Karan Narula

+1-858-319-5650 | kanarula@ucsd.edu |LinkedIn| Portfolio

Education

University of California, San Diego

Bachelor of Science, Math-Computer Science 09/2021 – 06/2025

- Achievements: GPA 3.9/4.0, Provosts Honors
- Courses: Data Structures and Object-Oriented Design, Computer Organization and Systems Programming, Theory of Computation, Advanced Software Engineering, Web Client Languages, Data Science In Practice, Design/Analysis of Algorithms, Supervised/Unsupervised Machine Learning, Recommender Systems, Web Mining, Linear Algebra, Linear Programming, Statistics

Skills

Programming Languages: Python, Java, C, C++, JavaScript, SQL, TypeScript, C#, Assembly, MATLAB, Bash, PowerShell, CSS, HTML

Tools and Technologies: GitHub, GitHub Actions, Docker, GraphRAG, OpenAI Platform + API, Data Version Control (DVC), MongoDB, Kubernetes, Playwright, Selenium, Pytest, TensorFlow, Pytorch, Snowflake, PowerBI, NumPy/SciPy, Django, Pandas, Streamlit, Maven, Gradle, Rest APIs, Fast API

Software Development: Software Development Life Cycle, Agile Methodology, Project Management, Test Driven Development, Behavior Driven Development, CI/CD pipelines, AWS, Azure, Object Oriented Design, Debugging, DevOps, MLOps, Scrum, Data Warehousing

Work Experience

Flectere

Data Science Intern 07/2024 – 09/2024

- Engineered Flectere Network Graph Project, leveraging NLP and graph algorithms to visualize expert connections, increasing community engagement by 20% and fostering collaboration.
- Integrated Streamlit, Microsoft GraphRAG, and OpenAI's GPT-4o model, automating client research processes and achieving a 25% efficiency gain within 2 weeks.
- Developed interactive digital dashboards for a major after-school care provider, centralizing decision-making and driving data-driven strategies, improving visibility by 30%.
- Delivered 20% manpower cost reduction via data-driven dashboards, laying the foundation for AI-powered cost savings (projected 5%), enhancing customer satisfaction by 15%.
- Improved data visibility and scalability by 25% through dashboards, directly leading to more informed business decisions and optimized resource allocation strategies.

Flectere

Data Science Intern 06/2023 – 12/2023

- Led 'Fractalized Tennis Bets' project, employing data science techniques to uncover 7 new business opportunities and valuable data-driven insights.
- Built and implemented CI/CD pipelines, enhancing project reliability by 35% and incorporating UI testing via Playwright to improve user experience.
- Implemented Data Version Control (DVC), enabling efficient version control for large ML models and increasing workflow efficiency by 15%.
- Developed and deployed machine learning models to predict match outcomes, achieving a predictive accuracy of over 75%
- Contributed to data analysis and reporting, resulting in data-driven insights that lead to a 10% optimization in business strategies.

Cognitive Science Department, UCSD

Undergraduate Research Assistant 04/2024 - Present

- Contributed to the development of a comprehensive Python textbook for COGS 18: Introduction to Python, focusing on improving clarity and accessibility of content.
- Assisted in designing and implementing educational technologies that enhanced student engagement and comprehension, resulting in improved learning outcomes in an introductory programming course

Projects/Papers

Comparative Analysis of Machine Learning Classifiers

- Designed and implemented a machine learning evaluation framework to compare classifiers, including Random Forests, Decision Trees, and Boosting.
- Optimized hyperparameters with grid search and cross-validation for robust results.
- Analyzed performance using accuracy, precision, recall, and F1-score, with detailed reporting.
- Streamlined experimentation by prioritizing computational efficiency and simplifying parameter grids, reducing runtime while maintaining predictive performance.

Personalized Clothing Recommendation System Using Rent the Runway Data

- Built a personalized clothing recommendation system using clothing review data, leveraging user attributes and product features.
- Implemented and compared models, including collaborative filtering, Bayesian Personalized Ranking (BPR), and an extended BPR with user-specific feature weights.
- Provided insights into feature augmentation challenges, highlighting overfitting risks when incorporating explicit user features.

UCSD Calendar Scheduler

- Developed a calendar automation tool for UCSD students, simplifying scheduling by reverse-engineering the course API and reducing manual effort by 90%
- Designed an intuitive front-end interface using Streamlit with increased UI/UX feedback by deploying it in Streamlit Community Cloud and getting enhanced student access by 40%.