CARSON KOHLBRENNER

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EDUCATION

MS - Autonomous Systems, University of Colorado Boulder, Boulder CO   Aug. 2023 – May 2025
GPA: 3.9/4.0 – *Department:* Ann & H.J. Smead Aerospace Engineering Sciences

BS - Aerospace Engineering, University of Colorado Boulder, Boulder CO   Aug. 2020 – May 2024
GPA: 3.9/4.0 – *Minor*: Computer Science
Awards: Summa Cum Laude

WORK EXPERIENCE

Teaching Assistant – University of Colorado Boulder, Boulder, CO   Jan. 2024 – Present
Description: Facilitated undergraduate engineering labs focused on creating control systems for a variety of vehicles including spacecraft, quadrotors, and fixed wing UAVs.

Student Researcher – Human Interaction & Robotics Group, Boulder, CO   June 2023 – Present
Description: Studied the integration of multi-modal sensing with an emphasis on the sense of touch. Led a team of three to create a novel tactile sensor as well as two software toolboxes. Wrote three first author papers on the subject, two of which were submitted to conferences. First master's student to be fully funded in the lab.

Assistant Engineer/Technician - Technology Applications Inc., Boulder, CO   July 2021 – Jan. 2024
Description: Aided in the design and manufacturing of high temperature thermal transfer straps for NASA and ARMY funded SBIR programs. Performed and managed two full company audits. Heavily involved in proposal writing.

PUBLICATIONS

Title: "**GenTact Toolbox: A Computational Design Pipeline to Procedurally Generate Context-Driven 3D Printed Whole-Body Tactile Skins**"
Authors: C. Kohlbrenner, C. Escobedo, S. Bae, A. Dickhans, A. Roncone
Conference: International Conference on Robotics and Automation (ICRA) 2025, Atlanta, Georgia
Status: In Review

Title: "**A Machine Learning Approach to Contact Localization in Variable Density Three-Dimensional Tactile Artificial Skin**"
Authors: C. Kohlbrenner, M. Murray, Y. Zhang, C. Escobedo, T. Dunnington, N. Stevenson, N. Correll, A. Roncone
Workshop: Conference on Neural Information Processing Systems (NeurIPS) 2024, Vancouver, Canada
Status: Accepted

Title: "**A Sensor Position Localization Method for Flexible, Non-uniform Capacitive Tactile Sensor Arrays**"
Authors: C. Kohlbrenner, C. Escobedo, N. Nechyporenko, A. Roncone
Conference: International Conference on Robotics and Automation (ICRA) 2024, Yokohama, Japan
Status: Submitted

PROJECTS

Contrastive Learning for Object Classification Using Tactile Sensors   Sep. 2024 – Nov 2024

Self-Landing Rocket Using Deep Learning   Feb. 2024 – May 2024

Autonomous Drone for Localization in GPS Denied Environments   Aug. 2023 – May 2024

SKILLS

- **Coding Languages**: C++, Python, MATLAB, Julia, C#.
- **Electronics**: Tactile Sensors, Linux, Arduino, FPGA, RPI, Git, Franka.
- **Robotics Tools**: ROS/ROS2, PyTorch, OMPL, Gazebo, Isaac Sim, CuRobo, Blender, PX4.
- **Robotics Experience:** Visuo-tactile Planning, OpenCV, Deep Learning.