

# Smart House (Remote light control)

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## Abstract

Internet of Things (IoT) is shaping the future of many industries and its many applications have changed the way people interact with their electronic devices. The main purpose of this project is to develop a platform that allows house owners to remotely monitor and control the status of the lights in their house (turn on/off). An Arduino board, a ESP8266 chip, and an Aliyun server are used to produce the necessary connections for employing the IoT. According to the final deployment results, the lights corresponding to each room of the house model can be monitored and controlled via a smartphone. It is believed that deployment of this model in larger scales, where more devices are added to the network, could improve the house owners' living experience and have great impact in the way individuals live their daily lives.

## Introduction

Since the early 2000, the internet has become an essential means of making transactions, sharing resources, and communication. With the development of the internet, the concept formally known as the Internet of Things (IoT) was introduced. IoT can be defined as a network of devices and sensors that communicate with each other via this network. Many outstanding devices such as smart phones, smart TVs, and even smart cars were created using IoT. In recent years, demand for enhancement in this field has transferred from mobile devices to home appliances, which led to the concept of Smart House [1]. Smart House refers to a house that consists of devices and sensors which are connected via a network and can be remotely monitored and controlled [2].

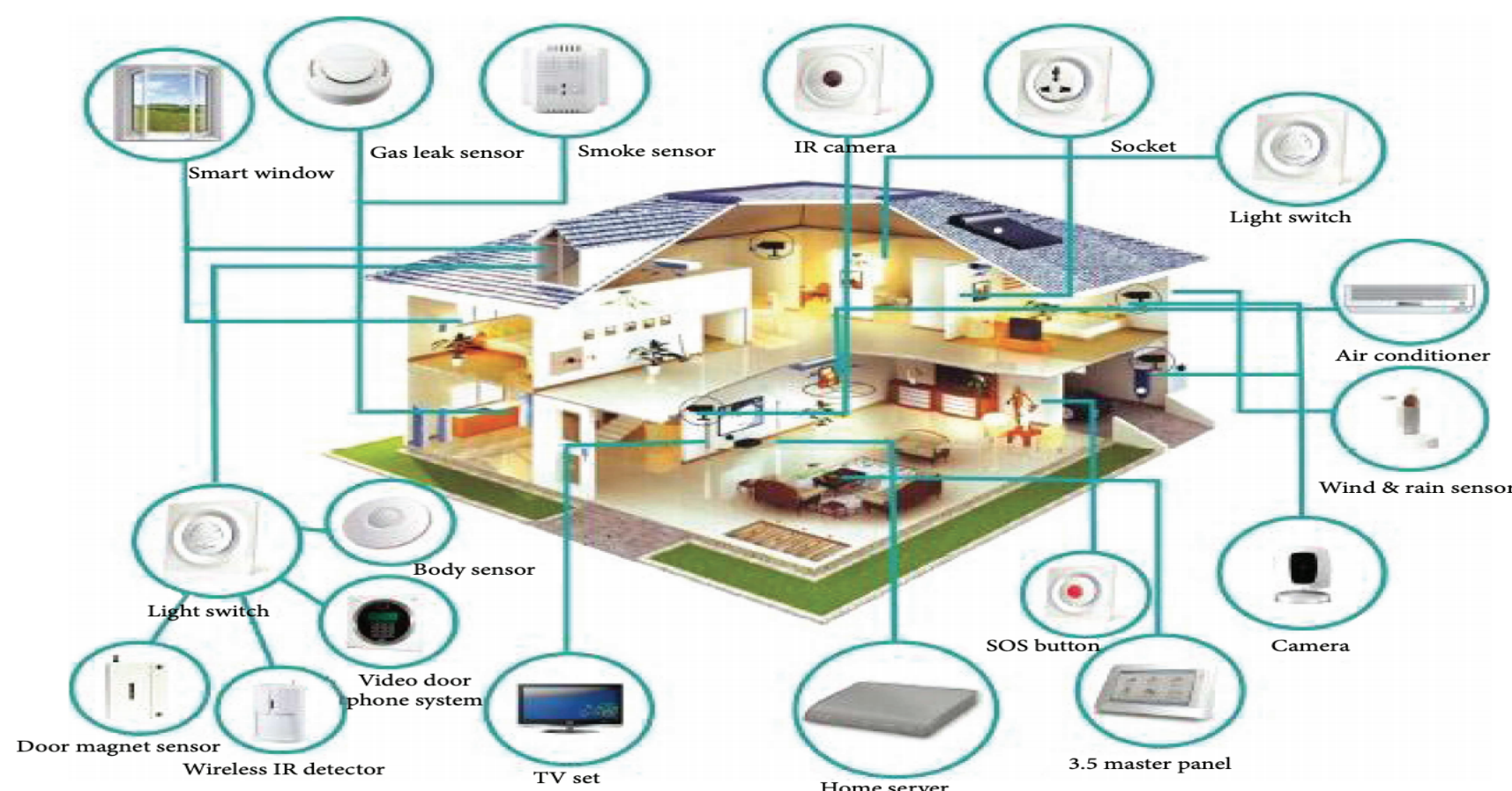


Figure 1: Smart House design model [2]

Although Smart House is an interesting concept and many could benefit from it, the overall security threats must be examined likewise [4]. However, since this project merely demonstrates a small model of the Smart House, security measurements were not taken into account.

