YEDİTEPE ÜNİVERSİTESİ

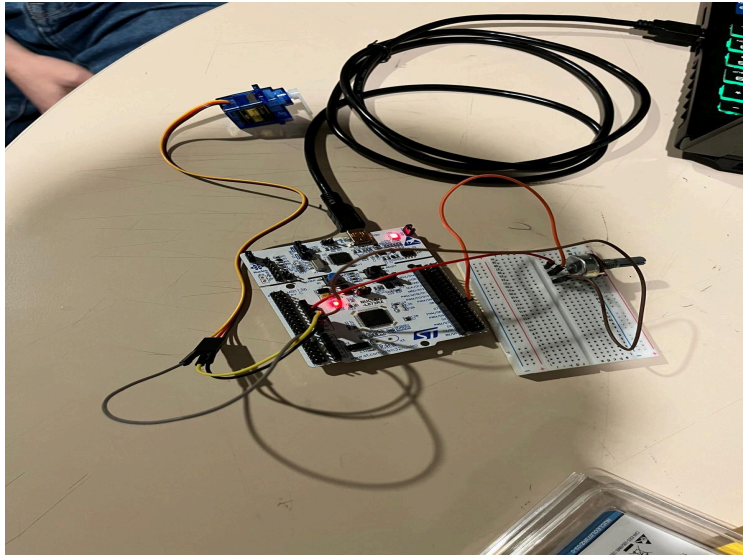https://github.com/mhfuzun/EE242-Project

SERVO MOTOR CONTROL WITH POTENTIOMETER
EE241

MUSTAFA AÇIKGÖZ
2022071016
MUHAMMET FURKAN UZUN
20220701008
MUHAMMET CEMİL ÖĞÜTVEREN
20220701005
ONUR NURİ TURAN
20230107004

Course Instructor:
Muhammet Talha Büyükakkaşlar

INTRODUCTION

This project demonstrates a simple yet effective way to control a servo motor using a potentiometer and a microcontroller. The system uses an STM32 Nucleo development board to read analog input from the potentiometer and generate a corresponding PWM signal to control the angular position of a servo motor.

In the schematic shown below, the potentiometer is connected to one of the analog input pins of the STM32 board. As the user rotates the potentiometer, the board reads the varying voltage and maps it to a PWM signal that adjusts the servo motor's shaft angle between 0° and 180°. This setup allows for real-time manual control of the servo position and is commonly used in robotics, mechatronics, and educational applications to understand analog-to-digital conversion and PWM signal generation.
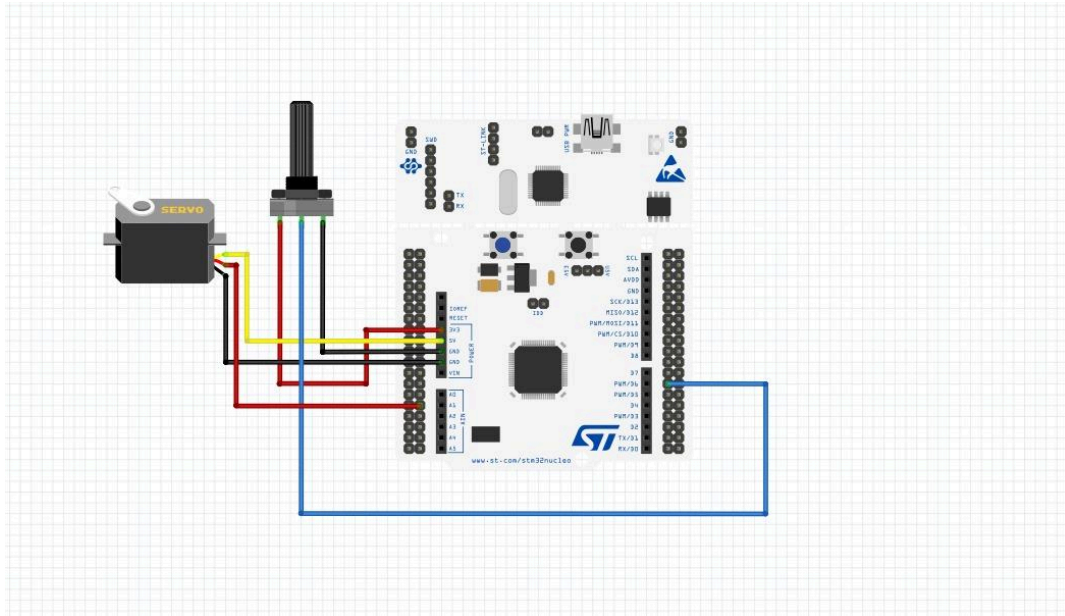
COMPONENTS

1 X Potentiometer

1 X Servo Motor

1 X STM32L073RZ Microcontroller
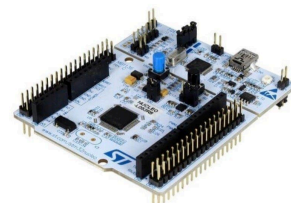
PROJECT SCHEMATİC

WORKING

The system reads the analog voltage from the potentiometer, which typically varies from 0V to 3.3V. This voltage is then mapped to a corresponding duty cycle value for a PWM signal generated by the STM32 board. The PWM signal controls the angle of the servo motor, making it move between 0° and 180°.

RESULTS

By rotating the potentiometer, the servo motor rotates smoothly to a corresponding angle. The entire system operates reliably and demonstrates the practical control of servo motors through analog input. The expected result of angular positioning from 0° to 180° was successfully achieved.