AKSHAT GUDURU

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EDUCATION

University of Central Florida - Expected Graduation: 2027
B.S. Computer Science | B.S. Statistics | Minor: Math

Relevant Coursework
Calculus With Analytical Geometry II/III • Discrete Structures • Object Orientated Programming • Statistical Methods I/II
Computer Science I/II • Machine Learning • Statistical Theory I • Numerical Calculus • Optimization

SKILLS

Programming Languages: Python3 • C • SQL • Java • HTML/CSS • JavaScript • C++
Frameworks & Tools: DJANGO Framework • React Native • REST APIs • AWS EC2 • Flask • Git
Libraries: TensorFlow • MatPlotLib • Pandas • ReportLabs • OpenCV • PyTorch

EXPERIENCE

Undergraduate Machine Learning Research Assistant – University of Central Florida | November 2024 – Present

- Collaborated with a project group focused on "Developing Algorithms for Intelligent Autonomous Systems," working alongside PhD students and faculty principal investigators.
- Advanced project objectives in Multi-Agent Reinforcement Learning (MARL) and distributed optimization through research, algorithm design, and system implementation.
- Developed and compared multiple MARL Policy Evaluation techniques, primarily focusing on the performance of Local Temporal Difference Updates.
- Used the Petting Zoo API to simulate different environments to test the performance of algorithms, while using performance metrics like Mean Squared Bellman Error and Consensus Error.
- Leveraged control theory and machine learning principles to design and implement control systems for Arduino-controlled robots, contributing to the field of intelligent autonomous systems.

PROJECTS

Syllabi.AI — Project and Backend Lead– Feb-April 2025

- Worked with and lead a team of 8 developers to develop a MERN app designed to help students organize and learn from their course syllabi.
- Managed version control, database schemas, and deployed app to AWS EC2 instance.
- Implemented API calls to OpenAI GPT-4o to parse syllabi for chapter names, summaries, and quizzes.
- Enhanced custom ChatBox with RAG to allow chat context for user courses, chapters, and syllabi.

Silicon Accelerated Neural Network using C++ – Feb 2025

- Developed a Neural Network with Neuron, DenseLayer, and NeuralNetwork classes, supporting Sigmoid, ReLU, and Tanh activation functions, along with forward propagation and back-propagation using gradient descent.
- Added functionality for Mac Metal GPU acceleration using Objective-C++, allowing faster computation by leveraging Apple's Metal framework for parallel processing and GPU Acceleration.
- Supports dynamic layer addition, training with multiple epochs, and prediction through an external API. It includes an evaluation function that calculates accuracy, precision, recall, and F1-score to assess model performance across epochs.

Smart home assistant — Jul - Aug 2024

- Developed a Smart Home Assistant using Raspberry Pi, Python, and TensorFlow.
- Implemented facial recognition for secure door unlocking via a servo motor. Automated lighting control using a radio frequency transceiver.
- Utilized TensorFlow, OpenCV, ArduCam, Flask, and MQTT to combine machine learning, hardware integration, and network security.

Trading strategy Algorithm — Jul 2024

- Developed a Python program to analyze stock data using technical indicators like SMAs, EMAs, MACD, RSI, and Bollinger Bands.
- Pulled stock data via the yfinance library, applied feature engineering, and implemented clustering using Gaussian Mixture Models (GMM) to identify market patterns.
- Generated buy/sell signals and visualized market trends with Matplotlib by plotting technical indicators and entry signals.
- Utilized Random Forest Classifier and Gaussian Mixture models to predict stock movements, with data preprocessing using StandardScaler and feature selection from multiple technical indicators.
- Produced a 25% return when using signals to purchase CrowdStrike stock.