Shane Duncan

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EDUCATION

University of Pennsylvania August 2019 - December 2023

B.S. in Systems Science Engineering

- **Software Systems:** Operating Systems, Programming Languages & Translators, Computer Networks, Intro to Databases
- **Machine Learning:** Applied Deep Learning, Probability & Statistics, Statistical Inference & Modeling

PROGRAMMING SKILLS

Data: Scikit-learn, TensorFlow, NumPy, Pandas, Spark, Kafka **Web**: Node.js, Postgres, React.js, Flask
DevOps: AWS, Docker, Airflow **Languages**: Python, C/C++, JavaScript/TypeScript, Java, SQL

EXPERIENCE

Alivia | Application Development Intern | Remote May 2022 - August 2022

- **Cloud**: Designed an optimized relational model and data pipeline for the collection and modeling of user input utilizing AWS S3 for secured storage of user data and AWS Lambda for the processing of user metrics. Added features to client performance insights workflow by re-configuring AWS EC2 and making code-level optimizations in Python scripts.
- **Application**: Implemented an interactive user-faced mobile application using the React Native for deployment on both IOS and Android with a concentration on accessibility and ease of use.

Geisinger | Research Intern | Danville, PA June 2021 - August 2021

- **Machine Learning**: Programmed machine learning models on cardiac measurements using Python and Scikit-Learn. Implemented regression functionality for the machine learning model report software Polyssifier.
- **Frontend:** Created a GUI program using Python and Tkinter for reviewing and classifying cardiac MRI images.

Barclays | Summer Analyst | Remote June 2020 - Aug 2020

- **Cybersecurity:** Worked on application security dashboards using Checkmarx and researched security methodologies based on OWASP. Restructured the application security database. Built a prototype chatbot using Django/DialogFlow.

PROJECTS

YelpDB [PostgreSQL, Flask, GCP] [Code]:

- Built a yelp clone webserver using PostgreSQL, Flask, Google Cloud Platform and Bootstrap. Utilized Python Flask and used SQL for queries on a MySQL database. Implemented features such as fault tolerance and Object-Relational DBMS using SQLAlchemy.

Natural Disaster Severity Classifier [Python3, Scikit-learn, TensorFlow, NumPy] [Code]:

- Created a supervised learning model for classification of wildfire severity based on the burn level of surrounding vegetation. Created a logistic regression model, support vector machine, and neural network from scratch in Python. The most accurate model used a neural net with a ReLU activation function, giving an accuracy of about 82%.

COVID-19 Literature Search [PyTorch, React.js, Flask] [Code]**:**

- Developed BERT-based search engine for retrieving COVID-19 academic journals, significantly enhancing accessibility to scholarly articles for research and analysis. Processed and analyzed the COVID-19 Open Research Dataset (CORD-19) by the Allen Institute for AI, featuring over 29,000 scholarly articles, using advanced NLP techniques to generate sentence embeddings that improve search result relevance.