Shan Jiang

jiangshan.nsfz@outlook.com | +1 820-758-8299 | Austin, TX
github | linkedin

Education

M.S. **Computational Science and Engineering (CSE)** **Aug 2024 - Current**
University of Texas at Austin *Austin, TX*
Current coursework: High Performance Computing & Computer Architecture

B.S. **Mathematics of Computation (Math&CS)** **Awarded in Jun 2024**
University of California, Los Angeles *Los Angeles, CA*
GPA: 3.94/4.00, *Cum Laude*
Selected coursework: Data Structure, Algorithms, Java with Applications, Deep Learning, Generative Artificial Intelligence, Computer Vision, Machine learning, Optimization, Scientific Computing

Skills

Programming Languages C/C++ | Java | Python | C# | R | JavaScript | MATLAB | SQL | HTML
Tools/Technologies WebRTC | ROS2 | Git | Unity | PyTorch | TensorFlow | SDK

Experience

Howen Technologies **Jun 2024 - Aug 2024**
Embedded Software Development Intern *Shenzhen, China*
- Redesigned the Active Noise Suppression (ANS) module in **C++/C** using WebRTC by implementing a backward processing technique to extract clear audio in high-speed, extremely noisy environments.
- Integrated the enhanced ANS into the company's Mobile Digital Video Recorder (MDVR) products, resulting in a 60% improvement in audio clarity under challenging conditions.
- Optimized the parameters of the extended Kalman filter in **ROS2** robot_localization package and integrated it into MDVR products equipped with a six-axis sensor, enhancing the accuracy of vehicle tracking.

Polymath REU (Research Experiences for Undergraduates) **Jun 2023 - Aug 2023**
Undergraduate Research Intern, *Advisor: Prof. Xianyi Zeng* *Remote*
- Constructed a physics-based rod-chain model by conceptualizing train cars as chains of rigid rods and derived ODEs system by incorporating derailment-resisting forces.
- Proposed a spring/dash-pot system at hinge points to decrease the frequency of the unstable nodes and determined the corresponding stability threshold in response to external forces.
- Simulated the model with an arbitrary number of rods using **MATLAB**.

UCLA Program in Computing **Sep 2023 - Jun 2024**
Course Learning Assistant *Los Angeles, CA*
- Undertook a part-time role, grading **C++** coding assignments for the programming courses which focus on **Dynamic Data Structures** and **Object-Oriented** programming.
- Assisted students in reviewing and providing feedback on their coding projects.

Notable Projects

Machine Learning Project **Jan 2023 - Mar 2023**
Project Title: ***Reinforcement Learning with Mountain Car Game*** *Los Angeles, CA*
- Collaborated in a team of four to develop and evaluate reinforcement learning models for the mountain car game with low-dimensional action and state spaces using Gymnasium in **Python** library.
- Designed and compared new policies for **Deep Q-Learning** agent, incorporating custom reward functions and epsilon-decay, against traditional Q-Learning.
- Compiled a comprehensive report featuring **Data Visualizations** to detail findings and strategies, wining 1st place among all participants.

Optimization Theory Project **Oct 2023 - Dec 2023**
Project Title: ***Finding Algebraic Varieties through Optimization*** *Los Angeles, CA*
- Applied numerical linear algebra techniques on multivariate Vandermonde matrix to seek the generator for the vanishing ideal, reconstructing the true algebraic variety on which data points lie.
- Designed and implemented an iterative optimization algorithm, focusing on **Sequential Quadratic Programming**, to accurately determine vanishing polynomials even in the presence of noisy data.