Pavan K. Yeddanapudi

Undergraduate Student • Researcher

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Education

Massachusetts Institute of Technology Sept 2024 - Today
B.S in Electrical Engineering and Computing Cambridge, MA

Las Positas College Jan 2024 - May 2024
Concurrent enrollment during HS Livermore, CA
GPA: 4.0

Experience

Signals, Information, and Algorithms Laboratory Sept 2024 - Today
Cambridge, MA
Advisor(s): Dr. Jongha Ryu

- Read research papers on using Neural Networks to approximate Mutual information between two probability distributions
- Implementing algorithm involving utilizing NeuralSVD framework to find eigenfunctions for the kernal function and passing them through KSG estimator to then find approximation for mutual information
- Reading and implementing algorithms involving using representation theory to minimize dimension of data in order to speed up calculations and approximate important processes for analyzing data

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MIT Media Lab Sept 2024 - Nov 2024
Cambridge, MA
Advisor(s): Mr. Abhishek Singh

- Writing code to optimize program for training machine learning models in a decentralized manner
- Devloping algorithms that ensure models are collaboratively trained across a permission-less network, balancing the need for personalization with collective training
- Implemented testing infrastructure in order to allow for continuous development and integration in an open-source environment
- Conducting experiments in order to evaluate performance of decentralized AI models under different conditions, minimizing communication overhead, privacy leakage, and optimizing model accuracy

San Jose BioRob Lab August 2023 - May 2024
San Jose, CA
Advisor(s): Prof. Lin Jiang (PI), Mr. Tadeas Horn

- Created embedded circuitry in order to make electronics for touch-sensitive glove that lets the user receive feedback for tasks they are currently doing, such as a doctor getting an assessment during surgery
- Implemented matlab simulations to map out movement or robotic glove in real time and collect data to analyze and give feedback to the doctor
- Produced unity simulation for seeing what the position of the glove is in real-time on the screen, allowing for future innovations such as simulations for doctors

UCSB Math Department
August 2023 - May 2024

Advisor(s): Dr. Daryl Cooper

- Explored relation between the surface area and volume of a multidimensional polygons and some of it's other properties
- Proved and reinterpreted existing theorem between the volume of multidimensional sphere and Euler's Identity
- Used interpretation to explore the field of linear programming and optimization problems that involve higher dimensional polygons and shapes

Personal Projects

Ball Catching Robotic Arm
April 2022 - Feb 2024

- Constructed stepper motor library from scratch in Cpp, allowing the arm to have seamless movement in whatever direction I want
- Programmed the machine to track a ball using live camera detection with communication utilizing a serial port connection from the python end to the cpp end
- Read research papers to understand how to camera-in-hand system for the arm to be able to attempt the catch the ball in real time
- Used linear interpolation in order to create system that can track the trajectory of a moving ball and will allow the robot to analyze where it will end up and how to reach a future point along the path
- Utilized the tensorflow library to create a program that allows me to control the robotic arm itself using gesture recognition

Neural Network for Image Recognition
Nov 2023 - Jan 2024

- Implemented VGG-19 Neural Network in the tensorflow library in order to analyze and identify images in the open-source CIFAR-100 dataset
- Read and analyzed research paper on how to implement said network, constructing the neural network from the information I had read
- Created and modified my own implementation of the Cross Entropy Loss function in order to better suit the dataset that was being analyzed and understood