IoT-Enabled Smart Metering Home Automation System

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1. Introduction
- Energy management is crucial for government, industries and individuals to identify wastage, conserve resources and optimize operational efficiencies.
- The IoT framework offers a system of integrated sensing and actuation devices connected over the internet for real-time monitoring.
- This project presents an energy management system comprising of:
  - an affordable smart meter
    - to collate and send energy information via the internet and
    - switch devices on and off via remote commands.
  - cloud-based database of home appliances for accessing real-time energy profiles.

2. The Concept
- Smart Metering
- Home Automation and Control
- Cloud-based Home Appliances Database

3. System Features
- Affordable and Easy-to-Install Smart Meter (prototype cost ~ $60)
- Accurate Energy Consumption Data for Decision Support
- Access to Real-time Energy Profiles of Domestic and Residential Buildings
- Simple GUI for Proper Monitoring of Power Usage
- Automatic Switch Control
- Applicable for water metering and gas metering as well as home and industrial security and automation systems.
- Cloud computing allows seamless integration of various metering services from multiple power companies, water and gas metering all in a central Server.

4. Architecture of the Energy Monitoring System

5. The Implementation

6. The Prototype

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