Richard Zhu

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Education

New York University *Sept 2020 - Expected Dec 2023*
B.A. Computer and Data Science GPA: 3.75/4.0

Relevant Coursework: Data Structures, Algorithms, Parallel Computing, Machine Learning, Natural Language Processing, Deep Learning, Computer Systems, Data Management & Analysis, Linear Algebra, Probability and Statistics, Discrete Mathematics

IBM, Deep Neural Networks with PyTorch Certification *Jan 2022*
Astronomer, Apache Airflow Fundamentals Certification *July 2021*

Experience

Zipline *Jun 2023 - Aug 2023*
Incoming Perception Software Engineer Intern *San Francisco, CA*

- Joining the Perception team to build systems that autonomously monitor airspace traffic and adapt UAV flight path in real-time.

Amazon *Sept 2022 - Dec 2022*
Software Development Engineer Intern *New York, NY*

- Achieved a 7x processing speed-up using parallel computing for a daily batch job that computes and updates the eligibility status of 3,000,000+ Amazon advertisers for a new payment method. Refactored the existing sequential processing implementation as a highly scalable, multi-threaded solution, added a custom thread pool to emit call time and failure metrics, and integrated sensors to monitor the metrics.
- Launched worldwide an internal webpage allowing authorized users to suspend Amazon DSP advertisers and pause their campaigns in case of payment default. The tool helps 25+ members from FinOps teams collect and manage bad actors and is the first milestone for automated suspension, an initiative estimated to save $15 million revenue per year.

Tau Motors *Jun 2022 - Sept 2022*
Data Science Intern *Redwood City, CA*

- Shortened compute time required to run motor thermal simulation software and create efficiency maps by over 99% using SVR with 99.5% accuracy.
- Orchestrated a distributed pipeline that constructed and validated thousands of unique and performant motor configurations using multi-objective TPE Bayesian optimizations in a 300+ dimension parameter space.
- Notably streamlined R&D by implementing a dashboard to visualize and compare motor geometry and wiring visualizations.
- Implemented a turning function algorithm using locality-sensitive hashing to quantitatively compare complex motor geometries.
- Accelerated part-selection process by automating NLP and OCR algorithms to parse table and graph data from web-scraped PDF datasheets, significantly easing manual research efforts for staff engineers.

ObjectSecurity *Feb 2022 - July 2022*
Machine Learning Intern *Remote*

- Clustered learned Convolutional Neural Network features from noisy I/Q data to identify irregular 5G cellular signals.
- Built a next-word prediction system in Neo4j yielding an 86% accuracy for messy, handwritten US Navy weapons data.
- Developed a Conditional Generative Adversarial Network to generate realistic synthetic data from complex military inventory datasets to ensure confidentiality, well-labeled data, and no erroneous data.

Projects

Yelp Reviews Sentiment Analysis

- Assembled Naive Bayes, SVM, and logistic regression classifiers to predict the sentiment of online restaurant reviews.
- Developed pre-processing to address data abnormalities and achieved 85% accuracy with Unigram TF-IDF SVC model.

Hidden Markov Model Part of Speech Tagger

- Extracted prior probabilities and part of speech transition probabilities of all Penn Treebank Dataset Part of Speech tags from corpi to train a bigram Viterbi Hidden Markov model that tags words with an accuracy exceeding 97%.

Skills

Programming Languages

- Python, Java, C, Javascript, R, SQL, MQL, Cypher QL, x86 Assembly Language

Technologies

- Git, AWS, Docker, PostgreSQL, MongoDB, Redis, TensorFlow, PyTorch, Neo4j, Airflow, NumPy, Pandas, SciPy, matplotlib, scikit-learn, PyVista, Dask, Jupyter