KYLE LOU

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EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO La Jolla, CA
B.S. Computer Engineering | GPA: 4.0/4.0 Sep 2022 - Jun 2026
Relevant Coursework: Digital Signal Processing, Random Processes, Adaptive Filtering, Filter Design, Control Systems, Optimization, Design & Analysis of Algorithms, Deep Learning Algorithms

RESEARCH EXPERIENCE

RARE LABS AT UNIVERSITY OF CALIFORNIA, SAN DIEGO La Jolla, CA
Data Processing Research Assistant Sep 2023 – Present
- Designed and implemented adaptive filtering algorithms to isolate weak dark matter signals from multi-terabyte experimental datasets, utilizing advanced statistical signal processing techniques to enhance signal detection accuracy.
- Optimized and streamlined large-scale data processing pipelines, enabling efficient handling and real-time analysis of high-dimensional experimental data for dark matter detection.

WORK EXPERIENCE

UNIVERSITY OF CALIFORNIA, SAN DIEGO La Jolla, CA
Calculus Instructional Assistant Sep 2024 – Present
- Assisted in reinforcing student understanding of calculus concepts by providing constructive feedback on assignments and exams.
- Collaborated with instructors to address student challenges, ensuring a consistent and supportive learning environment.

DAIWA CAPITAL MARKETS Hong Kong SAR
Data Science Intern Jun 2023 – Sep 2023
- Spearheaded the development of a comprehensive data analysis platform focusing on the Hong Kong Stock Exchange, leveraging Python and Pandas.
- Utilized effective communication skills to collaborate with team members and stakeholders, ensuring project goals were met within specified timelines. Exhibited adaptability and a rapid learning curve in mastering new concepts and methodologies.

PROJECTS

VEHICLE STEERING CONTROL Sep 2024
- Designed and implemented a PID control system with lead-lag compensation for a linearized vehicle model. Achieved precise reference tracking with a median percent error of under 1% for complex paths.
- Developed MATLAB simulations for time-domain and frequency-domain analysis, including root locus, step response, and Bode plots, to enhance system stability and performance.
- Applied algorithmic optimization and numerical methods for parameter tuning, minimizing oscillations, and ensuring robust system response across varied test scenarios.

DIGITAL AUDIO SYNTHESIZER Apr 2024
- Developed a sophisticated digital audio synthesizer in MATLAB, incorporating advanced signal processing techniques to create and manipulate complex sound waves. Implemented real-time audio synthesis with features including reverb, echo, fade, and chorus effects.
- Enhanced audio engineering capabilities by designing and integrating user interface elements, allowing for dynamic interaction and precise control over sound creation and modification.

STOCK EXCHANGE DATA ANALYSIS PLATFORM Aug 2023
- Automated retrieval and cleaning of Hong Kong exchange data for accuracy and timeliness. Optimized performance for efficient handling of large datasets.
- Implemented analytical techniques, including time series analysis and moving averages, to identify market trends and patterns.

- Applied statistical methods such as correlation analysis and regression to analyze relationships between stocks and market indicators.

ADDITIONAL

Technical Skills: Statistical Signal Processing, Adaptive Filtering, Statistical Analysis, Object Oriented Programming
Programming Languages: C, C++, Java, Python, MATLAB
Languages: Native proficiency in English, Cantonese, and Mandarin
Awards: UC San Diego Provost Honors