Aymane Saissi

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Portfolio: https://aymane-18.github.io/aymanesaissi.github.io/

EDUCATION

The Cooper Union for the Advancement of Science and Art, New York, NY 2021 - 2025

Bachelor of Engineering*, Mechanical Engineering,* ***GPA 3.99/4.0*** **— Dean's List all semesters**

- Awards: Innovator Merit Scholarship 2021-25, Half Tuition Scholarship 2021-24, Full Tuition Scholarship 2024-25, Jacqueline Bernstein and Marvis Scholarship 2021-25
- Tau Beta Pi Engineering Honor Society Member

University of Pennsylvania (UPenn), Philadelphia, PA 2025 - Present

Master of Engineering*, Mechanical Engineering*

RESEARCH EXPERIENCE

Research Assistantship in Fluid Dynamics, Cooper Union, New York, NY Fall 2022 - Spring 2025

Research Assistant for Flow Optimization

- Designed specialized **nozzles and pipe systems** using **SolidWorks and Autodesk** for optimized flow performance.
- Applied **Python-based data visualization** to assess and refine nozzle designs, minimizing turbulence and enhancing flow transitions.
- Conducted **CFD simulations in Ansys** to analyze subsonic and hypersonic flow, incorporating variations in angle of attack and fluid properties.
- Validated theoretical models through **high-speed imaging and pressure sensors**, capturing real-time flow dynamics and shock wave behavior.
- Developed expertise in **turbulence modeling, boundary layer analysis, and compressible flow simulations**, optimizing aerodynamic performance.

Summer Exchange Program in Mechatronics, Technische Universität Dresden**,** Dresden, Germany Summer 2023

Mechatronics Engineering Independent Researcher

- **Designed** and executed **experiments** to analyze electric motor performance and durability.
- Developed a predictive **machine learning framework** in Python, leveraging vibration data for early fault detection.
- Engineered **SolidWorks**-based motor connections for optimized weight distribution and experimental accuracy.
- Implemented **Node.js, Node-Red, and Javascript** for streamlined data processing and **UI (User Interface) development**.
- Contributed to a **predictive model** for motor failure classification, improving reliability.

PROJECTS

Adaptable Acoustic Panel for multi-Use Spaces, Cooper Union, New York, NY Fall 2024 - Spring 2025

- Led the design, fabrication, and testing of a mechanically switchable acoustic panel combining absorption and tunable diffusion
- Applied **ASME** acoustic testing **protocols** (**ISO 17497-2**) in controlled environments using RT60 and SPL measurements
- Gained 1 year of hands-on experience in a hardware engineering lab: **prototyping**, **CAD design** (SolidWorks), **manual fabrication**, and iterative testing
- Validated theoretical acoustic models (Sabine, Eyring, Fitzroy) with **Python** simulations and high-fidelity experimental data
- Developed a low-cost, scalable product tested in classroom and anechoic chamber environments

Drone Monitoring and Control (swarm), Cooper Union, New York, NY Fall 2021 - Spring 2022

- Used **Robot Operating System (ROS)**, **Linux**, and **Python** for synchronized operation of multiple drones for collaborative tasks.
- Utilized **Vicon cameras** and open-source drone technology to **monitor** and analyze the **motion** of the drone swarm.
- Optimized swarm behavior and enhance efficiency in task execution in collaborated with multidisciplinary teams.
- Coded algorithms leveraging Python programming and ROS frameworks to implement navigation and obstacle avoidance.
- **Repaired and maintained drones**, including **hardware** replacement and **software updates**.

WORK EXPERIENCE

Con Edison, New York, New York Summer 2024 - Summer 2025

Co-op Engineer

- Designed and implemented **Python** algorithms to **automate** the **extraction** of Negative Revenue Adjustments (NRAs) from multiples files**.**
- Developed **predictive models** using linear regression to **forecast** key **business metrics** and drive data-driven decision-making.
- Built an **interactive Power BI dashboard** to visualize key audit and NRA-related data, **tracking team progress** and streamlining reporting.
- Gained **insights** into the **energy production and distribution system** in the **New York area**, enhancing understanding of utility operations and regulatory frameworks.

SKILLS

Computer Programs: Python, C++, Node.js, Node-Red, Linux, Microsoft, Mac, Final Cut Pro, Microsoft Office, SolidWorks, Onshape, Siemens NX, Matlab, Microchip Studio, MPLAB X IDE, Ansys, Github, Docker, AWS, Javascript, CSS.

Fabrication: 3D Printing, basic wood construction, Soldering.

Languages: Fluent in French, Arabic, and English. Beginner in Spanish.

RESEARCH PUBLICATIONS AND CONFERENCE PRESENTATIONS

- **A. Saissi**, **G. Sidebotham**, **K. Wright**, **I. Feier**, "*Workshops for Active Learning and the Draining Tank: A Low-Cost Thermal-Fluid Experiment*", **ASME 2025 International Mechanical Engineering Congress and Exposition (IMECE2025)**, (Submitted for Technical Paper Publication, March 2025).

- **A. Saissi**, "*Condition Monitoring of Induction Motor Using Vibration Signals and Machine Learning Classification*", **2024 National Conference on Undergraduate Research (NCUR)**, Long Beach, CA, **April 8–10, 2024**.