Jeffrey Liu

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github | linkedin

Education

University of California, Los Angeles — **Sep 2023 - June 2026 (Expected)**

Computer Science and Mathematics B.S. (Double Major) — *Los Angeles, CA*

Relevant Courses

Data Structures and Algorithms | Operating Systems | Software Construction | Probability and Statistics | Discrete Structures

Skills

Programming Languages Python | C++ | Java | HTML | CSS | JavaScript | SQL

Developer Technologies React.js | Node.js | Angular | Node | Express | MongoDB | Excel | VSCode | Git | Latex

ML Libraries PyTorch | TensorFlow | Keras | Pandas | scikit-learn

Experience

Qualcomm — **June 2024 - Present**

Software Engineer Intern — *San Diego, CA*

- Built a modular in-house tool to extract and analyze data from timing analysis, parasitic extraction, and filer/IO Electronic Design Automation (EDA) tools, classifying stages in the different SoC chip design workflows.
- Used Python, Bash scripts, and data visualization softwares to evaluate over 10,000 log files in just about 5 seconds, improving pipeline time by 1-2 weeks, and storing the information in a retrievable database.
- Implemented object-oriented design patterns for scalability, developing optimized algorithms and data structures to communicate with configuration files and manipulate data, ensuring reliability and efficiency.
- Refined code in reviews with manager/mentor, and presented work to about 200 executives and colleagues.

ACM Teach LA Dev Team — **December 2023 - Present**

Software Developer — *Los Angeles, CA*

- Working on front-end development of an interactive website using React.js, Node.js, and different technologies.
- Engaged in Agile cycles, refining code through weekly reviews and active collaboration for enhanced quality.

Patton Computers — **May 2022 - July 2023**

Computer Technician — *Memphis, TN*

- Diagnosed and repaired software/hardware issues, e.g. SDD/RAM/CPU upgrades, malware removal, parts, etc.
- Utilized Bash script, Python and Linux to automate and expedite data transfers and DBANS by 120%.

Notable Projects

MusiLibrary

- Executed full-stack development of a dynamic music storage app, integrating a RESTful framework and a Model View Controller architecture.
- Implemented an engaging front-end with Javascript/HTML/CSS and a back-end and database with Node.js, Express, and MongoDB.

Quora Question Sentiment Analysis

- Built a PyTorch LSTM natural language processing model to classify serious vs. sarcastic Quora questions.
- Developed programs to format over 400k (~6.4 GB) rows of input text to encode and train the model.
- Perform sentiment analysis using the SkipGram algorithm with Word2Vec text embedding, with a 85% precision.

Breaking the Cycle: Reducing Recidivism in Iowa State Prisons

- Developed a Feedforward Neural Network using Tensorflow/Keras to evaluate the probability an inmate would re-offend, with AUC-ROC score 0.84928.
- Implemented a SHAP analysis, multiple regressions (r^2=0.985) , and a 2600 trial Monte Carlo Simulation with a Skewed-Cauchy distribution, to quantify risk and evaluate the FNN.

Shaq to Wemby: Evolution of Shot Selection of NBA Centers

- Analyzed, modeled, and clustered over 600,000 shots taken by NBA centers from 2003 to 2023, concluding an 10% increase in 3pt%, a 3.3 feet average increase in distance, about 6000 increase in shot attempts.
- Grouped the descriptions of shots from 70 to 5 similar categories, used KMeans algorithm to partition the areas of shot attempts, and used a Convex Hull algorithm to define boundaries lines for about 140 clusters.

Awards

- **2x AIME Qualifier (1x Distinction)**, Modeling the Future Challenge 2nd Place ($15,000 Prize), 2x USNCO Semi-finalist, M3 Modeling Technical Computing HM, Congressional App Challenge Winner, ACSL Finalist, Salutatorian

Publications

- **Jeffrey Liu**, Lou Zhou, Amar Kanakamedala, Henry Yu, and Evan Wu, "Breaking the Cycle, Reducing Recidivism in Iowa State Prisons," *2023.2 ARCH*, Education and Research Section of the Society of Actuaries.