**College of Engineering**

**Mechanical and Mechatronics Engineering Department**

**MECA 440- Microcontrollers for Mechatronics**

**Fall 2023**

**Final Project**

PID Light Tracker using Arduino

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# Project Description

The goal of this project is to build a robot capable of autonomously tracking a light source using PID (Proportional-Integral-Derivative) control. The robot will be equipped with two servo motors that control its yaw and pitch movements, allowing it to adjust its orientation and track the light source accurately. The system will include components such as a robot chassis, servo motors, a light sensor, a microcontroller, and a power supply. The microcontroller will process the sensor readings, calculate the appropriate servo movements using the PID control algorithm, and generate the control signals for the servo motors. By implementing this project, you will create a robot that can track a light source with precision and learn about concepts such as PID control, sensor integration, and servo motor control.

This light-tracking robot project offers a practical application of PID control principles and robotics. The robot's ability to track a light source using servo motors and a light sensor showcases the integration of hardware and software components. Through the development process, you will gain insights into assembling the robot chassis, attaching servo motors, connecting the light sensor, and programming the microcontroller. Additionally, you will have the opportunity to calibrate and fine-tune the PID parameters to optimize the tracking performance. This project provides a hands-on learning experience in control systems, sensor integration, and robotics, enabling you to deepen your understanding of these concepts and explore further applications in the field of robotics and automation.

# Functional Specifications

# Block Diagram

# Principle of Operation

# Schematic Diagram

# Bill of Quantity

# Results and Conclusion