Aymane Saissi

aymanexsaissi@gmail.com | (347) 480-6004 | www.linkedin.com/in/aymane-saissi-658b7427b

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

EDUCATION

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

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

RESEARCH EXPERIENCE

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

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.
- **Co-authored** a paper on thermal-fluid experiments, validating experimental and theoretical data with ANSYS simulations, submitted to **ASME IMECE 2025**.

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.
- Presented findings at NCUR 2024, Los Angeles.

PROJECTS

Autonomous Mobile Robot, Cooper Union, New York, NY Fall 2024

- Designed the robot frame using **SolidWorks** and fabricated components using laser cutting and 3D printing techniques.
- Developed the drive system utilizing custom motor mounts and high-traction wheels for stable movement.
- Integrated a sensor array, consisting of ultrasonic and IR sensors, to enable obstacle avoidance and target detection.
- Programmed the Arduino using a **state machine algorithm**, where the robot transitions between predefined states (e.g., obstacle avoidance, target detection, idle) based on sensor input, ensuring responsive and adaptive behavior.

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 - Present

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**.