## Methodology

The ESP8266 chip, which is a WiFi module, is programmed using the Arduino software to send requests to and receive data from the Aliyun server. In addition, this chip is also connected to the main board, which consists of the LED lights for each room. The following figure (Figure 2) demonstrates this establishment.

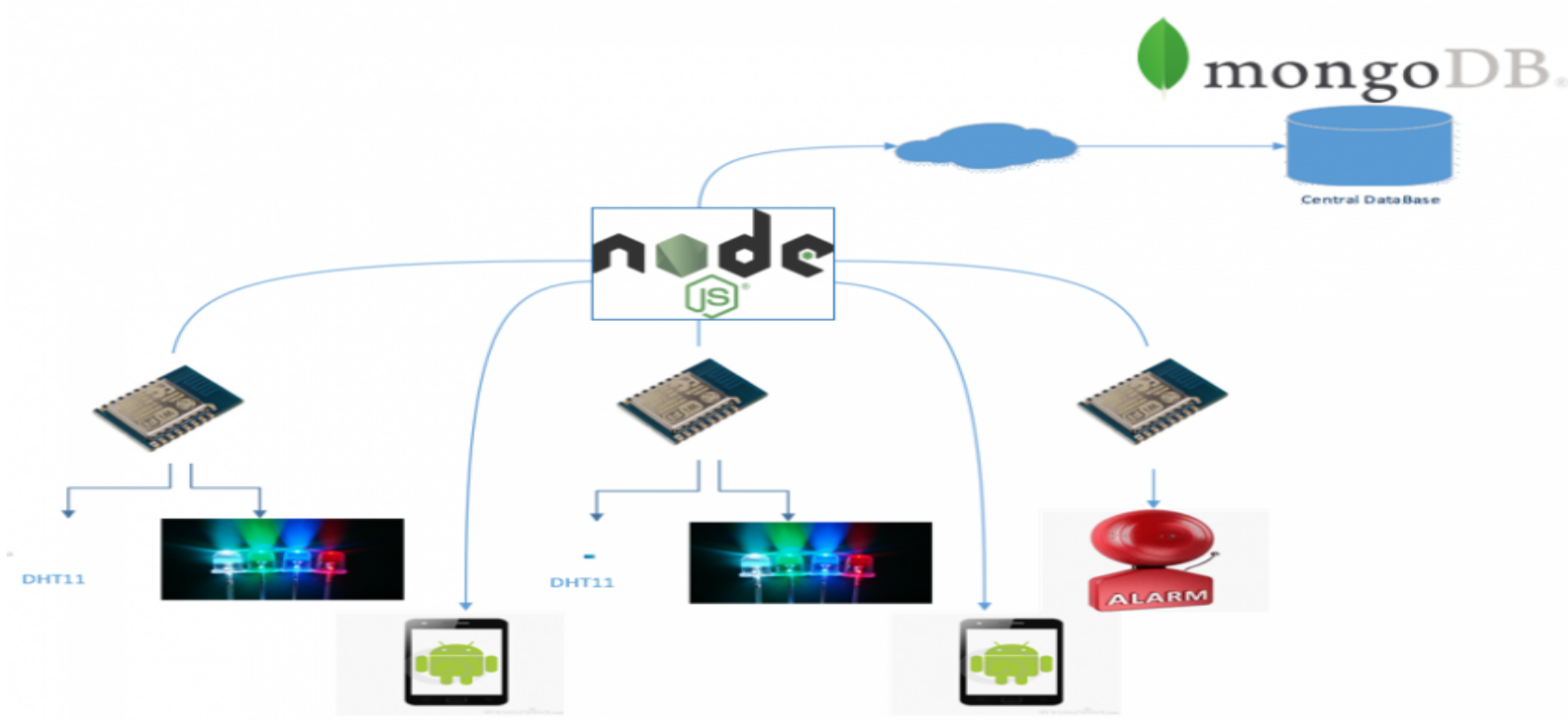


Figure 2: Include a short caption for your figure.

The following equation was added for the assignment [3]

$$\left[ \begin{array}{l} \frac{B(1+\lambda_m^*)}{Ln(2)} \left( \frac{H_m^n}{1+p_m^n H_m^n} \right) - q\varepsilon_0 - \mu \\ B \cdot \log_2(1 + p_m^n H_m^n) - \bar{c}_m^* \\ -p_m^n * + p_T \end{array} \right] \quad (1)$$

## Results

As this project is currently not fully developed, there are no results to be displayed at the moment. However, the following table (Table 1) was added to illustrate how the results sections would appear when the project is finalized.

Table 1: Random table

Treatments	Response 1	Response 2
1	0.0003262	0.562
2	0.0015681	0.910
3	0.0009271	0.296

## Conclusions

In conclusion, the IoT was used to develop a functioning model of a Smart House. Consequently, an app could be used to remotely monitor and control the lights in different rooms of the constructed house model.

## References

[1] A. Georgiev and S. Schlögl, "Smart home technology: An exploration of end user perceptions," *Smarter Lives*, 2018.

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[4] H. Lin and N. W. Bergmann, "Iot privacy and security challenges for smart home environments," *School of Information Technology and Electrical Engineering, University of Queensland*, 2016.

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