Alexander Montello

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PROJECT PORTFOLIO

alexmontello.github.io/portfolio

PROFESSIONAL SUMMARY

Mechanical Engineering student at Purdue University (accelerated 3-year path), seeking an internship to apply extensive experience in mechanical design and fabrication.

TECHNICAL SKILLS

Onshape, Autodesk Inventor, Siemens NX and Teamcenter, Blender, slicers and 2D CAM, CNC and manual machining, KiCad, Arduino, Raspberry Pi, Microsoft Excel/VBA, Visual Studio Code, Python, JavaScript, Java, MATLAB, Jupyter, Git

EDUCATION

Purdue University, West Lafayette IN — AUGUST 2025 - MAY 2028

- Designed hardware for an automatic instrument tuner aiding visually impaired musicians in a team of eight
- Utilized Siemens NX to design for change through dimensioning schemes and parameters, using a PDM system to simulate an industry PLM setting in MFET 163, using Engineering Change Orders and approval workflows
- Designed and fabricated chassis parts on Formula Society of Automotive Engineers with NX and Ansys FEA

University of Cincinnati & Cincinnati State, *Dual Enrollment*, Cincinnati OH — AUGUST 2023 - MAY 2025

- All 4.0/4.0 GPAs with relevant coursework such as Multivariable Calculus, Solar System Physics, and Web Design

PROFESSIONAL EXPERIENCE

See3D, *CAD and Printing Intern*, Cincinnati OH — JUNE 2025 - AUGUST 2025

- Leveraged Onshape and Blender to create over 30 3D models to assist and educate blind and low-vision people
- Exhibited Boston Museum of Science and National Freedom Center and created Onshape's first Braille CAD tool
- Managed the operation, optimization, and maintenance of 10 FDM machines of various types

TECHNICAL EXPERIENCE

14+ Independent Technical Projects (See Portfolio), Cincinnati OH — AUGUST 2021 - JUNE 2025

- Dual-segment articulated arm with worm gear turret and a four-part screw claw effector using inverse kinematics
- 5x5x5 Rubik's Cube solver with six 2-DOF grippers, custom toroidal pinion drives, and optimized turn scheduling
- Six-actuator cable parallel manipulator with matrix-based kinematics, variable tension, and 72,600 cm^3 workspace
- Rendered animations of robots and assemblies with physics simulations in Blender for professional presentation

FIRST Tech Challenge, *Mechanical Lead*, City/State/International — AUGUST 2022 - JUNE 2025

- Utilized Onshape and CNC tools to design, simulate, and fabricate hundreds of complex robot components
- Led data driven iteration on robots for two years using CAD version control, Excel, and engineering notebook
- Mentored and taught team members about mechanical design and tools such as a CNC plasma table and laser
- Won eight awards across design, control, and documentation, including two at the international level
- Contributed to optimizing finite state machine (FSM) control software and developed advanced CV processes

Selective Engineering Summer Programs, Various Universities — JULY 2023 - AUGUST 2024

- Collaborated on engineering projects in Purdue Seminar for Top Engineering Prospects, award for best electronics
- Researched asteroid risk using machine learning and statistical models, presented at a Stanford online seminar
- Built a robot in a mechatronics seminar at Northwestern University, assisted students with CAD and soldering
- Developed vision-assisting and writing evaluation projects by implementing diverse AI models in guided internship

SCORES AND AWARDS

ACT 36 | SAT 1580 | 8x FTC Awards; Control and Innovate Internationally | TSA Design & Build; 7th/600 Nationally | Purdue Presidential Scholarship | Edward & Clara Degering Scholarship | WH Alumni Engineering Scholarship