Doncey Albin

dynamical.doncey@gmail.com | donceyalbin.com | **GitHub:** donceykong | **LinkedIn:** doncey-albin

Education

University of Colorado - Boulder, Boulder, CO

Computer Science Ph. D.　　　　　　　　　　　　　　　　　　　　　　　　　2021–Present

    Advisor/Lab: Christoffer Heckman, Autonomous Robotics and Perception Group (ARPG)

    Areas of Focus: Distributed multi-robot mapping and exploration.

Colorado State University　　　　　　　　　　　　　　　　　　　　　　　**Fort Collins, CO**

Mechanical Engineering B.S.　　　　　　　　　　　　　　　　　　　　　　　　2017–2021

    Activities: ASME, NASA DemoSAT, NSF Research Experience for Undergraduates (REU) recipient

Research Experience

Army Research Laboratory (ARL)　　　　　　　　　　　　　　　　　　　　　**Boulder, CO**

Graduate Robotics Research Fellow　　　　　　　　　　　　　　　　　　　　Summer 2025

– Developed a pipeline for distributed multi-robot map merging, enabling robust performance under sporadic and opportunistic communication constraints.

Medtronic　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Boulder, CO**

Graduate Student Researcher　　　　　　　　　　　　　　　　　　　　　　Jan 2022–Aug 2023

– Worked as the lead researcher on the development of an autonomous surgical system, marking the first time a graduate student-based project at Medtronic transitioned to production. Specifically, I led the development of the perception and motion planning algorithms.

NSF REU　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Fort Collins, CO**

Undergraduate Researcher　　　　　　　　　　　　　　　　　　　　　　　Summer 2020

– Led the design and construction of a semi-autonomous unmanned ground vehicle aimed at fire extinguishment, incorporating mechanical, electrical, and software components. Following this, I authored my inaugural publication in the 2021 IS&T International Symposium on Electronic Imaging: Autonomous Vehicles and Machines.

NASA DemoSAT　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Fort Collins, CO**

Undergraduate Researcher　　　　　　　　　　　　　　　　　　　　　　　Summer 2019

– Contributed as a Mechanical Engineering Intern to CSU's NASA DemoSAT team, focusing on the design, fabrication, and testing of a payload destined for stratospheric exploration via weather balloon. Responsibilities included crafting the payload's housing and developing an onboard control system for temperature regulation, ensuring the experiment's integrity during flight.

Publications

Doncey Albin, Daniel McGann, Miles Mena, Annika Thomas, Harel Biggie, Xuefei Sun, Steve McGuire, Jonathan P. How, and Christoffer Heckman (2025). *CU-Multi: A Dataset for Multi-Robot Collaborative Perception.* arXiv: 2509.19463 [cs.RO]. URL: https://arxiv.org/abs/2509.19463.

Doncey Albin, Miles Mena, Annika Thomas, Harel Biggie, Xuefei Sun, Dusty Woods, Steve McGuire, and Christoffer Heckman (2025). "CU-Multi: A Dataset for Multi-Robot Data Association". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) - Field Robotics Workshop.* Workshop Paper. URL: https://arpg.github.io/cumulti.

Harlow, Kyle, **Albin, Doncey**, Kristen Such, et al. (2025). *ColoRadar+: An extension of the dense millimeter-wave radar dataset ColoRadar.*

Sun, Xuefei, **Doncey Albin**, Cecilia Mauceri, Dusty Woods, and Christoffer Heckman (2025). "Spatial-LLaVA: Enhancing Large Language Models with Spatial Referring Expressions for Visual Understanding". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) - Human-Centered Robot Learning Workshop.*

Biggie, Harel, Patrick Cooper, **Doncey Albin**, Kristen Such, and Christoffer Heckman (2024). *CogExplore: Contextual Exploration with Language-Encoded Environment Representations.* arXiv: 2406.17180 [cs.RO]. URL: https://arxiv.org/abs/2406.17180.

Reed, Alec, **Albin, Doncey**, Anuh Pasricha, et al. (2024). *Transformer-based Learning Models of Dynamical Systems for Robotic State Prediction*. URL: `https://doi.org/10.21203/rs.3.rs-3919154/v1`.

Reed, Alec, Brendan Crowe, Doncey Albin, Lorin Achey, Bradley Hayes, and Christoffer Heckman (2024). *SceneSense: Diffusion Models for 3D Occupancy Synthesis from Partial Observation*. arXiv: `2403.11985 [cs.RO]`.

Doncey Albin and Steve Simske (2021). *Design, Implementation, and Evaluation of a Semi-Autonomous, Vision-based, Modular Unmanned Ground Vehicle Prototype*. DOI: `10.2352/ISSN.2470-1173.2021.17.AVM-214`. URL: `https://doi.org/10.2352/ISSN.2470-1173.2021.17.AVM-214`.

Industry/Consulting Experience

Foxglove **Remote**
Robotics Consultant March 2024–Present
- Transform large robotics datasets into MCAP visualizations for integration with Foxglove Studio software. Enhanced the usability and effectiveness of data visualization, aiding in better analysis and decision-making for robotic systems.
- Create comprehensive written tutorials and instructional videos to support users in leveraging Foxglove's MCAP writer and Schemas full capabilities. Facilitated improved user understanding and engagement with the software, contributing to the overall user experience and satisfaction.

Lightning E-Motors **Loveland, CO**
Controls and Data Analytics Engineering Intern Summer 2021
- Developed testing protocols for a Linux-based vehicle driver interface to identify and troubleshoot software issues in CAN bus data retrieval. Acquired proficiency in Python, Linux OS, HTML, PHP, and network/device management, contributing to the enhancement of driver interface functionality.

Projects

Household Fire Elimination System ([See here](#)) Aug 2020–May 2021
- Designed and developed a household fire tracking, following, and elimination system for my senior research practicum. This project ultimately won 3rd place for the Engineering Days showcase.
- This project incorporated mechanical design (SolidWorks), 3D printing, computer vision using TensorFlow lite, USB communication protocol implementation (i2c, SPI), and PID-based visual servoing.

Automated Beer-Pong Machine (Beirut) ([See here](#)) Dec 2021
- Worked with three other students to design and fabricate an automatic beer-pong machine named Beirut. We were awarded as a top team and had the opportunity to present the final project to our class. This project was a ton of fun and seriously inspired me to do more robotics.

Teaching

Guest Lecturer **Boulder, CO**
Advanced Robotics Fall 2024, Spring 2024, Fall 2025
Graduate Teaching Assistant **Boulder, CO**
Advanced Robotics Fall 2024
Foundation of Software Engineering Spring 2024
Algorithms Spring 2023
Dynamics Spring 2022
System Dynamics Fall 2021

Awards

Won third place for CSU's 2021 senior capstone showcase May 2021