Eric Gu

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Portfolio
tianchenggu.org

Education

University of California, Berkeley Expected May 2028
B.S. in Mechanical Engineering and B.S. in Electrical Engineering and Computer Science, 3.98 GPA

Activities and Experiences

Theoretical & Applied Fluid Dynamics Laboratory May 2025 - Aug 2025
Mechanical Engineering Undergraduate Researcher

- Designed the mechanical system architecture of three generations of autonomous endurance sailboats.
- Created a standardized, modular mounting system for fixturing sail, rudder, and sensor systems allowing for rapid iteration and repair. Incorporated water ingress protection validated in underwater pressure testing.
- Engineered a microscale 0.25m diameter vertical axis wind turbine for 0.3W of continuous power generation.
- Worked through every aspect of products' production and deployment processes, including epoxy application, PCB assembly, frontend and backend software deployment, and extensive hands-on testing at the marina.

Unmanned Aerial Vehicles at Berkeley Aug 2024 - Present
Lead Airframe Engineer, Business Team Member

- Designed autonomous modular quadcopter and compact tailsitter VTOL vehicle that both pack into an airline personal item-sized container with 20 miles of range. Performed manufacturing and electrical integration.
- Designed tiltrotor mechanism and frame assemblies for a high speed fixed wing tiltrotor VTOL vehicle.
- Created and taught CAD, material science, and manufacturing curriculum for 50-student onboarding program.
- Introduced Simulink stability and Ansys FEA analysis to optimize vehicle design process.
- Produced graphics and video content for outreach and fundraising events that led to $6000 in donations.

Space Enterprise at Berkeley Aug 2024 - Present
Structures Team Member

- Engineered thrust transfer structures for a 20 kN rocket engine, chargewells, eye bolts, and other parts.
- Performed FEA and hand mechanics calculations on structural components for mass optimization.
- Integrated vehicle subassemblies using OpenRocket and by designing fixturing and retaining components.
- Fabricated numerous components including performing fiberglass layups on composite nosecones.

Supernode Makerspace Dec 2024 - Present
Student Fabrication Admin

- Provided comprehensive 3D printer operation assistance, including design for manufacturing advising for student projects and software usage support. Trained over 40 students on fabrication equipment operation.
- Oversaw the acquisition of $10k of new equipment including organizing funding, deploying a custom software stack to provide remote access and user print tracking, and producing relevant training materials.
- Maintained and repaired a fleet of 3D printers, including performing complete printer rebuilds.

Projects

Thrust Vectoring EDF VTOL: Designed thrust vectoring vehicle around a 90mm EDF for vertical flight.
CoreXY FDM 3D Printer: Self-sourced and built a CoreXY 3D printer running custom Klipper firmware.
Maze-Navigating Robot: Created Arduino-based 3D printed robot with low-level SLAM implementations.

Skills

Computer Aided Design	Parametric modeling, assemblies, basic finite element analysis, and basic CAM for CNC mills. SolidWorks, Inventor, Fusion 360, OnShape, Ansys Mechanical.
Manufacturing	Design for manufacturing (machining, SLA/FDM 3D printing), electronic and software integration. FDM 3D printer construction, operation, and maintenance. PCB assembly, wiring harness assembly. Wood and metal machining, lathes, CNC routers, mills, water jets, laser cutters.
Software Development	Python, Java, C/C++, Arduino, and MATLAB.
System Administration	Windows, Arch Linux, Docker, WordPress, and basic networking.
Languages	Mandarin Chinese, German