**SMART ELECTRIC SOCKET SYSTEM**

**Abstract:**

This project proposes the development of a Smart Socket system with an auto-activation switch, designed to enhance convenience, safety, and energy efficiency in household electrical usage. The system integrates sensor technology with a control mechanism to enable automatic activation of the socket when a compatible device is plugged in, eliminating standby power consumption and reducing the risk of electrical hazards. The Smart Socket system consists of three primary components: a sensor module, a control unit, and the electrical socket assembly. The sensor module detects the insertion of a plug into the socket, while the control unit processes this information and triggers the activation of the socket accordingly. Additionally, the system incorporates safety features to prevent accidental activation and ensure reliable operation. By employing advanced sensor technology and intelligent control algorithms, the Smart Socket system offers several benefits. It eliminates standby power consumption by deactivating the socket when not in use, thereby reducing energy waste and lowering electricity bills. Furthermore, the automatic activation feature enhances user convenience, eliminating the need to manually switch on/off the socket. The implementation of the Smart Socket with an auto-activation switch presents a practical solution for promoting energy efficiency and safety in household electrical systems. It aligns with the growing demand for smart home technologies that optimize resource utilization and improve user experience.

**COMPONENTS**

Current Sensor

ESP8266

Electro Magnetic Relay

**Program:**

const int sensorPin = 2;

const int relayPin = 3

void setup() {

pinMode(sensorPin, INPUT);

pinMode(relayPin, OUTPUT);

digitalWrite(relayPin, LOW); // Ensure relay is initially off

Serial.begin(9600);

}

void loop() {

int sensorValue = digitalRead(sensorPin);

If sensor detects plug insertion (HIGH signal)

if (sensorValue == HIGH) {

Activate the socket (turn on relay)

digitalWrite(relayPin, HIGH);

Serial.println("Socket activated");

delay(1000); // Delay for stability (optional)

} else {

digitalWrite(relayPin, LOW);

Serial.println("Socket deactivated");

}

delay(100);