

# Complete Home Automation and Intelligence

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*Abstract: Internet of Things is a very happening technology in this world. Automating the processes has become essential in order to save time. This system helps you automate your home lights and fans over a very usually found LAN that is WiFi. It uses Machine Learning to predict the time to switch the light ON on the next Day.*

### 1. Introduction:

Automation of things is not only used to same time but to make even smallest errand of yours tension-free and more systematic. This system works for the same purpose. Switching the lights of your home might feel difficult and boring you at any point of time, as it involves many steps. This system makes it for you on click of few buttons. The local server hosted at our WiFi, makes every device connected to it, to access it. Speaking of automation, it uses Linear Regression to do the work.

### 2. Proposed System:

There are few essential components and techniques involved in this process.

- A Local server is hosted across the WiFi network using any suitable device capable of hosting the server and processing the requests.
- A logical relay circuit is used to connect all the high voltage (220V) devices such as bulbs or fans to the controlling device that receives signals from the host microcontroller or maybe any other device.
- User has to connect to the provided IP address over which the server is hosted in the LAN.
- A basic web interface can be built for the website that send and receive POST-GET requests.
- The difference between the time of the sunset and the lights-ON time is calculated and stored as a dataset, which is used to train the model and predict the time of the next lights-ON with respect to the Sunset time of that day.
- Use of simple Linear Regression algorithm makes it easier for the system to switch on the lights by its own.
- This mechanism can be simple overridden by the user as he has the final authority and the system learns this from the next day.

### 3. Benefits:

This system has many advantages over other Home Automation concepts and are listed below:

- A single language and a single gadget can be used to build all the essential bodies of the proposed system such as use of Raspberry Pi3 and Python could be the best combination.
- Amendments and upgrading would be very easy as the system has very much scope to get altered

- Cost effective as we are not using any expensive Smart Lights for this but the system can be built for existing ones.
- Since It is built over WiFi, it does not seem to be vulnerable for any kind of security threats nor high internet server hosting charges.

#### **4. Scope:**

The system still opens up a large area of scope for its upgradation and development and few are enlisted below:

1. Integration of SMART-LOCK
2. Creating a hierarchical-based server interface with *Username*s and *Password*s.
3. Including other IoT devices such as Temperature sensors to regulate the temperature using switching ON and OFF the Fans, A/C or maybe heater.

#### **5. Conclusion:**

Internet of Things has a great scope and applications. When used with the existing technologies and theories, It can create many useful things that are not far from the reach of common public.