

Cole Thomas Fenner

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Professional Summary

Detail-oriented Robotics Engineer with expertise in mechanical design, modeling, and hands-on prototyping. Proven leadership in competitive robotics and research-driven systems, with a strong foundation in 3D modeling, CNC machining, and ROS.

Education

Oregon State University— Corvallis, OR

M.S. in Robotics (GPA: 4.0) / Graduated: Sept 2024 – May 2025

Research Member, Laboratory for Robotics and Applied Mechanics (LRAM)

- ❖ Thesis: Projectile arm thrower that isolated angular momentum. Use of Odrive controllers and ROS.
- ❖ Focus: Adjoint matrices in group-based design, compliant Kinova arm control, optimized path planning, composite mechanics

B.S. in Mechanical Engineering (GPA: 3.9) / Graduated: Sept 2021 – Aug 2024

- ❖ Focus: Composite Manufacturing, 3D Modeling, Design, GD&T
- ❖ Awards: OSU Finley Scholarship, Intel Scholarship, Dean's List, Honor Roll

Technical Skills

- ❖ **Programming:** Python, ROS, Matlab, Gazebo, HTML
- ❖ **3D Modeling:** Fusion 360, Autodesk Inventor, AutoCAD, SolidWorks, Siemens NX, Onshape
- ❖ **Prototyping:** CNC machining, 3D printing, laser cutting, welding
- ❖ **Engineering:** GD&T, composite manufacturing, lean Six Sigma, adjoint matrix coding

Engineering Experience

First Robotics Competition Mentor (Volunteer), Shockwave 4488 / Sept 2025 – Present

- ❖ Mentor high school students in mechanical design, CAD modeling, and manufacturing using Onshape.

Graduate Teaching Assistant, Oregon State University / Sept 2024 – June 2025

- ❖ Assisted with engineering coursework by grading, proctoring exams, and holding student office hours.

Design Engineering Intern, MEGI Engineering Inc. / June 2022 – Sept 2022

- ❖ Created detailed 3D models of industrial paper mill systems using point cloud scan data.
- ❖ Updated piping and electrical systems in AutoCAD to improve infrastructure adaptability. (P&ID)

First Robotics Competition Team Captain, Shockwave 4488 / Aug 2017 – Mar 2021

- ❖ Designed, prototyped, and manufactured competition robots using Fusion 360 and CNC machining.
- ❖ 30" x 30" robots fabricated from aluminum and polycarbonate by CNC plates, bars, and sheet metal.
- ❖ Led a team of 30+ members to achieve 10th in the world recognition, including:
 - 2018 World Galileo Division Champion, Innovation in Control Award.
 - 2019 Pacific Northwest Championship finalist, Industrial Design Award.
 - 2020 District Event Winner, Industrial Design Award .
- ❖ Led outreach initiatives, adapting toys for children in China with disabilities to improve accessibility.

Projects

Robotics Master's Project, Oregon State University / Sept 2024 – June 2025

- ❖ Manufactured a 2-DOF decoupled spin projectile launcher using a virtual 4-bar belt drive.
- ❖ Implemented synchronous motion control with ODrive motor controllers and ROS2 CAN communication.
- ❖ Integrated an ESP32 microcontroller to remotely trigger pneumatic mechanisms.

SAE Baja Senior Project, Oregon State University / Sept 2023 – March 2024

- ❖ Led reverse engineering and CNC manufacturing of a limited-slip differential gearbox.
- ❖ Designed precisely toleranced, interchangeable disc springs with controlled breakaway torque.
- ❖ Conducted FEA simulations to optimize stress tolerances and enhance durability.
- ❖ Collaborated with a multidisciplinary team to integrate the gearbox into the SAE Baja vehicle.

Octocanum Drive System, Independent Project / 2021

- ❖ Designed and built a compact mechanical octocanum drive system integrated around a 2" x 1" aluminum chassis rail, featuring a shifting pneumatic gearbox between mecanum and tank drive.
- ❖ Used rapid 3D printing for iterative prototyping and fit validation.

Swerve Drive System, 4488 Shockwave / 2020

- ❖ Designed and CNC-fabricated a custom differential gearbox for a swerve module.
- ❖ Engineered compact corner packaging while maintaining structural rigidity.
- ❖ Integrated custom subsystems including intakes, funnels, arm manipulators, and shooter mechanisms.

Honors & Activities

Tennis Officer, OSU Club Team / 4 years

- ❖ Coordinated practices and competitions; competed in regional-level tournaments.

Chess State (Founder & Competitive Player) / 10 years

- ❖ 2nd Place individual at *Chess for Success* State Tournament; multi-time regional champion.
- ❖ Founded HS school chess program; led team to regional victory.

Tennis Team Captain, Glencoe HS / 4 years

- ❖ Led varsity team to district quarterfinalist finish.

Tae Kwon Do (Black Belt) / 5 years

- ❖ Mentored junior students, demonstrated long-term discipline and leadership.