

# Smart Home Power Monitoring System

By

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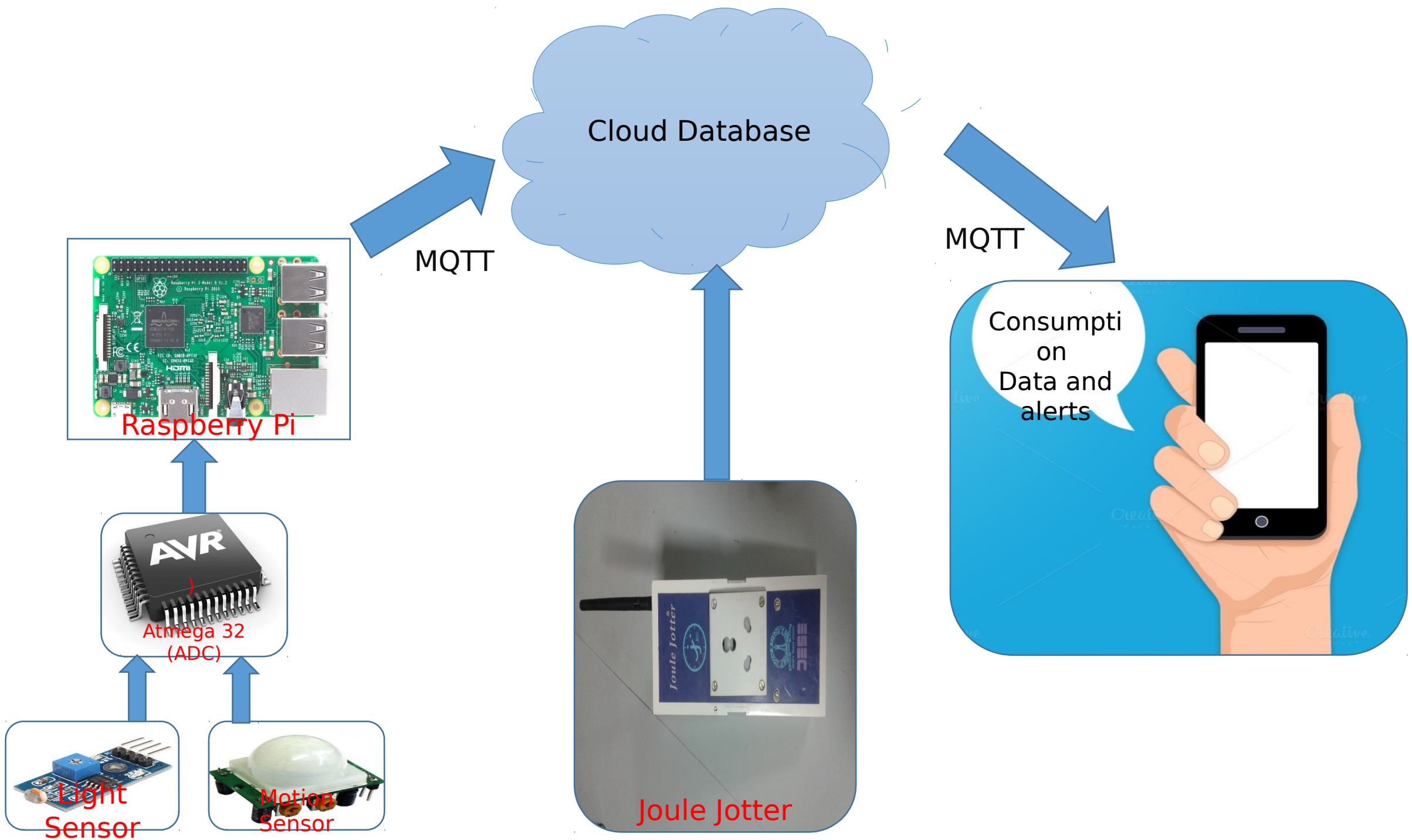
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# Objective

- To sense and monitor the power consumption in household and understand the usage based on the activity of a user.
- Monitoring the power profile of an appliance and look for possible faults in the appliance
- Suggesting the user to turn off appliances or even repair faulty appliances reduce the power consumption.



# What have we done?

- Sensor data is collected by a raspberry pi based client side system and sent to the cloud.
- Joule Jotter reads the electrical parameters of a particular appliance or set of appliances and wirelessly sends the data to remote server. This data is sent to the cloud.
- Disaggregation of appliance data and determining which appliance is operating and based on the sensor data we determine if a particular appliance has to be ON or not.
- Factorial Hidden Markov Model

# Results



```
pi@raspberrypi:~ $ python data_input_latest.py
Ambient Light Sensor: 105
Motion Sensor: 95
Ambient Light Sensor: 108
Motion Sensor: 88
Ambient Light Sensor: 122
Motion Sensor: 95
Ambient Light Sensor: 132
Motion Sensor: 118
Ambient Light Sensor: 114
Ambient Light Sensor: 114
Motion Sensor: 112
Ambient Light Sensor: 98
Motion Sensor: 95
Ambient Light Sensor: 99
Motion Sensor: 88
Ambient Light Sensor: 115
Motion Sensor: 90
Ambient Light Sensor: 135
Motion Sensor: 114
Ambient Light Sensor: 124
```

# Future Expansions

- Complete smart home automation based on the person's activity.
- Incorporating additional sensors like temperature and humidity.
- RTC and LCD interfacing for Pi.