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Connor Guzikowski

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EDUCATION

Master's of Science in Electrical and Computer Engineering **09/2024 - Present**
University of California San Diego

- Concentration in Intelligent Systems, Robotics, and Controls
- Main courses: Mathematics for Robotics, Sensing and Estimation for Robotics, Advanced Image Synthesis

Bachelor's of Science in Robotics Engineering **09/2020 - 06/2024**
University of California Santa Cruz
GPA: 3.68 - Highest Honors in Major

- Main courses: Robot Manipulation, Mechatronics, Microcontroller Design, UAV Theory and Practice, Sensing and Sensor Technologies, Data Structures and Algorithms, Feedback Control Systems, Brain Inspired Machine Learning, Probability and Statistics for Engineers
- Member of engineering honors society Tau Beta Pi.

WORK EXPERIENCE

Graduate Research Assistant - UCSD ARClab **10/2024 - Present**
UCSD ECE Department *San Diego, CA*

- Leading a research project on the revival of the functionally extinct Northern White Rhino species through the use of a robotic catheter for embryo implantation into Southern White Rhino surrogates
- Duties include ROS2 development, Linux environment setup, and mechanical design

Undergraduate Research Assistant - UCSC H.A.R.E Lab **02/2023 - 09/2024**
UCSC ECE Department *Santa Cruz, CA*

- Student drone pilot
- Modified plant simulator for more accurate plant health simulations
- Researched using plant health simulations to train neural network for disease detection
- Aided in development of ROS2 packages and Linux environment setup for robotic systems

Individual and Group Tutoring **09/2022 - 12/2022, 01/2024 - 03/2024**
UCSC ECE Department *Santa Cruz, CA*

- Tutored for ECE13: *Computer Systems and C Programming* and ECE167: *Sensing and Sensor Technologies*
- Led office hours solo and in conjunction with teaching assistants

PROJECTS

Utilizing Synthetic Plant Health Data to Train Neural Networks **06/2024**
Undergraduate Thesis and Research

- Modified plant health simulator to accurately model a plant's spectral response to water deprivation
- Conducted experiment where a plant's spectral reaction was measured
- Created algorithm to generate field of both healthy and stressed plants

Imitation Learning for Ball Catching

03/2024

Deep Learning and Robotic Manipulation

- Implemented imitation learning model to teach robot arm to catch a ball in simulation
- Model learned how to correlate ball position in cameras with target destination for arm

Event Based Object Detection - Self Driving Application

11/2023

Neuromorphic Computing and Spiking Neural Networks

- Expanded on previous work to detect pedestrians, two wheelers, cars, trucks, buses, traffic signs, and traffic lights on data from neuromorphic camera.
- Modified previous work to utilize an event-based neural network on the event-based data

Power Glove

06/2023

Software and Circuit Design

- Glove that turns on and interacts with various devices using finger taps and motion of hand
- Incorporates capacitive touch sensors, IR sensors, and IMU
- Devices included laptop, RGB LED, servo motor, and piezo speaker

UAV Waypoint Following and Orbiting

03/2023

Controls and Software Design

- Runs simulation to guide a UAV to various waypoints
- UAV orbits said waypoints for a specified duration before redirecting to other waypoints.

SKILLS

Programming

Python, C, C++, Git, L^AT_EX, Matlab, OpenCV, PyTorch, ROS/ROS2

Hardware Design

Verilog, Oscilloscope/Multimeter proficiency, Circuit Design, Embedded System Development

Other

Github, Linux, Solidworks, Fusion360, QGIS, Drone Flying