Tommy N. El Hajjar

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EDUCATION

American University of Beirut
Mechanical Engineer
Bachelor of Engineering
GPA: 3.4/4.0
2021-2025

SKILLS – INTERESTS:

Skills
AutoCAD | Creo 3D | SolidWorks | Microsoft Suite | MATLAB | NI Lab View | Arduino IDE | Python.

Interests
Tennis, Swimming, Building Arduino projects, Playing piano.

Languages
Arabic (native), English (fluent), French (fluent).

ACTIVITIES

Scouts du Liban
Largest Lebanese youth association
2016 – Present

Cabinet At AUB Robotics Club
August 2023- Present
Organized events and workshop for more then 100+ students. Managed national competitions such as EDC

Model of United Nations at LAU
Feb. - May 2020
Represented New Zealand in the United Nation Committee of Science and technology and won the position Paper award

Algocode Foundation 2015 - 2019
Completed coding levels in Lego Mindstorm robotics, Arduino board using Arduino IDE, and Python .

Donors Relation Manager at DarbEssama 2020 – Present
Achieved organizational growth and secured funds while implementing effective inventory management.

Member at AUB 2021 – Present
ASME AUBRC SSEA

EXPERIENCE

T. Gargour & Fils | Automobile Intern (Mercedes Benz, Jeep) August – 2023

- Applying Knowledge of automotive systems, including **engines, transmissions, brakes, electrical systems**, and **HVAC,** to perform repairs and adjustments.
- Contributed to the successful completion of a major disassembly of an engine, including **cylinder head removal, piston ring replacements**, and **timing chain installations**.
- Conducted **engine diagnostics** using OBD-II scanners and diagnostic software to identify issues with engine performance and emissions.
- Assisted in performing **brake system inspections**, including brake pad replacements and brake fluid flushes.

Research in Modular Robots **2022 - Present**

- Researching **energy efficient modular robots** capable of self-reconfiguration using programmable magnets.
- Demonstrating the effectiveness of **programmable magnets in simplifying actuation** and optimizing power consumption in robot applications, resulting in a **reduction of up to 60% in power usage**.
- Successfully integrating **gears** into the robot's structure, enabling smooth transformation, leading to a notable **increase of up to 70% in overall efficiency.**

Study on Air Conditioning Optimization (AUB SSEA) **September -2022**

- Conducted an in-depth study focusing on **optimizing air conditioning facilities** through the **implementation of a Building Management System** aimed at efficiently controlling the usage of air conditioning units.
- **Identified consumption trends** leading to increased costs, shortened life cycle of installed systems, and inefficient heat losses
- Estimated potential **savings of up to $106,850** over a 20-year period for the Bechtel building alone.

Study on Optimizing Ventilation Control (AUB SSEA) **April - 2023**

- Conducted a **study analysis** on **temperature control** by changing slanted skylights to flat windows.
- **Enhanced roof ventilation** by installing **actuators** that involve converting inclined skylights to horizontal windows, leading to a significant decrease in **upper floor temperature** by a **reduction of up to 30%.**
- Dissipated heat through window opening: Opening 11 windows for an hour accomplished **a dissipated heat of 7853 KW.**

Arduino-based Chicken Incubator **2023**

- Implemented an **egg rotation mechanism** with **time-controlled functionality**, ensuring the **even development of chicks** by periodic egg rotation by **improving hatching success rate by 30%**.
- **Designed and evaluated multiple prototypes** for the chicken incubator structure.
- **Prepared** made a **detailed datasheet** for the NTC 10k temperature sensor, ensuring **precise and dependable temperature measurements.**
- **Coded the Arduino program** for temperature control and fan regulation, successfully **automating the fan system** based on temperature readings.
- **Created a detailed circuit diagram**, documenting all **electrical connections and components** used in the incubator system