Karthik Kandikonda

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Experience

Northrop Grumman Baltimore, MD

Software Engineer - Modeling and Simulation | C++, Python *Aug 2024 - Current*

- Developed, Verified, and Validated simulation models, crafting comprehensive test scenarios to ensure functionality and alignment with system requirements
- Optimized simulation efficiency, achieving a 30% reduction in runtime by implementing sensor isolation techniques to focus testing efforts, minimizing computational resource demands
- Built a data-sharing pipeline between two simulation systems, enabling seamless data exchange via ports and sockets, enhancing integration and interoperability

Research

Human Trust in Robotics East Lansing, MI

Undergraduate Research Assistant | React, NodeJS, MongoDB *Sept 2023 - Sept 2024*

- Designed and built an experiment to analyze human trust by focusing on behavioral and physiological metrics of a human working with a digital robot
- Developed a full-stack web application to simulate a human-robot interaction environment to enable efficient data collection and management
- Processed and analyzed data using Input-Output Hidden Markov Models (IOHMM), uncovering predictive patterns in trust dynamics across 40 participants

Autonomous Valet System East Lansing, MI

Undergraduate Research Assistant | Python *Jan 2023 - Sept 2023*

- Implemented multithreading to optimize computation times, resulting in a 70% reduction in processing duration
- Devised a system for simulating IMU drift, significantly enhancing the accuracy of our simulation environment
- Revamped the system architecture with a focus on object-oriented programming (OOP), amplifying efficiency and readability while streamlining maintenance

Internship

TomTom Farmington Hills, MI

Software Engineer | Java, Python *June 2023 - Aug 2023*

- Developed the data preparation process for the machine learning model, enhancing data quality and boosting model performance
- Engineered a machine learning model, overseeing the entire life cycle from data analysis and feature engineering to model selection and validation
- Innovated and designed a user-friendly application, streamlining the integration of supplier data into our systems and significantly reducing processing time by a week

Projects

Vercel Clone for Python Apps

NodeJS, NextJS, MongoDB, Docker, Kubernetes, AWS *Completed 2024*

- Built a hosting platform for deploying and sharing Streamlit and Gradio apps with a Vercel-like user experience
- Implemented scalable deployment using AWS, enabling auto-scaling for traffic demands to enhance reliability
- Automated TLS/SSL certificate generation to secure all hosted applications with zero manual intervention

3D Printing Slicer

Python, ROS, MoveIt2, Computational Geometry *Completed 2023*

- Developed a 3D printing pipeline, including slicing, end-effector path planning, and execution in a virtual environment
- Optimized print patterns to enhance structural durability and minimize weaknesses in any direction
- Simulated robotic arm movement in ROS using MoveIt2 for precise object printing in a virtual environment

Education

Michigan State University — College of Engineering East Lansing, MI

Bachelor of Engineering in Computer Science *Graduated May 2024*

- **GPA:** 3.3
- **Activities:** Autonomous Vehicles Club, Artificial Intelligence Club, Rocketry Club

Skills

Languages: Python, C++, JavaScript, Java
Frameworks: Git, AWS, Docker, NodeJS, ReactJS, ROS
Interests: Running, Cooking, Playing Cards, Physics