Benson Cao

Gardner, MA | 978-868-4393 | bensoncao8@gmail.com | linkedin.com/in/bensoncao

Professional Summary

Mechanical Engineering graduate experienced in SolidWorks CAD, electromechanical design, and hands-on fabrication using 3D printing, laser cutting, and CNC. Led teams of 4-5 across projects in precision mechanisms, airframes, and product design.

Education

Boston University, College of Engineering **May 2026**
Bachelor of Science, Mechanical Engineering w/ Aerospace Concentration GPA: 3.44/4.00

Coursework: Electromechanical Design, Fluid Dynamics, Aircraft Design, Aerodynamics, Vibrations, Robotics, Heat Transfer

Skills

- **CAD & Simulation:** SolidWorks, OnShape, KiCAD, OpenVSP, COMSOL, XFOIL, JSCut
- **Programming & Software:** MATLAB, C++, Arduino IDE, GitHub, JFlashLite, Wix, MS Office, Google Suite
- **Fabrication:** 3D Printing, Laser Cutting, Soldering, CNC/Manual Mill, Lathe, Rapid Prototyping, DFM
- **Methodologies & Language:** Agile/Scrum, English (Fluent), Vietnamese (Conversational)

Technical Experience

aKin AI **Haymarket NSW, Australia**
Mechanical Engineering Intern Feb 2024 – May 2024

- Developed 3 exterior shells and 2 internal mounting frames for a stationary home assistant robot.
- Expedited per-part fabrication time by 70% using dovetail laser cutting techniques, increasing prototype iterations.
- Restructured internal layout to fit 50% more components while improving aesthetics and user accessibility.
- Modeled concepts in CAD (Onshape), manufactured parts via 3D printing and laser cutting, created 3D renderings, and presented progress through daily Agile stand-ups.

Engineering Projects

Technical Portfolio: bensoncao.com | GitHub: github.com/bensoncao8

Mini Vertical Takeoff and Landing (VTOL) Flight Vehicle Sep 2025 – May 2026

- Engineered a lightweight VTOL aircraft capable of 2-axis flight, resulting in a final vehicle mass 2% below target weight threshold while supporting 2X required payload.
- Spearheaded 4-person team in custom PCB design, closed-loop flight software (Arduino IDE), and airframe fabrication.
- Produced full PCB schematics and designs, CAD models and assemblies, vehicle sketches, and prototype documentation designed for manufacturing through an Onshape, KiCAD, and GitHub-based design workflow.

Robotic Recycling Arm Feb 2026 – May 2026

- Fabricated and simulated 4-DOF SCARA robotic arm (RPRR) in MATLAB to autonomously recycle cans.
- Implemented a joint-space PD controller, achieving inverse kinematic positioning errors below 10^{-6} m.
- Built physical hardware using 3D-printed and laser-cut links, extrusion, servo motors, and custom end effector.
- Derived DH parameters, forward & inverse kinematics, and Jacobian for 4 joints to program into MATLAB.

Maritime Patrol Aircraft (MPA) Sep 2025 – Dec 2025

- Conceptualized a turbofan-powered MPA to replace the P-3 Orion, achieving a $135M projected unit cost, a 45% cost reduction while retaining comparable mission range, takeoff/landing distance, size, and armament capabilities.
- Simulated full aircraft component sizing through software calculation, including airfoil selection, empennage design, propulsion output, and Thrust-to-Weight vs Wing Loading design point.

Cartesian Motion Painter Sep 2024 – Nov 2024

- Built a 2.5 DOF cartesian motion painter with ±0.002 mm accuracy across a 100 × 140 mm area at up to 5000 mm/s.
- Led a 5-person team on end effector design (SolidWorks), programming (Inkscape, JSCut, MATLAB), and assembly.
- Implemented tool path allocation and auto re-dipping for 3 colors and 1 marker via MKS board.

Honors & Activities

College of Engineering - Dean's List: 3.00+ GPA, Top 30% Eng Students
Activities: Basketball, Weightlifting, Tennis, BUVSA Club