Term Project
MECHATRONICS – 2568 [40%]

Assignment Date: Thursday, February 13, 2025

Problem Description

The best way to learn Mechatronics is to work on a **Mechatronics Project**. In this class, the Mechatronics Design project is to design a **Small Mechatronics System** that includes a mechanical system, electronics (interface circuit) and raspberry pi (pico), and a python program. This is upto three-student project. The project should demonstrate some challenges in Mechatronics and the benefits of using Raspberry Pi (or equivalent processors)

Report Requirements [40 marks]

1. The rational of the project [2.5 marks].
2. The background and related previous works [2.5 marks].

Technical Requirements

3. The overall diagram showing the mechanical system and processor including all the interface circuits [**10 marks**].
4. The python program with comments [**10 marks**].
5. The part lists including their specifications and prices [5 marks]
6. Clip that demonstrates the technical features [**10 marks**]

Technical Requirements (select THREE from TWELVE) [60 marks]

1. Smart Home: Home Assistant: Google Assistant; Siri; Alexa)
2. Link with Chat GPT
3. Graphic Interface/Web Application/Mobile App
4. Link with google/amazon/azure/thingspeak/netpie services.
5. Simulation/Digital twin/Simscape.
6. Python packages **(select TWO)**:
    a. ROS.
    b. VisionWorks/OpenCV.
    c. TensorFlow.
    d. Flask/SocketIO.
    e. MongoDB/SQLAlchemy.
    f. Ask for approval.
7. User Friendly, Fully Mobile, Fully Automatic system.
8. Robustness, Reliability, Precision.
9. MQTT/REST API/IoT.
10. Multiple Threa/FreeRTOS.
11. Scientific Result.
12. Raspberry pi ONLY.

Number of Students: THREE students per one project

Due: A final week