile framework, I automated the elucidation of ongoing data science product progress, potential obstacles, and innovative product ideas.  
 • Automated the ingestion of data from medical devices through IoT devices with AWS IoT services. This involved setting up automated processes to collect data from medical devices, transmit it securely to AWS IoT Core, and then ingest it into AWS for further analysis

Research Engineer

Drexel University April 2021 - July 2021, Philadelphia, PA

• Conducted an in-depth analysis of flight data using GIS and advanced data science tools, specifically focusing on the impact of aircraft noise on real estate valuations. This research provided valuable insights into environmental factors influencing property prices.

Software Engineer

Kredit September 2020 - April 2021, New York, NY

• Co-op with Drexel University  
 • Developed an in-depth data pipeline to feed and analyze natural language processing from different sides of our network observing conversations on our platform.  
 • Spearheaded the research, creation, programming, and management of Kredit's foundational marketing strategy. This comprehensive approach has fueled an impressive 47x growth since its implementation, underscoring the strategy's effectiveness and transformative impact.

PROJECTS

Autonomous Drone Research

Senior Design • September 2023 - Present

• Conducting research on UAVs in Microsoft AirSim using Deep Reinforcement Learning for individual motor control and motion. Leveraging Computer Vision and pathing algorithms for optimized navigation.  
 • Tested the UAV in different physics simulations at differing levels of wind and other weather patterns   
 • Investigating advanced techniques for LLMs to direct drone motion and programmatically control motor functions.

Automated Personalized Podcast

Founder • https://www.tokenizedtoast.com/ • June 2023 - Present

• Developing an AI-driven application that curates and summarizes daily news from over 3000 RSS feeds. Utilized advanced machine learning techniques to personalize content for each user, significantly increasing user engagement and satisfaction. Ingesting ~5000 articles per day.   
 • Utilized lambda functions and developed lambdas in python, GoLang, and Node to generate the AI podcasts through calling generative AI LLM & TTS Models. Built redundancy in the requests so if the primary model fails the back up model succeeds. Used a combination of lambdas to ensure parallel requests. Developed lambdas with lambda-docker containers for access to more storage for python transformer packages. I used lambda layers to handle audio file processing and increased the memory of the lambda to decrease processing time.  
 • Implementing an efficient automation system using Python and AWS services (EC2, S3). The system expertly manages high-volume data, successfully uploading daily content to an S3 bucket and managing EC2 resources.  
 • Developed Sagemaker Models and endpoints for continuous updates and delivery of Machine Learning models developed within the tool including generation time prediction, news article analytics, news story analytics, recommendation systems  
 • Pioneering a multi-platform approach to news delivery, offering users personalized news podcasts for a deeper understanding of topics they are specifically interested in news from the last day. This versatile design catered to diverse user preferences and enhanced the overall user experience. Tuning LLM & recommendation parameters to optimize user experience.  
 • Leveraging Milvus Vector Database in conjunction with unsupervised clustering, named entity recognition, and sentiment analysis. Integrated a pipeline using BERT encoding to intelligently recommend personalized content to users.

RaphaAI

CTO • http://rapha-ai.com/ • August 2023 - February 2024

• Working with a stealth startup to automate genetics research by building no-code AI interface for backend workflows for genomic researchers. Developed protein visualizations, Multi-Sequence Alignment, and a genomic-BERT model  
 • Developed an initial MVP, created a feature roadmap, managing 3 other engineers.   
 • Awarded finalist in a Philadelphia entrepreneurship competition.

Artist Painting Classification

Data Scientist • https://github.com/Charles-Gormley/DaVinciVision • May 2023- June 2023

• Conducted exploratory data analysis (EDA) using a diverse set of image filter functions such as Garbor, Sobel-kernel, Laplacian of Gaussian-kernel, Roberts-kernel, and Canny Edge Detector with varying hysteresis thresholds to understand data characteristics better.  
 • Utilized Hough Transform Line Detection for feature analysis post-EDA, comparing artist-to-artist theta distributions to evaluate the effectiveness of different edge detectors, enhancing our understanding of artistic styles.  
 • Constructed two essential training classes. The first, a model training class, accommodated user-specified architectures and hyperparameters. The second, a bespoke generator, managed new feature dimensions, data augmentation, class-weighting-correction, and more, providing flexibility for diverse project needs.  
 • Expercdimented with six distinct Convolutional Neural Network (CNN) architectures including a bespoke architecture, VGG, AlexNet, GoogLeNet, DenseNet, and ResNet50 with pre-trained weights. After meticulous tuning of the optimal architecture's hyperparameters, I achieved an impressive accuracy rate of approximately 92%, demonstrating the effectiveness of the selected model.

CERTIFICATIONS

AWS Certified - Cloud Practitioner

Amazon Web Services • 2023

Production Machine Learning Systems

Coursera - Google Developers • 2022

COURSEWORK

Applied Deep Learning; Artificial Intelligence; Computational Photography; Interactive Computer Graphics, Game AI Development

Drexel University: College of Computing & Informatics • 2023

Intermediate Macroeconomics; International Money & Finance; Time Series Econometrics; Data Economics; Behavioral Economics

Drexel University: Lebow College of Business • 2023

INVOLVEMENT