



SmartGully

January 2020

GITHUB

Smart Street Lighting System

Organization: Department of Scientific and Industrial Research

Problem Statement: Most of the streets are illuminated from evening to morning averaging about 12 hours per day within the habitations. It is well understood that some of the streets may not have vehicles or even pedestrians passing through them throughout the night. In such scenarios there is wastage of electrical energy for illumination of streets.

Team name: Chipp

Team Leader: Ruthvik Reddy

College code: U - 0934

Approach

Generic street lights have just two options – ON & OFF, they cannot be adjusted or controlled according to the amount of light present in the environment and hence lead to energy wastage. Our project, SmartGully is an advanced photosensitive IOT device that automates the turning on and off of street lamps by detecting darkness and activating motion sensors to detect motion. During the day, even if it detects motion, the street lights remain turned off optimising power usage. The motion sensor turns the street lights on when darkness is detected and pedestrians, animals or vehicles pass by. This increases safety on roads in a much efficient way and therefore prevents accidents owing to a safer route of travel. The lights are turned off by default when no motion is sensed during the night.

Approach

SmartGully also sends a notification summarising the power consumption on a daily basis. Additionally, the user interface allows the operator/user to monitor the live power consumption of any particular area letting them keep a tab on the power usage at some instantaneous time and hence making it easier to detect any malfunction/damage of street lights in that particular region. This can also be done through the android application. This application allows user to remotely access the lamp status and modify the lamp mode and lamp settings. This makes street light maintenance way easier than it is today. We provide two modes, AUTO and MANUAL mode which can be switched using the application. The auto mode automates the turning on and off of the street lights through motion sensors. The manual mode puts the motion detector off and allows user to manage manually, the turning on-off of street lights in that case.

Technology Stack

- Raspberry Pi 3 Model B
- PIR Motion Sensor
- Arduino UNO R3
- Adafruit IO
- Fritzing
- IFTTT
- Unity3D
- Node.js
- Bcrypt

Use Cases:

- These lamps can be used on national highways and on the street within the cities and villages.
- Can be implemented on Airports and Runways.
- Can also be implemented in corporations and Public places including parks, schools, residential areas.
- App can be used to monitor the live power consumption and notifies over usage.
- If any lamp starts malfunctioning or stops glowing we can easily detect through system.

Dependencies

- The device is dependent on wifi/gsm module/ethernet for sending and receiving feeds.
- The range of PIR motion sensor is 10m so one sensor can handle only 10 m long street.