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Eric Ho

Education

Dec 2018 **University of California, San Diego**, *MS Electrical Engineering*.
Overall GPA: 3.6; Specializing in Machine Learning and Data Science

June 2017 **University of California, San Diego**, *BS Electrical Engineering*.
Major GPA: 3.58; Specializing in Machine Learning and Control

Work

March 2019 – Present **Machine Learning Engineer**, *Trabus Technologies*, San Diego.

- Developed a travel time model that predicts the ETA of two points on the US waterway using gradient boosting which achieved 22% MAPE, and deployed using Docker containers on AWS EC2 instances
- Built a GraphQL webserver for a river information system commercial application to advise mariners of ETAs, potential delays, and hazardous conditions (patent pending)
- Implemented a management system that allows users to oversee the work progress of their clients and auto-generates Tableau workbooks by parsing/analyzing text files using AWS S3 buckets, Django, and PostgreSQL
- Pioneered an EDI to exchange invoice documents between barge companies with a REST API and a full stack website to replace outdated exchange system
- Created a pipeline to ingest over 100k GPS data points per minute and designed a geospatial dashboard to monitor and maintain data integrity
- Implemented a CI/CD workflow with Github actions for rolling updates on Docker containers and integrated automatic Slack updates

June 2018 – Sept 2018 **Platform/Machine Learning Intern**, *Brain Corporation*, La Jolla.

- Created point clouds visualizations to analyze the effects of LIDAR scans on glass walls
- Implemented a synthetic environment to model glass walls and to collect data
- Trained a LSTM and multilayer perceptron (MLP) to detect glass walls using Keras with 85% accuracy
- Developed unit tests with pytest to ensure reliability and reproducibility

Publications

March 2018 **Quantifying Gaze Behavior during Real World Interactions using Automated Object, Face, and Fixation Detection**, *IEEE Transactions on Cognitive and Developmental Systems*.

- Utilized Faster R-CNN with Caffe framework to detect and locate specific objects with 77% accuracy
- Implemented a face recognition and object recognition system with eye tracking glasses
- Lead a 5 student team in creating and labeling training and test sets in Matlab
- Link to paper: https://ieeexplore.ieee.org/document/8328848/

Projects

March 2018 **Classical Music Generator**, *Python, PyTorch*.

- Designed a character-level LSTM RNN with PyTorch that can generate classical music in ABC music notation
- Optimized the RNN by using GRU units, dropout layers, and adaptive learning rates via RMSprop
- Implemented a "temperature" parameter that changes how random/structured the generated music is

March 2018 **Doppelganger Face Generation using DC-GAN**, *Python, TensorFlow*.

- Created a Deep Convolutional General Adversarial Network (DC-GAN) that generated realistic human faces
- Found the closest face by using various similarity metrics such as Euclidean and Minkowski distances
- Applied feature extraction using principal component analysis (PCA) and discrete cosine transform (DCT)

Dec 2017 **Bayesian Classifier with Gaussian Mixtures**, *Matlab*.

- Segmented an image of a cheetah into the foreground (cheetah) and background by classifying each pixel using Bayes decision rule
- Found the maximum likelihood parameter estimates of Gaussian mixtures using the expectation maximization (EM) algorithm
- Achieved 4.6% probability of error with 64 Gaussian components densities

Skills

Programming **Python (Keras, TensorFlow), GraphQL, SQL, Matlab, ReactJS, HTML/CSS, C, Latex**

Tools **VIM, Anaconda, Docker, Git, Tableau, Jupyter, Amazon Web Services**