Wi-Fi -Based Actuator Control Using ESP32/ESP8266

Using MIT App Inventor & TM1637 Display

Introduction

- This project focuses on controlling Actuators using an ESP8266 microcontroller. The system includes a potentiometer for input, a TM1637 display for real-time data visualization, and an app interface developed with MIT App Inventor.
- A potentiometer is used to measure the actuator's position.

Components Used

- - ESP8266 Microcontroller
- - 2-Channel Relay Module
- - TM1637 4-Digit Display
- - Potentiometer (10kΩ)
- - Power Supply (5V)
- - MIT App Inventor-based Mobile App
- - Mornsun (24V to 5V)
- - Actuators

Circuit Diagram

- The circuit connects the ESP8266 with relays, a potentiometer, and a TM1637 display. A detailed diagram will be added here.

Code Explanation

- 1. ESP8266 is configured as an Access Point (AP)
- 2. User can change SSID & Password
- 3. Reads potentiometer values and displays them on TM1637
- 4. Controls relays via app interface
- 5. Stores AP details in EEPROM for persistence

App Interface (MIT App Inventor)

- The mobile app provides buttons for controlling relay states (ON/OFF) and changing the ESP32/ESP8266 Access Point settings.

Future

- - Cloud-based control for remote access
- - Adding voice commands for relay control
- - Integrating a mobile notification system for relay status
- - Mobile App Integration
- - Security & User Management
- - Multi-Relay & Multi-Device used