Calvin James Stahoviak

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Active DOE L Clearance

Roboticist at Sandia National Laboratories with an M.S. in Computer Science, building computer vision, reinforcement learning, and control systems for autonomous robots. Experience spans mobile robot and manipulator control, robotic simulation, supervised learning, and CUDA-accelerated perception, with published work in robotic manipulation and multi-robot transport.

Education

University of New Mexico — Albuquerque, NM

Master of Science in Computer Science, GPA: 3.83 — *Aug. 2023 – Dec. 2025*

- **Thesis (awarded distinction):** *Dynamic Admittance Parameterization for Non-Prehensile Multi-Robot Transport with Optimal Coordinated Planning*
- **Relevant Coursework:** Parallel Processing (A−), Machine Learning (A), Controls (A+), Advanced Machine Learning (A+), Deep Reinforcement Learning, High Performance Computing

Bachelor of Science in Computer Science — *Aug. 2018 – Dec. 2022*

- **Relevant Coursework:** Calculus III (A), Differential Equations (B), Linear Algebra (B), Data Structures & Algorithms I & II (B+), Design of Large Programs (B), Computer Logic Design (B), Data Organization (A+)
- Studied abroad at Akita International University, Akita, Japan (Fall 2022).

Experience

Sandia National Laboratories — Albuquerque, NM

Member of Technical Staff — *Aug. 2026 – Present*

- Own computer vision (detection, tracking, localization) for robotic automated-assembly systems, and support vision work across other robotics and AI research projects.
- Contribute to funded research in AI-driven robotic assembly, adversarial ML, and RL-based quadrotor control.

Research and Development Graduate Intern — *June 2024 – Aug. 2026*

- Designed an outdoor reliability benchmark for camera-based hand-sign recognition on a quadruped robot [2].
- Developed and trained a physics-informed neural network that rapidly identifies the linear and rotational constraints on an object's motion for robotic manipulation, with under 1° of error on three real mechanisms [3].
- Developed an end-to-end, multi-behavior reinforcement learning policy for quadrotor control.
- Developed a computer vision pipeline to track small objects across multiple video feeds simultaneously.

University of New Mexico — Albuquerque, NM

Graduate Research Assistant (with Prof. Melanie Moses) — *Aug. 2023 – Dec. 2025*

- Designed, built, and wrote the full software stack for two mobile manipulators; developed dynamic admittance control and optimal coordinated planning for autonomous cooperative transport [1].
- Development spanned mechanical prototyping and assembly, manipulator integration, SLAM-based localization, and pose-estimation pipelines.
- Led two undergraduate researchers: set the project roadmap, assigned tasks, and delivered milestones to advisors.

Sandia National Laboratories — Albuquerque, NM

Research and Development Undergraduate Intern — *Apr. 2019 – Aug. 2022*

- Implemented low-level PID control for skid-steer mobile robots using MATLAB, Arduino, and Raspberry Pi, integrated with ROS.
- Developed a novel RGBD-based detection, segmentation, and localization ROS package with custom YOLO models, OpenCV filters, CUDA acceleration, and custom ROS messaging, estimating object centroids faster than the camera's 30 Hz frame rate on a single GPU [4].

Technical Skills

Languages: C++, CUDA, C, Python, Bash, MATLAB, Java, HTML, CSS, Haskell, XML
Robotics: ROS, Isaac Sim, Gazebo, SLAM, Admittance/Impedance Control, Occupancy Mapping, Motion Planning
Machine Learning: PyTorch, TensorFlow, YOLO, scikit-learn, MLflow, Optuna, Reinforcement Learning
Computer Vision: OpenCV, Point Cloud Processing, OpenGL
Hardware: RGBD Sensors, AprilTag, Mobile Robot Platforms, Robotic Manipulators, Low-Level Sensor I/O
Developer Tools: Git, Package Managers, Linux, VS Code, Simulink, SolidWorks, SLURM, Claude Code
Other: JLPT (∼N3)

Personal Projects

Productivity Web Application | *Firebase, Flutter, Dart*

- Full-stack development of a web-based and mobile application. Allows users to track habits and adhere to them in clever ways.
- Also performed project planning, managing tasks, and setting milestones for project collaborators.

Awards & Honors

Thesis Distinction: M.S. thesis *Dynamic Admittance Parameterization for Non-Prehensile Multi-Robot Transport with Optimal Coordinated Planning* awarded distinction by the University of New Mexico Department of Computer Science, Dec. 2025.

Lobo Hackathon (2025): Fourth place for an AI-powered web app that helps consolidate and summarize government legislation.

Volunteer Work

Central NM STEM Research Challenge Judge Chair (2025, 2026)

UNM School of Engineering Open House Computer Science Ambassador (2025)

Publications

[1] **Stahoviak, C.** et al., "Dynamic Admittance Parametrisation of Non-Prehensile Multi-Robot Transport with Optimal Coordinated Planning," *MECC*, 2026. *(accepted)*

[2] Stocco, P. et al., "Reliability of Mobile Camera-Based Hand Sign Recognition in Outdoor Environments," *MECC*, 2026. *(accepted)*

[3] Kim, R. et al., "Perceived Constraint Identification Using Physics-Informed Deep Neural Networks," *ASME LDSC*, 2026.

[4] Young, C. et al., "Rapid Constrained Object Motion Estimation based on Centroid Localization of Semantically Labeled Objects," *AIM*, 2024.