Shailesh Pranav Rajendran

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Skills

- **Programming & Scripting:** Python, C, C++, C#, MATLAB
- **Machine Learning & AI:** TensorFlow, PyTorch, Llama-Index, Langchain, Keras, Scikit-Learn
- **Development Tools:** Git, Docker, Neo4j, ChromaDB
- **Platforms:** AWS, Raspberry Pi, Android, Arduino, Siemens PLC
- **Modeling & Design:** Unity, Blender, SolidWorks, Unreal Engine

Experience

WorldLink US – Machine Learning Engineer — Nov 2023 - Current

- Contributed to the development and implementation of a secure, on-premise chatbot, focusing on data protection and user privacy in compliance with organizational and regulatory standards. This initiative leverages Gen AI technology to ensure interactive and intelligent user engagement.
- Designed and implemented a sophisticated data pipeline integrating vector and knowledge graph databases. This infrastructure underpins the chatbot's Gen AI-driven Retrieval-Augmented Generation (RAG) capabilities, significantly enhancing its response accuracy and quality.

New York University Tandon School of Engineering – Research Intern — Feb 2020 - May 2020

- Designed and fabricated a rehabilitation device for stroke patients with partial loss of arm maneuverability under the guidance of Dr. Vikram Kapila
- Utilized 3D printing to manufacture required device components.
- Integrated the Dynamixel servo library to control the motor and a force sensor to measure the force feedback applied by the patient.
- Contributed to the development of a customized solution to improve the quality of life for stroke patients through the application of engineering principles.

Projects

Interactive AI Chatbot for Enhanced User Engagement

- Developed a local chatbot utilizing the Mixtral 8x7b / Llama 3 7b model to drive interactive conversations, showcasing advanced natural language processing capabilities.
- Integrated Streamlit to create a user-friendly interface, enabling seamless user interaction and enhancing user experience.
- Leveraged Neo4j for knowledge graph-based storage method and Milvus for vector-based storage, in addition to Langchain, for content-based question answering or Retrieval Augmented Generation(RAG). This approach facilitated accurate and relevant responses by the chatbot to user inquiries.

Autonomous Vehicle Trajectory Generation using Vision Transformer (ViT) (GitHub)

- Implemented autonomous vehicle trajectory generation using the ViT Deep Learning algorithm.
- Utilized the Level5 planning dataset for training and testing in a simulation environment using Lyft's gym library.

Human Detection and Tracking Project (GitHub)

- Developed a human detection and tracking feature for a 4-wheeled robot using the YOLO algorithm.
- Employed a CNN architecture for object detection in computer vision.
- Utilized software development techniques such as ESC methodology, Agile Development Process, and Test-Driven Development.
- Implemented CI and CD pipelines using GitHub Actions for continuous integration and continuous deployment.

AdaBins-Lite: Monocular Depth Estimation in Embedded Devices (Report)

- Addressed depth map estimation from a monocular RGB camera on embedded devices.
- Presented findings on a suitable depth estimation model for edge devices.
- Compared the computational complexity of the base model to address the problem of deploy-ability on low-powered embedded systems.

Education

May 2023 — **University of Maryland** — College Park, MD, USA
Master of Engineering: Robotics Engineering

May, 2020 — **PSG College of Technology** — Coimbatore, TN, India
Bachelor of Engineering: Robotics and Automation Engineering

Leadership Experience

TIDES Conference — September 2016

- Volunteered as an organizer for the TIDES Leadership Summit, conducted by the Confederation of Indian Industry (CII).

ENEXT Conference — April 2016

- Lead the team for the console at the E-NEXT Conference hosted by the Entrepreneurs Club of PSG College of Technology

KRIYA – Intercollege Technical Fest — January 2019

- Organized and managed a maze solver and memory-based path planner competition.