Omar Abdallah

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Education

Stanford University June 2027
B.S. in Mechanical Engineering with Computer Science *Current GPA: 4.0/4.0*

Coursework (including Fall 2024): Thermodynamics, Dynamics, Mechanics, Electricity & Magnetism, Light & Heat, Linear Algebra & Multivariable Calculus, Ordinary Differential Equations for Engineers, Space Flight, Programming Abstractions, Computer Organization & Systems, Intro to Solid Mechanics

Skills

Tools: SolidWorks, Fusion 360, Siemens NX, Altium Designer, MATLAB, Git/GitHub, RobotStudio, Blender
Manufacturing: Carbon Fiber Composites (Hand Layups), CNC Machining, 3D Printing, Drill Press, Laser Cutting
Systems: Electric Propulsion Systems, ABB Robotic Arm, Power Electronics, Multifunctional Energy Composites
Languages: C/C++, Python, Java, JavaScript, HTML/CSS, RAPID, LaTeX

Experience

Mechanical Engineering Co-Op Jan. 2025 – Present
Apple Inc. *Cupertino, CA*

- iPhone AppleCare Technologies

Undergraduate Researcher June 2024 – Present
Structures & Composites Lab, Stanford University (Aero/Astro Department) *Stanford, CA*

- Led research on **Multifunctional Energy Storage Composites (MESC)**, integrating lithium-ion batteries into composites to enhance energy storage and structural performance.
- Fabricated and tested MESCs using **peel, thermal expansion, fatigue, & impact** tests on an MTS machine to optimize durability.
- Designed PCB layouts and fabricated a **4S2P structural battery wing** using composites, reducing weight & improving aircraft range by over **100%**.

Project Manager & Propulsion and Avionics Team Lead Sep. 2023 – Present
AIAA Design/Build/Fly Team, Stanford Flight Club *Stanford, CA*

- Leading a 15-member team in the design, development, & construction of an aircraft for the 2024-25 competition.
- Optimized motor, propeller, & ESC system configurations using **eCalc simulation and static thrust testing**, ensuring compliance with **20-ft takeoff mission requirements**.

Mechanical & Manufacturing Engineering Intern Jan. 2024 – June 2024
Alef Aeronautics (TIME's Best Invention of 2023) *San Mateo, CA*

- Collaborated on the design and manufacture of the world's first flying car, achieving a **30 mph in-flight speed**.
- Designed and analyzed **butterfly-style door hinges** & **ailerons**, improving aerodynamics & weight efficiency.
- Optimized **carbon fiber layups** for ailerons, body frame, and doors to reduce weight and increase strength.

Co-Founder & Director of Engineering Nov. 2020 – June 2024
Pocket Learn *Doha, Qatar*

- Developed a custom EdTech device with tailored hardware and OS to meet children's educational needs.
- Secured **$100,000** in funding by creating pitch decks and project plans, advancing product development.

Research Assistant June 2022 – Aug. 2022
Texas A&M University (Mechanical Engineering Department) *Doha, Qatar*

- **Developed a 3D concrete printing system** to manufacture custom concrete designs, leading the integration of robotics for precision in construction.
- Resolved critical issues related to **nozzle clogging** & **overflow**, improving manufacturing processes for proprietary concrete mixtures.

Projects

***FIRST* Championship & *FIRST* Global (Team Qatar)** | *Captain & Robotics Engineer* Nov. 2021 – Dec. 2022
Developed multiple prototypes for numerous modules on the robot to achieve the annual mission goal