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Smart Scalable and Flexible Low Power Sensor Based Internet Connected Street Satellite System with Embedded Web Server

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Abstract - The purpose of project is innovative street lighting system that runs associate in net server to present sensible electronic administrations to people living within the town however the vitality effective lighting administration and alternative disaster managing system. This intense lighting system is often dead in urban areas, roads, grounds, stops and don scene. The exceptional parts of the project are described below. The microcontroller runs an internet server that sends data to the client aspect application. Any instrument with a web program, as an example, mobile phone or PC/Laptop are often utilised to screen the data maintain. The client part is verified with a 1 of a user name and secret password before aiming to conversational idea. The net server is accountable of serving the web site pages, overhauling the client and for maintaining the TCP/IP association till the user closes the session. Web site pages are designed with hypertext mark-up language non-standard speech. The device utilizes the LwIP open supply TCP/IP convention stack for its net availableness.

Keywords: ARM Cortex-M4, Camera, PIR motion Finding, OV2640camera detector, Business advertising, observation post, Rain and flood scrutiny, Emergency speaker

I. INTRODUCTION

The project presents here is a remote streetlight monitoring and auto controlling system. The system can be set to run in automatic mode [1], which control streetlight according to Sunrise and Sunset Algorithm and light intensity. This control can make a reasonable adjustment according to the seasonal variation [2]. This street light system also includes a time cut-out function, and an automatic control pattern for even more electricity conserving for example day time street light automatically ON and night time street light automatically OFF [3]. This design can save a great amount of electricity compared to streetlamps that keep alight during nights. Furthermore, this system has auto-alarm function which will used to identify the flood warning system [4]. The system can be widely applied in all places which need timely control such as streets, stations, mining, schools, and electricity sectors and so on. The core of the system is constructed based on the microcontroller [5].

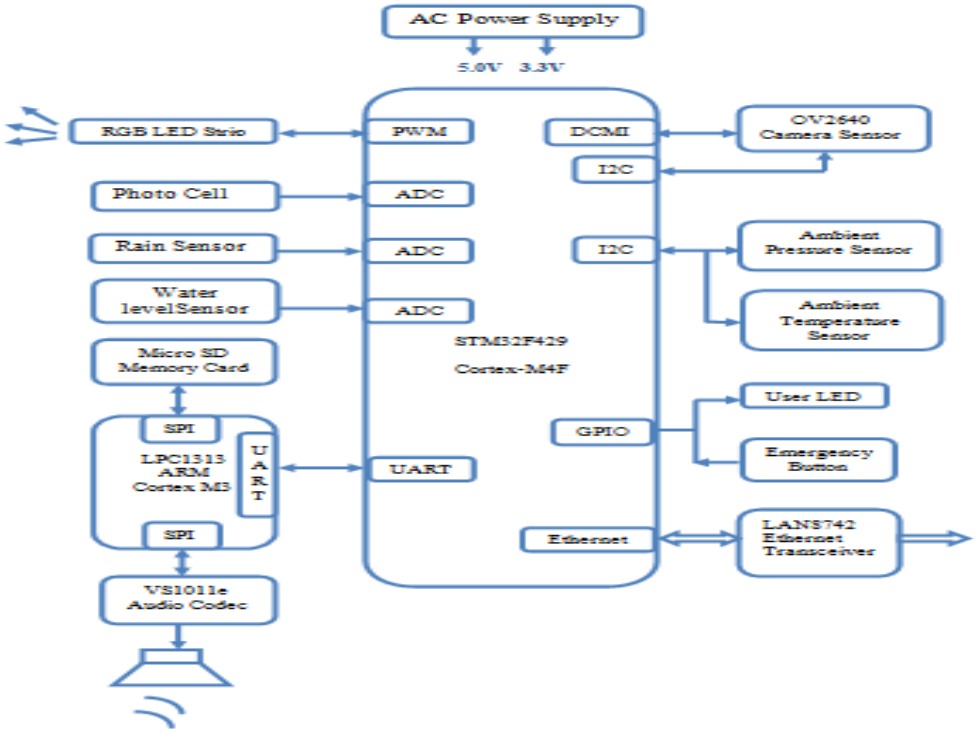

Figure 1: Hardware Module

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II. PROPOSED SYSTEM

The device has the consequent options to be enforced. Being a mobile device with restricted storage capacities, the planning ensures that image relate in attention sound recording can happen solely throughout an emergency event triggered by the user. The device supports up to 8GB of onboard memory [6-7]. Figure 1 shows that the hardware module.

Embedded net Server

The microcontroller runs an internet server that sends information to the consumer side application. Any device with a web browser like Smartphone or PC/Laptop is often used to monitor the information feed. The consumer side user is login with a singular user name and password before accessing streaming content. The net server is to hold responsible for serving the net pages, the consumer request and for maintaining the TCP/IP [8] association till the user ends the session. Web content is created with hypertext mark-up language. The device uses the LwIP open supply TCP/IP protocol stack for its web property.

Live Video Feed

The system consists of a camera detector to stream a live video feed. once request is formed the aboard microcontroller captures the JPEG pictures from the camera exploitation the inherent DCMI peripheral and starts to stream it over the net in MJPEG compression format at a suitable rate between. The image resolution is mounted at 470 x 272. The microcontroller includes a massive RAM memory space, regarding 256KB, that may be a should for this sort of application.

III. RESULTS AND DISCUSSION

Figure 2 demonstrates that the execution of street lighting system. A monitoring system in view of the embedded Internet innovation for street light is composed and actualized. Embedded system is completely in light of equipment and programming. In this proposed system relies upon ARM Microcontroller. ARM Microcontroller has an Ethernet port. Ethernet gives a quick, productive, and guide association with a switch. It's have Wi-Fi, is utilized for remote association. A reason would utilize Ethernet over Wi-Fi is to faster, more reliable connection.

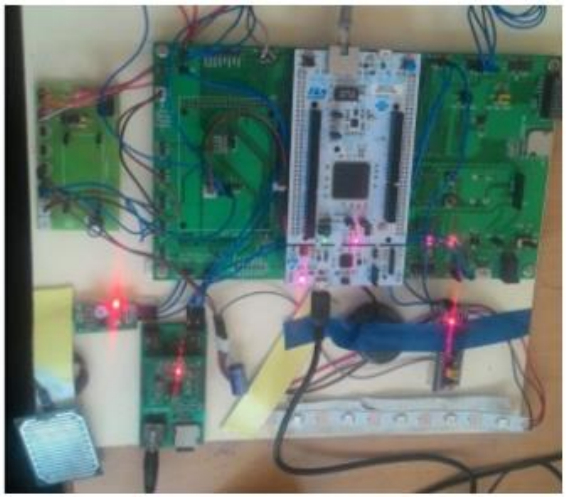

Figure 2: Hardware Implementation

In this street lighting system comprises of rain sensor, water level sensor, photocell control and RGB LED. Rain sensor used to discover the rainy time. Water level sensor is distinguishes the flood level. Photocell sensor used to control the light for instance in day time naturally street light is off and evening time the street light is consequently on. In this sensor information sends to the web server through Ethernet.

IV. CONCLUSION

This project of Intelligent Street Light System is a cost effective, flexible, scalable, eco-friendly and the safest way to save energy and it clearly undertakes the two problems that world is facing today, saving of energy and also identify the climatic changes are very efficiently. In the proposed system demonstrate the Intelligent Street lighting system is described that integrates new technologies offering ease of maintenance and energy savings. Power is very important for the world our proposed system describes the Energy saving it also tackles with the problem of power cut.

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