KGiSL INSTITUTE OF TECHNOLOGY
co-KreateyourGenius

PYEXPO25

Genius innovation leaves behind a legacy...

Team ID: T031

Team Name: Neural Nexas

PS Number: PY088

PS Title: Smart energy meter for House-Hold Consumption

Domain: IoT

Category:Hardware

Problem Statement:

- It measures energy consumption automatically thus it avoids for a person to read the meter manually.

- It gives information about the usage of energy at a moment in time; thus it becomes possible to identify instances when it was excessive.

- Having information, you can recognize which appilances consumes more and unwanted energy

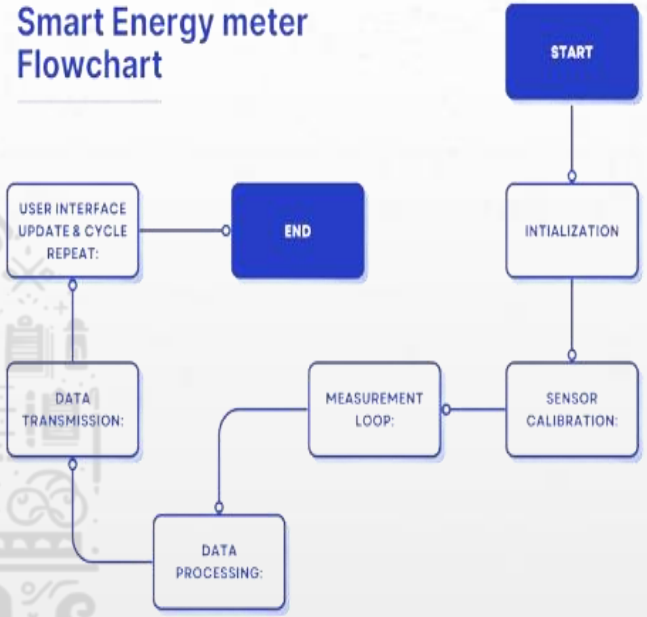
- It can detect abnormal peak of usage that are probably due to flaw appliances or even power theft.

Targeted People:

- Homeowners
- Utility Companies
- Government & Regulators
- Environmental Groups
- Researchers & Tech Developers

Proposed Solution:

- Connect all appliances to a single app for monitoring and control.
- Provide real-time data on energy usage and runtime for each appliance.
- Analyze energy usage patterns and offer actionable tips for conservation.
- Enable remote switching off/on of devices.
- Alert users about unusual energy consumption or forgotten devices.
- Allow setting schedules for device operation to optimize energy usage



COMPONENTS:

- Micrprocessor:Esp32
- Voltage Sensor:ZMPT101B AC Voltage Sensor
- Communication Module:Examples: Built-in Wi-Fi in ESP32/ESP8266, GSM module, or LoRa modules.

Architecture & Hardware-Software:

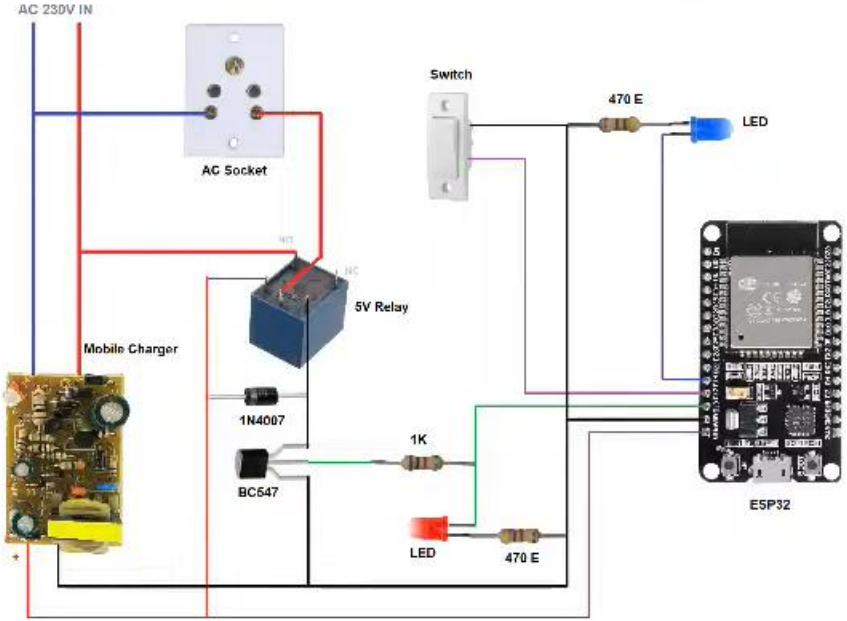
Software:

Back-End:

- Language/Framework:
  Python (using Django, Flask, or FastAPI)
- Database:
  PostgreSQL, MySQL, or SQLite
- Communication:
  MQTT (with libraries like paho-mqtt)

Fronted-End:

- Templating (Python-based):
  Django Templates
- Modern UI Frameworks:
  JavaScript frameworks like React, Angular
- Web Technologies:
  HTML, CSS, and JavaScript



Hardware:

- MCO-ESP32
- 5V Relay
- IN4007 Diode
- BC547 Transistor
- 1k Resistor
- Recitifier

Demo:

Add screenshot

Impact and Future Scope:

- Energy Saving
- Cost Efficiency
- Remote Monitoring
- Billing Automation
- Environmental Friendly
- Scalability

Research and References:

- IEEE explorer : Power Metering: History and Future Trends(2017 Ninth Annual IEEE Green Technologies Conference)
- https://ijariie.com/AdminUploadPdf/IOT_based_smart_energy_meter_for_efficient_energy_utilization_and_billing_ijariie17659.pdf?srsltid=AfmBOooEBXtvBusDPrH3RNT4ykwLsVXifCIz6HgFn4SL70yoIlkLtuKx&utm

Team Member Details:

Name(TL): Prasanth S	**Roll No:24UCY139**	**Dept: CYS**
Name: Harini M	**Roll No:24UEC130**	**Dept: ECE**
Name: Sairam R M	**Roll No:24UAD227**	**Dept: AI&DS**
Name: Harshini A	**Roll No:24UCS136**	**Dept: CSE**
Name: Bharath R	**Roll No:24UIT106**	**Dept: IT**
Name: Bebincy V K	**Roll No:24UCS118**	**Dept: CSE**

THANK YOU !