Caleb Patton

Reno, Nevada
www.linkedin.com/in/cajp
calebpatton09@gmail.com
cap099.github.io
217-356-5995

EDUCATION

University of Nevada, Reno - *M.S. Mechanical Engineering* *Jan 2023 - Dec 2024*
Control Theory, Autonomous Vehicles, Aerospace *GPA: 4.0/4.0*

University of Illinois, Urbana-Champaign - *B.S. Computer Engineering* *Aug 2018 - May 2022*
Deep Learning, Robotics, Embedded Systems, Hardware, Statistics *GPA: 3.77/4.0*

EXPERIENCE

Graduate Research Assistant – *University of Nevada, Reno* *Jan 2023 - Present*
Learning Autonomy and Control Systems Lab + Robotic Workers Lab *Reno, NV*

- Used ROS, Python, and C++, to architect a Simulated Environment for Autonomous Vehicles using CARLA, Gazebo and PX4 to test Control, Mapping and Deep Learning Algorithms
- Used the DJI SDK and ROS to create a Perception HW/SW stack to fly a DJI M600 fully autonomously in a GPS-Denied Environment using LIDAR, RGB-D and an IMU
- Tested the accuracy of the Voxblox and Octomap mapping algorithms in a simulated environment
- Researched methods of generating optimal trajectories for UAVs to avoid obstacles, moving and static, using Deep Learning and SLAM

Computer Vision and Robotics Intern – *Brunswick Corporation* *Feb 2021 - Dec 2021*
Autonomy Team *Champaign, IL*

- Developed 2 perception systems for an autonomous watercraft to detect swimmers, boats, docks, and other obstacles using FasterRCNN, YOLOv5 and MaskRCNN at 30 fps and 10 fps
- Optimized performance of C++ code for scientific computing to support autonomous boating simulations
- Researched methods to utilize and generate synthetic data to improve performance of DNNs using Unreal Engine by varying time of day, weather conditions and object generation
- Led team of 15 interns in marine RGB and IR image data collection and subsequent obstacle labelling processes using a dSpace Autera and Microsoft Azure
- Ran mapping algorithms on mobile robotic platforms using LiDAR Sensors and Raspberry Pi Cameras

PROJECTS

Multivariate Time Series Transformer Model – *Python, PyTorch, Pandas* *2023*

- Used Python to implement and train a Transformer Deep Neural Network to classify Multivariate Time
- Series data with 93% accuracy on an unseen test set

x86 Operating System (ECE391) – *C, Assembly, QEMU* *2020*

- Used C to implement Page Tables, Interrupt Service Routines, and other features of an OS Kernel

RC Tricopter Scratch Build – *Electronics, RC Aircraft, CAD* *2020*

- Designed a Quadcopter frame that could constructed for under 5 dollars to test RC hobby electronics
- Used Fusion360 to design a folding arm Tricopter frame that could be cut from acrylic on a Laser Cutter

TECHNICAL SKILLS

Programming: Python, C/C++, PyTorch, CUDA, ROS, Docker, SQL
Manufacturing: 3D Printing (FDM, SLA), Laser Cutters, Soldering, Power Tools
CAD: Fusion 360, NX 12.0