Changming Liu

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EDUCATION

Harvard University **Boston, MA**
Master of Data Science Expected March 2027

University of California, San Diego (UCSD) **San Diego, CA**
Bachelor of Mathematics and Computer Science; Double Major in Business Economics September 2021 – June 2025

Cumulative GPA: major GPA 4.0/4.0 (Total GPA: 3.89/4.0) with Provost Honor every semester; GRE: 335/340

Relevant Courses: Computational Statistics, Software Engineering, Artificial Intelligence, Advanced Data Structures and Algorithms, Theory of Computability, Data Analysis, Recommender Systems, Web Mining, Distributed Systems

WORK EXPERIENCE

CNPC USA **Houston, TA**
Data Science Intern July 2024 – October 2024

- Developed algorithms for cleaning, calibrating, and structuring oil and gas datasets, leveraging machine learning models like BERT and Latent Dirichlet Allocation to enhance geoscience data analysis, resulting in a 30% efficiency
- Applied statistical analysis techniques, including DBSCAN clustering and Random Forest regression, to identify patterns and correlations within geological data, leading to actionable insights for exploration strategies
- Designed and implemented scalable algorithms for cleaning, calibrating, and structuring large oil and gas datasets using Python and SQLAlchemy, reducing data preprocessing time and improving downstream ML model accuracy

Boston Consulting Group (BCG) **Shanghai, China**
Data Analyst Intern June 2023 – August 2023

- Developed an optimized bioinformatics data pipeline for genomic analysis, improving data processing speed by 30% and enabling the handling of large-scale genomic datasets and deeper genetic variation insights
- Analyzed over 50 policy documents and conducted 15 expert interviews to evaluate the impact of recent Chinese healthcare reforms on the biotechnology industry. Compiled findings into a strategic report that outlined key risk factors, providing insights for biotech firms to refine their market entry strategies and enhance compliance protocols
- Utilized advanced analytical tools such as BCG's proprietary data analytics platform and market simulation models to conduct a strategic review of the CRISPR technology sector, analyzing over 30 datasets

CITIC Securities **Beijing, China**
Quantitative Research Intern June 2022 – August 2022

- Leveraged regression analysis and Monte Carlo simulations and employed PowerBI for extensive historical data visualization to analyze each fund's risk and return profile which led to a 20% increase in investor inquiries
- Prepared daily morning industry research meeting reports, summarizing market dynamics, the latest news, and industry-related events by implementing Python scripts for web scraping daily financial news and market data
- Assisted in enhancing the company's online platform by employing Python to develop key components for automating repetitive data entry from market feeds or transaction records reducing manual entry errors

RESEARCH, PROJECT & LEADERSHIP EXPERIENCE

Biological Data Analysis Research, *UCSD Ion Channel Neurotransmission Analysis Assistant* August 2024 – Present

- Developed a Python pipeline using NumPy, Pandas, and OpenCV for microscopy image integration, reducing data processing time by 10 minutes per dataset of 10,000 images, enabling reliable and efficient batch analysis
- Utilized MATLAB functions like polyfit and findpeaks for polynomial regression and peak intensity analysis, achieving 95% accuracy in calcium intensity peak prediction and extracting precise biological metrics such as half-life
- Developed an automated pipeline for generating diverse visualizations using Tableau, replacing manual plotting with interactive dashboards, including heatmaps, line graphs, and scatter plots, saving approximately 5 minutes per dataset

Full-stacked AI based Tarot card reading Web App, *UCSD Project Leader* January 2023 – June 2023

- Developed AI based Tarot card reading online platform with implementation of NLP sentiment analysis(OpenAI API) and Bayesian probability model to provide personalized and context-based interpretation based on user queue
- Implemented real-time interactive system reporting through Socket.IO and React.js which allows multiplayer Tarot reading and card interpretation, resulting 50% user satisfaction and 25% reduction in the session dropout rate
- Deployed full-stack architecture online using Node.js on AWS; employed Elastic Load Balancing (ELB) to distribute user traffic across multiple instances of the application and reducing downtime, improving API response time by 20%

SKILLS & INTERESTS

Frontend: JavaScript, TypeScript, HTML, CSS, Angular, React Native, Webpack, Bootstrap, jQuery
Backend: Python (NumPy, Pandas, SciPy), R (Bioconductor, ggplot2, tidyverse), NodeJS, Java, JUnit, REST
Database: MySQL, MongoDB, PostgreSQL, Power BI, Tableau, Redis, Flyway, Data Modeling, SQLite
Machine Learning: OpenAI API, PyMC3, NLP, Bayesian Inference, TensorFlow, PyTorch, Scikit-learn, Deep Learning