Alexander Roller

alexander.roller12@gmail.com | alexanderroller.com | Corvallis, OR

Skills

Robotics: ROS 2, Nav2, NVIDIA Isaac ROS, SLAM, Motion Planning
Software: Python, C/C++, Assembly, Linux, Git
Embedded Systems: NVIDIA Jetson, ESP32, AVR, Raspberry Pi, Arduino, I2C, SPI
Hardware: PCB design (KiCad), oscilloscopes, DMMs, electronic loads, PCBA
CAD & Fabrication: Fusion 360, Onshape, 3D printing, CNC machining, laser cutting

Experience

Undergraduate Researcher   Sep 2025 – Jun 2026
Do Robotics Lab, Oregon State University – Corvallis, OR

- Building and characterizing v2 of a bi-stable tape manipulator based on the v1 pinched bistable tape architecture in ICRA 2022 paper: Pinched Bistable Tapes.
- Designing benchtop characterization workflows for repeatability, stiffness behavior, and extension performance across prototypes.

Robotics Intern, Hampton Lumber Mills – Willamina, OR   Summer 2025

- Built a custom autonomous cleaning robot with a custom chassis and dual-cyclone vacuum system using ROS 2 Humble on a Jetson Nano with NVBLOX, VSLAM, and Nav2.
- Developed custom drivers for vacuum control, dust-door actuation, and shaker operation; built mission control tooling and a lawnmower-style coverage planner.

Robotics Intern, Hampton Lumber Mills – Willamina, OR   Summer 2024

- Converted an industrial push sweeper into a fully autonomous mobile robot using ROS 2 Humble, SLAM, and Nav2.
- Built custom brush-motor control using relays and a microcontroller, and enabled PS4 teleop alongside autonomous point-to-point navigation.

Projects

HIRO (Humanoid & Intelligent Robotics Organization), Founder & President   hiro-osu.github.io

- Founded and now lead HIRO at OSU, setting technical roadmap and running weekly design and build execution for humanoid robotics projects.
- Developing an SO101 robotic arm autonomous tic-tac-toe system using GR00T 1.6 + Jetson Thor.
- Developing an arm-first humanoid prototype using Robstride actuators.
- Completed a 3D-printed 10:1 cycloidal actuator feasibility prototype (8318 BLDC motor + ODrive Pro).

cadfactory.ai   cadfactory.ai

- Built an AI CAD platform (Next.js + FastAPI) that uses LLMs to generate OpenSCAD models, with editing/preview and authenticated STL export.

splitBot   github.com/AlexanderRoller/splitBot

- Developed a Discord bot for reverse-split monitoring, alerts, arbitrage estimates, charting, and stock utilities.

Education

Oregon State University   Expected Jun 2027
MS in Robotics
Accelerated Master's Program

Oregon State University   Expected Jun 2026
BS in Electrical and Computer Engineering
Minor: Computer Science