CONOR GAGLIARDI

cgg3724@g.rit.edu conorgagliardi.com 1(518)698-7260 ConorGagliardi ConorGagliardi

Experience

NASA - Johnson Space Center - Optical Navigation
OpNav Software Engineer Intern — May 2024 to Aug. 2024, May 2024 to Aug. 2024

- Created OpenCV tool suite for calibrating Artemis II flight cameras
- Gathered full scope datasets for calibration procedure
- Oversaw tests to compare calibrator with checkerboard and ChArUco board against traditional star calibrator
- Networked with different branches at NASA to enable cross-division collaboration

NASA - Johnson Space Center - SENSS / STAR Lab
GN&C Development and Testing Intern — Jan. 2024 to Aug. 2024

- Performed machine vision sensor (camera, LIDAR) calibration
- Tested LIDAR-based hazard detection (HD) and safe-site-identification/safe-site-selection (SSI/SSS) algorithms
- Tested sim-to-real image transformation algorithms
- Developed test plan/procedure for evaluating various machine vision based GN&C algorithms
- Created and Led a testing and development campaign for SENSS lab including TRR
- Generated scaled reference trajectories to emulate real-world operations
- Creating PID controller for manual gimbal control with auxiliary IMU
- Embedded electronics controller using Raspberry Pi UART and SBUS circuit design
- Mechanical design with Creo for robot mounts

NASA - Johnson Space Center - S.U.I.T.S.
Intern - Autonomous Rover / Augmented Reality Spacesuits — Aug. 2023 to Dec. 2023

- Developed an autonomous navigation system with obstacle avoidance for a rover in collaboration with augmented reality spacesuits.
- Created a tessellated map to facilitate autonomous navigation using ROS and RGBD video feed.
- Helped program a wearable umbilical interface assembly (UIA) to simulate various life support systems for EVA using Raspberry Pis.
- Improved a telemetry stream that displays rover telemetry, location data (global + local) and speed, spectrometer, UIA data, and a spacesuit's mounted video stream.
- Physically tested designs on a simulated Mars terrain field.

NSF REU - UAS Applications - University of Oklahoma
Research Intern — May 2023 to Aug. 2023

- Trained and used a YOLOv8 model for real-time UAS detection, tracking, and relative localization.
- Used OpenCV for estimating position, velocity, and orientation from camera data.
- Designed a formation control strategy for managing UAS swarm movements.
- Validated control scheme through simulation testing (Microsoft Airsim) and Quadcopter flight tests in lab conditions (DroneDome at OU).
- Conducted real-world tests at the UASIPP test site to further evaluate system performance.

Professor Dennis Delgado (SPAS at RIT)
Computer Vision Engineer - Studio Assistant — Oct. 2022 to May 2023

- Used Principle Component Analysis to extract "Eigenfaces" from images gathered using a facial recognition neural net processing of several films.
- Used Python and OpenCV for motion tracking and object detection to help Professor Delgado with projects and creative exhibits.
- Used various techniques such as sparse and dense optical flow and delta-frames for motion detection.

Cellec Technologies
Computer Science Co-op — Aug. 2021 to Dec. 2021

- Created a program to normalize complex data sets from lithium ion battery testing equipment using the Python libraries NumPy, Pandas, and Matplotlib allowing for the transformation of massive data outputs from several battery testing machines with different output file formats into a standardized, coherent, and presentable form.
- By employing products from the software I produced, the company was able to be successful in three distinct presentations for grants and to continue receiving funding for ongoing projects.
- In order to help the business' scalability choices, I also worked on investigating potential AWS implementations and created white papers on the subjects of database and machine learning integration.

Special Operations Command - Central Command Deployment
Director of Intelligence / Lead Intelligence Analyst — 2020 to 2020

- Attached to SOCCENT and filled two roles;
  -Director of Intelligence for task force operations and activities in Central Asia and Egypt.
  -Lead analyst for intelligence related to Syria, Jordan, and Lebanon.
- In both roles, directly supported the Task Force Commander, US Embassy in Amman, and Special Operations Command - Central Command. Providing leadership with a timely and dependable source of intelligence analysis for the areas of my responsibility.
- Provided support to victims of the Beirut Port explosion in Lebanon.

Education

Oregon State University PhD Robotics — Current

Rochester Institute of Technology BS Computer Science - GPA: 3.53 — 2023

SUNY ADIRONDACK - Early College Career Academy program (NY) Networking / Cyber-Security — 2017

Cochise College (AZ) - Intelligence Operations Studies — 2019

U.S. Gov. Top Secret Clearance with SCI (Expired 08/2024)

Activities

NASA Intern Tours and Lectures - Astronaut Chair

NASA Intern Fish Committee - President

RIT Robotics Club, AI Club, and Space Exploration Club

RIT and OSU Division 1 League of Legends E-Sports Athlete

Awards

Early College Career Academy: Early College High School IT Computer Networking Program - Maureen VanBuren Memorial Scholarship and Award — 2017

Army Commendation Medal — 2020

Skills

PROGRAMMING LANGUAGES / TOOLSETS: Python, Robot Operating System (ROS), ROS2, Linux, Raspberry Pi, Ubuntu, Git, C++, C, SQL, Java, Lisp, Matlab, Simulink, Unreal Engine, Arduino, Gazebo
PROFESSIONAL: Communication, Teamwork, Military Briefing, Research Proposal, Enthusiastic, Collaboration, Self-Motivation, Self-Direction, Passionate
FRAMEWORKS / LIBRARIES: OpenCV, TensorFlow, PyTorch, SKLearn, NumPy, Pandas, Gazebo, Microsoft Airsim, Flightmare
LANGUAGES: Mandarin Chinese

Projects

Monocular Vision-Based Control of UAS Swarm (NSF-REU)

Gesture-based UAV Control through EMG and IMU Data Fusion (Research Project)

SLAM Integration for Autonomous UAVs (Personal Project / Independent Study)

Experiment adding SMOTE to CNN Net Traffic Identifier (Research Project)

Fashion MNIST Classifier using Tensorflow CNN (Machine Learning Project)

OpenCV Motion Detector / Object Tracking (Personal Project)

Experiments with PCA, Optical Flow, and Delta Frames for Eigenfaces, and Motion Detection (CV Project)