RANE GRAY

Boulder, CO | (720) 557-3925 | ranegray@outlook.com | ranegray.com | linkedin.com/in/ranegray | github.com/ranegray

EDUCATION

University of Colorado Boulder Expected Spring 2027
B.S. in Computer Science *GPA: 3.82*

TECHNICAL SKILLS

Robotics: ROS 2, SLAM / 2D Mapping, sensor integration (LiDAR / RGB-D), URDF, teleoperation, simulation (Webots)
Programming: Python, C++, TypeScript / JavaScript, Bash, Git, Linux/Unix
ML / Perception: reinforcement learning (Gymnasium), imitation learning (SmolVLA), computer vision (OpenCV / Open3D)
Software: React, Next.js, Node.js, SQL (PostgreSQL / Supabase), CI/CD, testing, documentation

EXPERIENCE

Undergraduate Research Assistant — Correll Lab Feb 2025–Present
University of Colorado Boulder

- Developed and integrated a head/neck pan-tilt subsystem for the Unitree H1-2 humanoid, spanning mechanism design, ROS 2 control, and end-to-end validation on the full platform.
- Implemented an Apple Vision Pro teleoperation interface (inspired by *Open-Television*) and integrated head/pose tracking to improve operator control and situational awareness.
- Developed a YOLO-seg–based perception pipeline using a labeled screw dataset to detect and segment screws in cluttered scenes, supporting downstream manipulation tasks (e.g., EV battery disassembly).

F-16 Avionics Systems Expert — USAF & COANG Aug 2015–Aug 2025
Arizona, South Korea, Germany, Colorado

- Led a 23-person avionics team responsible for diagnosing, repairing, and validating mission-critical electronic systems, sustaining 95% mission-ready aircraft under tight schedules.
- Designed a standardized troubleshooting + training pipeline (checklists, sign-offs, proficiency gates) that cut qualification time 30% while improving consistency and safety.

PUBLICATIONS

A. Shaw, C. Liu, J. Costa, **R. Gray**, A. Skowronek, K. Diaz, N. Bui, and N. Correll, “Cutting the Cord: System Architecture for Low-Cost, GPU-Accelerated Bimanual Mobile Manipulation,” arXiv:2603.09051 [cs.RO], 2026.

AWARDS

Hugging Face x LeRobot Hackathon — *1st Place Team* (SO-101, SmolVLA) June 2025

- Collected 50 teleoperated drawing demonstrations and fine-tuned SmolVLA; evaluated instruction-following via natural-language prompts on hardware.

PROJECTS

xLeRobot Platform — Computer Vision + Object Grasping Dec 2025 - Present

- Built an RGB-D perception-to-grasp pipeline with Intel RealSense to localize objects and execute grasps on a 6-DoF arm.
- Implemented point-cloud filtering/segmentation to produce stable grasp targets under clutter, noise, and lighting variation.
- Leveraged Pinocchio and PINK for forward/inverse kinematics to convert camera-frame targets into arm-frame motion commands.

Click & Whirr — Robotics Education Platform (clickandwhirr.com) Jul 2025 - Present

- Designed and shipped a browser-based platform where students write real Python to drive a simulated robot through 13 lessons covering PID control, odometry, sensor fusion, and path planning.
- Built the full stack solo (Next.js, TypeScript, Supabase), including the 2D robot simulator, live code checkpoints, and cross-device progress sync.

iRobot Create 3 — ROS 2 Navigation + Mapping June 2025

- Built a ROS 2 stack on Raspberry Pi 4 for the Create 3, integrating RPLidar A1M8 and publishing LiDAR scans for downstream mapping/localization.
- Implemented 2D SLAM and validated mapping in RViz, producing consistent occupancy maps across multiple indoor environments.