Apostolos Apostolou

Mechanical Engineering Graduate | (357) 97640674| apostolosapostolou78@gmail.com | Nicosia, Cyprus

About me

Mechanical engineering graduate experienced in robotics and automation. Skilled in integrating hardware and software, with hands-on work in ROS2, Arduino, Raspberry Pi, electronics and mechanical design.

Experience

Engineering Research Intern | Texas A&M University - Energy Efficiency Control Optimization Laboratory | 05/2024 – 07/2024

- Designed and implemented a **custom** low-cost yet powerful **Data Acquisition Module** (DAQ) using **Raspberry Pi**, **16-bit ADC**, **Python**, and a custom **3D-printed** enclosure for measuring critical parameters in compressed air systems.

Research Intern | Kios Research and Innovation Center of Excellence | 07/2023

- Implemented a **linear programming optimization algorithm** using both **MATLAB** and **Python** for **minimizing electricity cost** by charging/discharging the PV system's battery storage at optimal hours.
- Implemented **cost calculation functions** using Python, and GUI improvements for a web dashboard that is used for calculating the electricity cost of a house in different cases (no PVs, PVs, battery storage, etc.).

Engineering Intern | NOVATEX Solutions | 05/2023 – 06/2023

- Created an **earthquake detection system** using an accelerometer, **ESP32**, **MQTT**, **InfluxDB**, **Node-Red**, and **Grafana**.
- Worked with **LoRa**/**LoRaWAN**(TTN) and established communication between different devices using encrypted data.
- Worked with **Rotrics Robot Arm**, created an instructions manual for it.

Mechanical Design Engineer Intern | CYPET Technologies | 06/2022 – 08/2022

- Designed complex parts and machines using **SolidWorks**.
- Designed/ran **injection molding simulations** using **Moldex3D** and analyzed the results.
- Created **2D Drawings** (for assembly purposes) and User Manuals.

Education

BACHELOR OF SCIENCE: MECHANICAL AND MANUFACTURING ENGINEERING | 09/2021 – 05/2025 | UNIVERSITY OF CYPRUS, NICOSIA | GRADE: 9.30/10

MATERIALS TECHNOLOGY AND PROCESSES - ERASMUS BLENDED INTENSIVE PROGRAMME | 10/2024 | ESSLINGEN UNIVERSITY, ESSLINGEN

HIGH SCHOOL DIPLOMA| 09/2017 – 06/2020 | PALAIOMETOCHO LYCEUM, NICOSIA

Skills & Languages

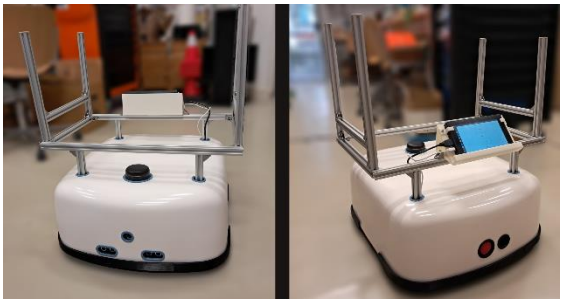
- ROS2
- Electronics (Circuits/PCB Design)
- IoT & Robotics
- Programming (Arduino/Python)
- CAD/CAM (SolidWorks/Fusion360)
- Languages: Greek & English

Awards & Achievements

- Awarded for academic excellence throughout all four years of university studies.
- Completed my mandatory military service in Cyprus (14 months) at Technical Corps (2020-21).
- "Excellence" achievement received for all the years of secondary education.

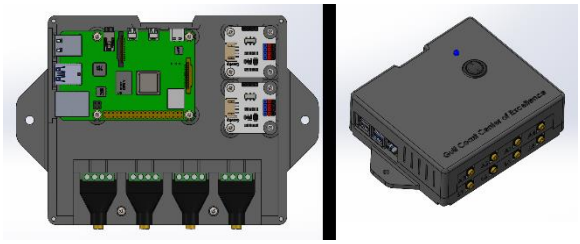
Projects (For all my projects, visit my website: aa.netcy.com)

Final Year Thesis: Autonomous Mobile Robot for Payload Transportation



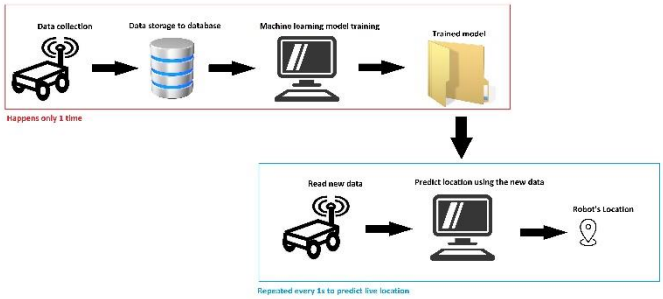
For my final year thesis, I developed an **autonomous wheeled robot** for payload transportation using **ROS2**. Simultaneous Localization and Mapping (**SLAM**) and Autonomous Navigation algorithms (**NAV2** Framework) were implemented in both a **simulation (Gazebo)** environment and on the **real hardware**. Moreover, the **Arduino** code for controlling the robot's motors using velocity commands and a **PID** controller was developed. The robot's hardware includes an Arduino Mega, a Raspberry Pi 5, DC Motors with encoders and a LiDAR sensor.

Custom Data Acquisition Module (DAQ)



During a two-month summer internship at the Energy Efficiency Control Optimization Laboratory at Texas A&M University, I undertook the design and implementation of a **low-cost Data Acquisition (DAQ) module**. This module is primarily used to measure critical parameters of compressed air systems. I **independently developed** all the **electronics, software, and hardware** for the device. The module features a **Raspberry Pi** microcomputer, a **16-bit ADC**, and a custom **3D-printed enclosure**, all controlled via **Python** scripts. The project was successfully completed and tested within the internship period.

Indoor Robot Positioning System Based On Wi-Fi Signals: An Implementation Using Machine Learning.



For this project, I implemented a **machine learning algorithm** to detect the location of a mobile robot in an indoor environment, by using the Wi-Fi signals around it. The two **algorithms** tested on this project were **K-Nearest Neighbor** Regression and **Random Forest Regression**. The algorithm was implemented in **Python**.