Caleb Patton

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EDUCATION

University of Nevada, Reno — *Jan 2023 - Dec 2024*
M.S. Mechanical Engineering — *GPA: 4.0/4.0*

University of Illinois, Urbana-Champaign — *Aug 2018 - May 2022*
B.S. Computer Engineering — *GPA: 3.77/4.0*

EXPERIENCE

Graduate Research Assistant – *University of Nevada, Reno* — *Jan 2023 - Present*

- Researched the intersection of Perception, Control Theory, Path Planning and State Estimation for Autonomous Vehicles
- Used PyTorch and ROS to run Deep Learning algorithms in Autonomous Vehicle simulations
- Implemented a Signed Distance Function mapping algorithm for Autonomous Quadcopters using CARLA simulator, ROS, Gazebo and PX4

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

- Used the CAN protocol to write embedded C code for an autonomous boating demo
- 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

Software Engineering Intern – *Xaptum Inc. Chicago, IL* — *Jan 2020 - Aug 2020*

- Learned Erlang to develop a prototype Anomaly Detection/Notification system
- Detected anomalous connection requests using the Isolation Forest and Logistic Regression Algorithms

TECHNICAL SKILLS

Programming
- Python
- C/C++
- CUDA

Software
- PyTorch
- Deep Learning
- ROS
- Docker
- SQL

Manufacturing
- 3D Printers (FDM, SLA)
- Laser Cutter
- Soldering

CAD
- Fusion360
- NX 12.0

PROJECTS

- RC Tri-Copter
- Jetson Nano Autonomous Vehicle
- Pipelined RISC-V Microprocessor
- x86 Operating System
- FPGA based Arcade Game