## HARRISON BOUNDS

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Northwestern University M.S. in Robotics (Expected Dec. 2025)	Sep. 2024-Present Chicago, IL
University of Central Arkansas	Aug. 2020-Dec 2023
Bachelor of Science in Computer Science	Conway, AR
Skills         Programming Languages: C++, Python, C, Java, SQL, LaTeX, Node.js         Software: ROS/ROS2, Linux, PyTorch, OpenCV, Git, Bash, Coppelia Sim, Gazebo, MuJoCo, Isaac         Hardware: Raspberry Pi, Arduino, NVIDIA Jetson, Soldering, 3D printing         Robotics: SLAM, Reinforcement Learning, Legged Locomotion, LLM, VLM, VLA         Experience	: Sim, Isaac Lab
<ul> <li>Clustering Algorithm Research   Research Assistant   University of Central Arkansas</li> <li>Collaborated with a research team to publish a comparative study on the Jancey K-Means algorit</li> <li>Built an Online K-Means algorithm from scratch using C</li> </ul>	<b>Jun 2023-May 2024</b> hm in C++
<ul> <li>Machine Learning and Text-Based GANs   Research Assistant   University of Central Arkansas</li> <li>Classified malware anomalies using random forest models</li> <li>Produced a synthetic dataset with text-based Generative Adversarial Networks</li> </ul>	Sep 2023-May 2024
<ul> <li>Windstream Communications   Software Engineer Intern   Little Rock, AR</li> <li>Developed enterprise-level chatbots using BotPress and Python</li> <li>Designed and deployed APIs and microservices following Domain Driven Design principles</li> <li>Performed continuous integration/deployment pipeline, pull requests, and user acceptance testing</li> </ul>	May 2022-Dec 2022
UCA Makerspace   Ambassador Maker   Conway, AR       J         • Prototyped robotics projects for engineers with Python, 3D Printing, and AutoCAD       J         Publications       J	un 2021 – May 2022
<ul> <li>Harrison Bounds, M. Emre Celebi, Jordan Maxwell, Color quantization using an accelerated Jaclustering algorithm, J. Electron. Imaging 33(5), 053052 (2024)</li> <li>Projects</li> </ul>	ancey k-means
<ul> <li>VLA for Manipulation   VLM, Reinforcement Learning, VeRL, Isaac Sim, Isaac Lab, Sim-to-Real, H</li> <li>Creating a simulation pipeline with Isaac Sim and Isaac Lab to interface with VLA model</li> <li>Training an VLA model with RL to deploy into the real world using ROS 2</li> </ul>	<i>ROS 2</i> Feb 2025
<ul> <li>Hexapod Learning to Walk   C++, Reinforcement Learning, Inverse Kinematics, Python</li> <li>Designed and built a six-legged robot that uses inverse kinematics to move with a tripod gait</li> <li>Trained a locomotion policy with using the proximal policy optimization algorithm</li> <li>Simulated the successful model in Genesis to visualize the learned gait</li> </ul>	Jan 2025
<ul> <li>Doodle Droid   ROS 2, Image Processing, Computer Vision, Motion Planning</li> <li>Located and processed an image with OpenCV for a 7-DoF arm to draw a live portrait</li> <li>Calibrated robot arm using AprilTags to move to correct z height</li> <li>Utilized ROS 2 and the MoveIt API to develop a motion planner, including a Cartesian path to ex</li> </ul>	Nov 2024
<ul> <li>Quadruped Locomotion   Reinforcement Learning, PPO, Simulation, Sim-to-Real</li> <li>Used Proximal Policy Optimization to train the unitree go2 robot dog to perform different tasks</li> <li>Created detailed reward functions for the dog to sprint, climb, jump, and strafe</li> </ul>	Feb 2025
<ul> <li>Autonomous RC Car   Convolutional Neural Networks, Behavioral Cloning, Imitation Learning</li> <li>Led development of an open-source autonomous RC car project in Python, with custom hardware</li> <li>Created a custom Convolutional Neural Network that predicts steering and throttle based on an i</li> <li>Constructed a controller mapping using PyGame to control the RC car</li> </ul>	Jan 2023 nput image
<ul> <li>Interactive Path Planner   ROS2, C++, A-Star</li> <li>Read SLAM maps to publish an 2D occupancy grid fro universal use</li> <li>Published a path between a start and goal node using the a-star algorithm</li> <li>Made the markers iteractive so the path can be updated dynamically</li> </ul>	March 2025
Sketch Prediction   Python, Deep Learning, PyTorch, Convolutional Neural Networks	Jun 2023

• Produce user sketches using a gui interface as input to the model

<sup>•</sup> Created and trained a Neural Network with PyTorch that recognizes a sketch belonging to 1 of 250 categories