ZIHANG HE

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EDUCATION

University of California, San Diego — **San Diego, CA**
B.S. Computer Science and Engineering (3.97/4.0) — Sept. 2020 - June 2024 (Expected)

SKILLS

- **Programming:** python, Java, C, C++, Unix shell, Git
- **Web development:** HTML, Javascript, React, Node.js, CSS, SQL
- **Machine learning and data analysis:** PyTorch, TensorFlow, Matlab, R, SPSS, PCA

EXPERIENCE

Safe Autonomous Systems Lab — **San Diego, CA**
Research Assistant — Sept. 2022 - Present

- Investigated approaches in modeling soft robots. Combined Koopman operators and Bayesian regression with graph neural network to improve the accuracy of existing models
- Generated dataset of soft robots, including their parameters and motion. Applied different parameters across each body parts of a soft robot, so that the model yields a more practical result training on the dataset

Mentor Global Consultant — **Irvine, CA**
Intern — Feb. 2022 - May. 2022

- Conducted research on how startups can utilize Metaverse and blockchain technology, applied PCA and SPSS to twitter post datasets, used pandas to analyze financial datasets of Metaverse companies

Gupta Amarnath's Lab — **San Diego, CA**
Research Assistant — Aug. 2021 - Dec. 2021

- Worked on improving the current Latent Dirichlet Allocation by using the Fenwick tree structure to speed up the sampling process

PROJECTS

Smart Schedule Calendar

- Lead a team to build a local first, full-stack web application that allows user to assign particular time slot with tasks, or automatically schedule a user-input task using deadline, duration, priority, difficulty and other parameters
- Worked on the main scheduling algorithm, styled and stored visualized todos using object oriented data structures, and wrote automated tests using Puppeteer.js

Multiplayer Gobang App

- Built a full-stack React application that includes a realtime chat feature utilizing the Stream API, allowing users to play against each other in the popular game of Gobang (also known as Five in a Row) in realtime
- Created an authentication system in React using NodeJS and ExpressJS

Sentiment Analysis of Movie Reviews

- Constructed dataset using IMDB movie reviews, extracted polarity of review based on ratings, and performed text mining techniques like Bag of Words, TF-IDF, Word2Vec to textual reviews to predict the overall sentiment polarity with an accuracy of 0.87
- Created a movie recommender system using a user-free model based approach utilizing sparse linear methods

CNN-RNN Model Classification of Audio Genres

- Combined RNN and CNN model to extract both temporal and spatial features of audios of eight different genres. Trained the model to learn the music genres and differentiate them
- Created a generative model of a music genre, encoded midi files to pass in the network and generated new music