NEELESH GOPALAKRISHNAN

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EDUCATION

Purdue University. **West Lafayette, Indiana**
Master's in Electrical and Computer Engineering. (Automatic Control). August 2021-May 2024
Anna University. **Chennai, Tamil Nadu**
Bachelor's in Electronics and Communication Engineering. September 2017-August 2021

PROFESSIONAL EXPERIENCE

Collaborative Robotics Lab, Purdue University. **West Lafayette, Indiana**
Graduate Research Assistant. September 2022-June 2023

- Designed an intelligent agent for 4D printer software to optimize component placement in robots using backpropagation; maintained a large codebase using Git; implemented heatmap visualization for precise analysis.
- Created rendering engine and GUI to perform mesh operations and render 3D models in C++ for visualization.
- Enhanced and optimized chainsaw operations with a feedback system employing machine learning with LSTM-autoencoders and signal processing via Python utilizing TensorFlow, Pandas, and NumPy libraries to analyze vibrations and sensor data, optimizing performance and leveraging MySQL for effective data management.

Danlaw Inc. **Novi, Michigan**
Software Systems Engineer. August 2021 – August 2022

- Developed Python-based tools and scripts for vehicle connectivity and autonomous navigation by defining and implementing V2V (Vehicle to Vehicle) technologies alongside the Algorithm team.
- Streamlined data preprocessing; executed an end-to-end multilane detection algorithm using an ADAS camera; leveraged TensorFlow for CNN deep learning applications, enhancing GPS localization and vehicle perception.
- Led the creation of a data analytics tool in Python to extract and interpret raw unstructured data from on-board units, enhancing operational metrics and insights and provided visualization for testing and analysis purposes.
- Collaborated with engineering teams to design and develop a GUI in Python and C for simulating 7 types of vehicle interactions in V2V applications, facilitating improved testing and development processes.
- Designed and built Python tools to streamline OBU (On board Unit) software updates, enhancing reliability and reducing manual intervention by 50 hours monthly, thereby boosting operational efficiency and consistency.
- Documented and supported software solutions; mentored junior colleagues to enhance and maintain the Data Analytics tool, fostering knowledge sharing; prepared technical reports for making product decisions.
- Initiated and coordinated the development of a post-processing tool in Python and C++ for Maverick Truck data; integrating precise latitude and longitude tracking to analyze vehicle movements at over 500 intersections, improving data visualization capabilities by over 40 percent, and reporting results in graphs and spatial charts.

Ashok Leyland. **Chennai, Tamil Nadu**
Intern, Product Development. May 2019 – August 2019

- Utilized Extended Kalman Filters with Python to efficiently collect and analyze real-time data from Electric Vehicle battery cells, accurately estimating SOC (State of Charge) and SOH (State of Health) of battery which are crucial for determining EV battery life expectancy and optimizing charging cycles.
- Assisted in the development and analysis of EV battery data, contributing to the enhancement of operational metrics through data collection and analysis to draw actionable conclusions that supported improvements.
- Implemented a deep learning model in TensorFlow trained on historical battery data, to optimize battery usage.

PROJECTS AND SKILLS

Employee Empowerment Platform (Non-Profit Initiative).

- Pioneered a nonprofit platform for employee recognition using Next.js, Tailwind CSS, Firebase and AWS.

Obstacle Avoidance using deep reinforcement learning.

- Trained an agent using a raspberry pi to avoid obstacles by using readings from 3 ultrasonic sensors as inputs.
- Devised agent model using python and PyTorch.

Skills: MATLAB, C++, Python, C, React.js, PyTorch, TensorFlow, AWS, NumPy, Pandas, OpenGL, Docker, Git, GitHub, Version Control, Data Analysis, Linux/Unix, Software testing, JIRA, Front-end, OpenCV, Microsoft Visual Studio.

TECHNICAL PUBLICATIONS

Neelesh Gopalakrishnan. (2020). Autonomous Obstacle Avoidance Robot Using Reinforcement. International Journal of Advanced Science and Technology, 29(9s), 3741 - 3745. Retrieved from http://sersc.org/journals/index.php/IJAST/article/view/16609.