Calvin Lee

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Career Objective

A software engineering position in a technology organization with the responsibility of creating software that adheres to the principles of software engineering and collaborating with cross-functional teams to drive business results.

Education

University of California Irvine | B.A. in Quantitative Economics — Sept 2018 – Jun 2022

- Cumulative GPA: 3.719
- Minor in Information & Computer Science
- Campuswide Honors Collegium and Economics Honors Program

Experience

Evolution of Neural Networks on Financial Market Returns — Jun 2021 – Mar 2022

- Employed a genetic algorithm to discover and train a neural network architecture for financial movement prediction.
- Designed a tournament selection metaheuristic to evolve a population of neural networks by incorporating architectural mutations. Implemented in Google's TensorFlow.
- Outperforms baseline ARIMA-GARCH model by 2.87 percentage points (83.33% vs 80.46% directional accuracy, respectively).
- Implemented in TensorFlow to train models and split GPU memory to simulate parallelism across virtual devices with large scalability in mind.

Projects

Gunpla 3D Model Generator — Apr 2022

- Designed and implemented a desktop 3D vision capture system to construct a full 3D model of a Gunpla model using 2D scans. Implemented in Python.
- Created a stereo vision data pipeline that incorporated structured illumination and triangulation on scanned 2D images of Gunpla models.
- Constructed 3D model via mesh generation, mesh smoothing, and mesh alignment by recovering original 3D geometry from the stereo vision data pipeline.

ALICE: Humour Chatbot — Feb 2022 - Mar 2022

- Created a chatbot using trained on various discussion based corpus that can hold a general conversation with a sense of humor; implemented using a hybrid model architecture.
- Generative component utilized a custom encoder-decoder model with Beam Search and Global Attention to generate general responses. Implemented using Facebook's PyTorch library.
- Informational retrieval component utilized a bi-encoder neural retrieval system trained using BERT embeddings to generate comedic responses. Implemented using Hugging Face's transformers package.

Data Visualization — Aug 2021

- Designed and released Streamlit application that visualizes tabular data, modifies tabular data, and downloads mutated data.
- Crafted various common feature engineering tools such as removal of features, normalizing features, and plotting heatmaps and histograms of different features.
- Packages: scikit-learn, pandas, seaborn, matplotlib, NumPy.

Relevant Coursework

- Machine Learning and Data-Mining
- Data Structure Implementation and Analysis
- Analysis and Design of Algorithms
- Principles of Software Engineering
- Probabilistic and Deterministic Graphical Models
- Neural Networks and Deep Learning

Skills

Programming Languages
Python, SQL (PostgreSQL, MySQL), C++, JavaScript

Operating Systems
macOS, Windows, Linux (Ubuntu)

Tools
Visual Studio Code, GitHub, Git, Apache Spark, LaTeX, HTML, CSS