

Catherine Seo

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY
Bachelor of Science, Mechanical Engineering | Robotics Minor

Expected May 2028

Relevant Coursework: Statics • Thermodynamics • Mechanics & Heat • Multivariable Calculus • Differential Equations • Rapid Prototyping • Intro to Nanoengineering • Electromagnetism

Timberline High School, Boise, ID | Graduated as Salutatorian

Aug 2021 - May 2024

ENGINEERING EXPERIENCE

Autonomous Underwater Vehicle Project Team, Cornell University, *Mechanical Subteam Lead*

Nov 2024 - Present

- Organized and led the 2025 summer crew, allocated tasks to teammates, structured timelines, and onboarded new members.
- Collaborated with 46 members to develop two autonomous underwater vehicles for the International RoboSub competition.
- Manufactured waterproof enclosures for an FLIR camera and piezoelectric pinger to $\pm 0.005''$ precision using the TRAK mill.
- Engineered a hydrophone enclosure that allows acoustic signal detection, modifying transducer collars to ensure no leakage.
- Improved torpedos & droppers mechanism by iterating geometry and spring loads, reducing accidental firings by 99%.
- Design frames with a shroud to achieve the submarine's neutral buoyancy, cleaner cable management, and weight reduction.

Architectural Robotics Laboratory, Cornell University, *Robotics Design Engineer*

May 2025 - Sep 2025

Faculty: Keith Evan Green

- Rebuilt and assembled the chassis and powertrain of a Lamp Robot previously non-functional for two years, and integrated a tendon-driven continuum arm for dishwashing while emphasizing human-robot interaction (HRI) principles.
- Implemented a double-scissor floor mechanism for the Robot-Room Project, enabling adjustable heights in constrained spaces.
- Modeled a cover with 3D-printed parts and acrylic for the HOME+ drink-serving robot, accommodating a four-axis rotating arm and two pneumatic lift systems for wire management and appearance.

FIRST Robotics Competition, FRC 2122 Team Tators, *Captain & Mechanical Subteam Lead*

Nov 2020 - Aug 2024

- Dedicated 5,500 hours leading a team of 40 students and actively promoted STEM education through 15 outreach initiatives.
- Designed, fabricated, and iterated on two on-season and one off-season robots annually using CAD and machine tools.
- Developed a custom inverted swerve drivetrain for protection, an 11" wheel tank drivetrain for rough terrain, a shooter capable of launching 16" balls, and tube-in-tube arm and 180° wrist subsystems for cone placement from any orientation.
- Led rapid prototyping to build a trap mechanism in two months to enable a 150-lb robot to climb a chain and reach high scoring, and a belt-driven three-stage cascading climber to ascend four levels of elevated monkey bars using pneumatic.
- Streamlined CAD workflow by 80% via version control/branching & wrote FeatureScripts to accelerate robot lightweighting.
- Mentored rookie members and enhanced subsystems communication with structured timelines and design review sessions.

LEADERSHIP & PROFESSIONAL EXPERIENCE

John S. Knight Institute Writing Center, Cornell University, *Tutor*

Mar 2025 - Present

- Facilitated weekly writing support for undergraduate and graduate students across disciplines, including research papers, lab reports, argumentative and literature essays, creative writing, group projects, personal statements, and application materials.
- Completed seven-week WRIT 2101 training on assisting multilingual writers and guiding them to strengthen analytical writing and evidence synthesis, improve cohesion, and apply reverse outlining to address higher-order concerns.
- Established a personal tutoring philosophy & participated in staff meetings to continuously reflect, discuss ethical use of AI.

Boise City Department of Arts & History, *Commissioner*

Dec 2021 - Aug 2024

- Coordinated with the Mayor, City Council, and city staff to review, score, and support Boise's public art and cultural initiatives.
- Served as a selection panelist for the Ustick/West Valley Neighborhood Redwood Park Public Art Project, 2024 Traffic Box Program, and Catalyst Grant Program (Rounds 1-4), reviewing over 80 applicants and allocating \$72,000 in city funding.
- Approved commission policies and goals during monthly public meetings and promoted arts programs across the community.

TECHNICAL SKILLS

CAD & Simulation: SolidWorks, Fusion, Onshape, ANSYS, FEA, DFM/DFA, Technical Drawings, LaTeX

Programming Languages: Python, MATLAB/Simulink, Arduino IDE, JavaScript, CSS, HTML, GitHub

Hands-on Skills: 3D Printing, Laser Cutting, Manual/CNC Mill, Lathe, Drill Press, Band Saw, Hand/Power Tools

HONORS & ACTIVITIES

Awards: PEO Star Scholar, NACME Engineering Design Scholar, 2x FRC Excellence in Engineering Award, 5x FRC World Championship Qualifier, HOSA International Leadership Conference 3rd Place, Published Author (*Stanford Intersect* Journal)

Campus Involvements: Autodesk Ambassador, Cornell Architecture Student Practice (Faculty Liaison), Engineering Orientation (Assistant), Cornell Reunion (Clerk), Society of Women Engineers (Alumni & Faculty Relations), Maker Club

Languages: English (Fluent), Korean (Fluent), Spanish (Conversational; 5 years of study)

Interests: Unicycling, Table Tennis, Edible Insect Research, Web Development, Photography, Cooking Korean Cuisine, Knitting