Calvin J. Stahoviak

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PROFESSIONAL SUMMARY

Master's student in Computer Science with expertise in autonomous robotics, AI, and ROS-based development. Experienced in sensor integration, SLAM algorithms, and machine learning for robotic control and object manipulation. Strong leadership in research projects, with a focus on innovative robotic solutions and interdisciplinary collaboration.

WORK EXPERIENCE

SANDIA NATIONAL LABORATORIES, Albuquerque, NM **Apr 2019 – Aug 2022**
Organization: High Consequence Robotics - Unmanned Systems & Autonomy
Position: Research and Development Undergraduate Intern Year Round

- Assisted in development with multiple robotics projects. Both projects revolved around developing a robotics system to navigate, map, and perform in unknown environments. Developed using ROS (Robot Operating System). Gained experience using low level sensor and motor control via Arduino, SLAM algorithms, and image classification with darknet/YOLO.
- Implemented a motor control algorithm on Arduino hardware for a 2-by-2 powered tank-like robot chassis. Later integrated Arduino I/O into a larger ROS-based system.
- Developed a model-based vision package for rapid detection, segmentation and localization using RGBD sensor data. Gained experience, implementing models in ROS, using OpenCV and point cloud libraries, testing and refining my own algorithm.

UNIVERSITY OF NEW MEXICO, Albuquerque, NM **Aug 2023 – Present**
Projects: Moses Biological Computation Lab
Position: Graduate Research Assistant

- Developed multiple mobile robots with 4DOF arms capable of localization and mapping.
- Developing suite of algorithms for stable cooperative lifting and transport via a swarm of these mobile robots. Algorithms take on ML or bio-inspired approaches.
- Leading a team of undergraduates in a project manager role.
- Conducting weekly literature reviews with the team to stay current on similar and novel research.
- Conducting experiments and performance evaluations using common industry benchmarks.

SANDIA NATIONAL LABORATORIES, Albuquerque, NM **June 2024 – Present**
Organization: High Consequence Robotics - Unmanned Systems & Autonomy
Position: Research and Development Graduate Intern Year Round

- Developed experimental setup to test the reliability and accuracy of popular gesture recognition algorithms on moving robots.
- Developing ROS2 driver for a pair VXM motor controllers via serial-communication. Allowed for closed loop control of each motor individually.
- Assisted in development of object manipulation toolchain that utilizes physics informed neural networks.
- Developing exploration algorithm that utilizes object manipulation for clearing occluded space.

SKILL SET

***Programming Language Experience*:**
- C++, C, Python, Bash Script, Linux OS, XML, Java, HTML, CSS, Haskell

***Software Experience*:**
- MATLAB, Simulink, Gazebo Simulation, RVIZ,

***Development Frameworks & Popular Libraries*:**
- ROS (Robot Operating System), Nav2 (ROS), MoveIt (ROS), Pytorch, Tensorflow, SKLearn, YOLO, Arduino IDE, OpenCV, OpenGL, React, Electron, Conda, Docker, Git

Technical Experience:
- Robotic Design Development & Performance Testing, Arduino Integration, Analog & Digital Sensor I/O, Microsoft Suite, JLPT (~N3)

EDUCATION

Manzano High School, Albuquerque, NM **Aug 2014 - May 2018**
Graduation Date: **May 2018**

Robotics Senior Project:

Integrated a controlled feedback loop using an ATmega32 microcontroller onto a previously designed 8-legged body. The chassis (initially with no electronics on board) was driven by 8 spider-like legs controlled by a complex gearbox made to be run by two DC motors. I designed and implemented a controlled motor feedback loop and on-board power source to drive the bot.

Weighted GPA: 4.555 (*Final Rank*: 10th)

University of New Mexico, Albuquerque, NM **Aug 2018 – May 2022**
Degree Program: **Bachelor of Science in Computer Science**

Relevant Classwork:
- Calculus III (A)
- Differential Equations (B)
- Linear Algebra (B)
- Data Structures and Algorithms I & II (B+)
- Design of Large Programs (B)
- Computer Logic Design (B)
- Data Organization (A+)

Cumulative GPA: 3.47
Studied abroad in Akita, Japan, during Fall 2022 at Akita International University

University of New Mexico, Albuquerque, NM **Aug 2023 – Present**
Degree Program: **Master of Science in Computer Science**
Expected Graduation Date: **Dec 2025**

Relevant Classwork:
- Parallel Processing (A-)
- Machine Learning (A)
- Controls (TBD)

Cumulative GPA: 3.83

Publications

- C. Young, C. Stahoviak, R. Kim and J. E. Slightam, "Rapid Constrained Object Motion Estimation based on Centroid Localization of Semantically Labeled Objects," 2024 IEEE International Conference on Advanced Intelligent Mechatronics (AIM), Boston, MA, USA, 2024, pp. 791-798, doi: 10.1109/AIM55361.2024.10637056.