Nevin Kopp

nevinkopp@gmail.com | nevinkopp.github.io | github.com/nevinkopp

Education

University of California, Riverside – M.S. in Robotics 2024

University of California, Riverside – B.S. in Electrical Engineering 2023

Experience

Graduate Student Researcher – University of California, Riverside CA 2023 – 2024

- Researched methods to improve the performance of machine learning models for marine life tracking
- Trained modern open air models on underwater images both with raw and enhanced datasets
- Results concluded with a performance increase of 10-15% with the enhanced image dataset

Engineering Teacher Assistant – University of California, Riverside CA 2023 – 2024

- Assisted engineering professors with grading, holding office hours, and running electrical engineering labs
- Briefed students on theories regarding components such as diodes, operational amplifiers and transistors
- Assisted students with using power supplies, oscilloscopes, and multimeters to complete experiments

Projects

Leviathan – Autonomous Underwater Vehicle (AUV) nevinkopp.github.io/projects/1_project/

- Participated in a multidisciplinary student club to develop an AUV for use in an international competition
- Used Gazebo and ROS for simulation and control to validate functionality within a hardware in the loop environment
- Designed and delivered motor controller and battery management PCBs for use in the AUV prototype

Autonomous Mobile Robot Navigation with PID Controller nevinkopp.github.io/projects/5_project/

- Graduate-level course required autonomous navigation within an obstacle-laden environment to complete a task
- Applied the A* search algorithm for optimal path planning, ensuring efficient obstacle avoidance
- Developed a PID control system to maintain accurate and stable motion throughout the robot's trajectory
- Integrated polynomial time scaling to enhance trajectory smoothness
- Successfully demonstrated task completion by navigating the map, avoiding obstacles and pushing a ball into the goal

Industrial Robotic Arm Analysis and Design nevinkopp.github.io/projects/6_project/

- Analysis and design of a four-joint robotic arm for palletizing tasks in industrial settings for a graduate analysis course
- Solved forward, inverse, and velocity kinematics, as well as statics equations to create a realistic model
- Rendered a comprehensive and functional concept model in 3D which was able to effectively showcase the capability of the arm to perform palletizing tasks

Skills

Robotics: Robot Operating System (ROS), Inverse Kinematics, Forward Kinematics, Artificial Intelligence (AI), Machine Learning (ML), Perception, Path Planning

Electrical Engineering: Embedded Systems, I2C, UART, SPI, Altium, PID Control, ARM, AVR, Ethernet, SPICE

Analysis: Finite State Machine (FSM), Git, MATLAB Simulink, Bash, OpenCV, PyTorch, scikit-learn, C++, C, Python, HIL

CAD: SolidWorks, FreeCAD

Technical: Solder Station, Power Supply, Oscilloscope, Multimeter, Laser Cutting, 3D printing