

Youssef Hassan

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Profile

Final-year MEng Mechanical Engineering student at the University of Southampton, specialising in aerospace engineering and on track for First-Class honours. Combines hands-on manufacturing and systems integration with engineering analysis, data interpretation and team leadership. Experienced in taking multidisciplinary projects through design, manufacture, troubleshooting and testing using SolidWorks, ANSYS, COMSOL, Python and rapid-prototyping methods. Proven ability to balance demanding academic work with part-time employment while maintaining quality, safety and reliability in fast-paced environments.

Engineering Experience and Projects

Team Leader - UAV Systems Engineering Project, University of Southampton 01/2025 – 05/2025

- Led a six-member team through the design, manufacture, integration and testing of a multirotor UAV with a self-levelling camera gimbal under a 640 g mass constraint.
- Coordinated SolidWorks CAD, structural components, propulsion, electronics and manufacturing activities across the team.
- Used laser cutting and 3D printing to manufacture components, resolving material and assembly failures through structured troubleshooting and iterative redesign.
- Delivered an integrated UAV that achieved stable flight and successful image capture during final testing.

Propulsion Lead & Internal Team Coordinator – Solar-Powered UAV, 09/2026 – Present
University of Southampton | Group Engineering Design Project Southampton, UK

- Lead the propulsion workstream for a solar-powered fixed-wing UAV, converting mission objectives into thrust, power, mass and system-integration requirements.
- Apply first-principles calculations to support motor, propeller and energy-system decisions within an £800 project budget.
- Coordinate technical communication between propulsion, aerodynamics, structures, energy and control teams.
- Maintain meeting agendas and support the tracking of technical decisions, responsibilities and cross-team dependencies.

Individual Project - Physics-Informed Crack Detection in Turbine Blades, 09/2025 – 06/2026
University of Southampton | Supervisor: Dr Adam Sobey Southampton, UK

- Built a parametric ANSYS workflow to generate and analyse structural-response data across different turbine-blade crack locations and depths.
- Used Python to organise simulation outputs, identify meaningful relationships and develop damage-classification and severity-prediction models.
- Reduced global prediction RMSE from 0.0412 to 0.00816 by incorporating physically meaningful information into the modelling process.
- Validated numerical results against first-principles mechanics rather than relying solely on automated software outputs.

Mechanical Design of a Perfusion Bioreactor,

University of Southampton | Group Engineering Design Project

01/2026 – 05/2026

Southampton, UK

- Led the concept development of a perfusion and compression bioreactor, translating stakeholder needs into mechanical, fluid-system and performance requirements.
- Developed a fluid-delivery system incorporating a peristaltic pump, pressure sensors, tubing and a porous scaffold.
- Applied fluid mechanics and COMSOL modelling to investigate flow distribution, pressure loss and system performance.

Employment Experience

Crew Member – Auntie Anne’s (Part-time)

09/2025 – 10/2026

- Maintain product quality, food-safety and customer-service standards in a fast-paced team while balancing part-time work with a demanding engineering degree.

Southampton, UK

Freelance Tutor - A-level & IGCSE Mathematics and Biology, Self Employed

07/2022 – 07/2023

- Tutored 15+ students; more than half achieved A/A* grades. Managed planning, progress tracking, client communication and scheduling independently.

Alexandria, Egypt

Founder & Organiser, Senior Spark Mentorship Programme

09/2024 – Present

- Founded and managed a mentorship programme for 40+ students, designing the matching process and coordinating communications, events and certification.

University of
Southampton Malaysia

Education

MEng (Hons) Mechanical Engineering | Aerospace Specialisation,

09/2023 – 07/2027

University of Southampton

Southampton, UK

- On track for First-Class honours; yearly averages: Year 1 70.6%, Year 2 78.0%, Year 3 70.6%.
- Awarded BEng Mechanical Engineering in 2026; continuing to the integrated MEng.
- **Relevant modules:** Aircraft Propulsion, Advanced Computational Fluid Dynamics, Advanced Computational Methods, Aircraft Structural Design, Aerothermodynamics, Finite Element Analysis, Heat Transfer and Control Systems.

Languages

English

Fluent

Arabic

Native

Sign Language

Skills

Manufacturing & Mechanical Systems

SolidWorks 3D CAD, engineering drawings, design for manufacture and assembly, mechanical integration, rapid prototyping, 3D printing, assembly and testing. Certified SolidWorks Associate (CSWA).

Data, Modelling & Process Analysis

Python, MATLAB, ANSYS, Abaqus and COMSOL; data analysis, parametric simulation, finite-element analysis, fluid-flow modelling and interpretation of system-performance data.

Leadership & Operational Improvement

Team leadership, structured problem-solving, root-cause investigation, technical coordination, project documentation, engineering trade-offs and working effectively in fast-paced environments.