INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue IV
March 2025
Available online at https://www.instabrightgazette.com

****

SMART LIGHT: DEVELOPMENT OF A GPS - INTEGRATED FLASHLIGHT WITH SOS MESSAGING FOR EMERGENCY RESPONSE

ADRIAN M. BENDAÑA
MHARC ROLLY A. CASTAÑEDA
JOHN FLORENCE N. DIMAILIG
KEDRIC GABRIEL D. VARGAS
JUSTIN M. VILLAFUERTE
Balayan Senior High School

ABSTRACT

It is important that the communication, navigation and illumination are efficient in case of an emergency but many tools that are currently used are ineffective in adverse conditions and hard to use in remote areas. This paper shows the creation of SMART Light, a GPS-enabled torch with built in SOS messaging to improve the current methods of communication during an emergency.

The device combines the required features of lighting, location services, and emergency notification into a single, handheld device. The SMART Light is designed to work independently from cellular networks by using an A9G module and a Seeed Studio XIAO ESP32-C3 microcontroller, thus remaining functional in areas with poor or no infrastructure.

The study employs a structured research methodology encompassing component selection, system integration, software development, and performance evaluation. The findings of the study reveal that the SMART Light has a GPS location accuracy of ±5 meters, fast SOS message transmission during ideal network conditions, and battery life of up to 12

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue IV
March 2025
Available online at https://www.instabrightgazette.com

hours in flashlight mode. The device proves to be robust in simulated emergency conditions, thus proving its readiness for real-life use.

In this context, the present research adds value to the evolution of emergency response technology by solving the problems of the current instruments.

The SMART Light presents a economical, easy to use and multi-purpose device that can improve search and rescue operations. Possible future enhancements could be strengthening the device, making it waterproof, and adding features for using other power sources like solar power to enhance the product's features. The findings of this study also show the possibility of technological development in the reduction of risks and improvement of disaster preparedness and response efforts.