SURVEILLENCE ROBOT FOR HUMAN DETECTION

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Abstract- *Surveillance systems are used everywhere from to banks to military areas. A few articles regarding increasing crime rate have been notable daily, but are not able to trace out due to evidences. In such a situation, one must be with utmost care and secured with oneself, which can be provided by surveillance. In term surveillance means monitoring from a distance through the gadget's electronics such as even robot. IOT play the major role, it a platform to connect these gadgets so that clients can perform operation with gadgets residing. This intelligent security robot using IOT to check about presence of any suspicious activities. The camera and microphone fixed with robot that can give live stream. The Node MCU attached GSM module notifies about the presence of intruder as soon as PIR sensor attached to robot detects a human. All these are controlled, monitored, and supervised under LORA Technology and this system as a microcontroller and cloud computing concept.*

Keywords- IOT Authentication, Arduino ATMEGA 328, Multi Sensors, LCD Display, LORA Technology.

I. INTRODUCTION

The primary aim is to develop a high-level technology that serves technology with high coverage, and to develop a very advanced capacity to control the robots. In order to realize them, some technical improvements along with the high performances with more intelligent robot, Earlier, wired networks have control robots. In recent days, to make more user friendly, they are formed thereby making user command. We can use multiple sensors to attached with Arduino board. Operations and application of robotics controlled by user. The surveillance robot using IOT to collaborates L Track a long-range tracking system based on LoRa, emerging low power wide-range networking technology, with a single transceiver pair.

THE PROPOSED SCHEME

In this proposed system, a surveillance robot is designed using LORA device and we can monitor human lives and obstacles in some long distance. Surveillance robot is controlled by LORA transmitter and receiver. Robot can be controlled from long distance using array switch and can be sent to rescue places in replacement to the humans.

LORA

The LORA is a wireless communication technology developed to create the long-range communication in wide-area network required for machine-to-machine(M2M) and internet of things (IoT) applications. LoRa is based spectrum modulation, which has low power characteristics like FSK modulation but can be used for long- range communications.
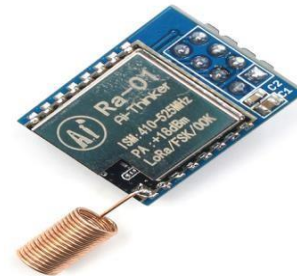

Fig 1.1 Lora Ra 02

The performance of LoRa technology in determining the efficiency of its long – range transmission at Next, future work will be performed by similar, Lora WAN development for other Tracking and Monitoring System Based on LoRa Technology for Lightweight Boats, MDPI in The robots communicate through long range wide area network (LoRa Wan) it can function at the same time and can communicate among each other successfully through the LoRaWan from low cost commercial weather stations and send them over long distances using the Existing cloud sourced LoRaWAN TTN gateways can be lever- aged to convey the gathered data.

We have tested two versions of the transponder based on the BSF32 microcontroller, The IoT system is effective to monitor the data from the SWP sensors with a long distance between local gateway Design and empirical

validation of a lorawan iot smart irrigation system Design and implementation of a LoRa based wireless   control for drip irrigation systems

ULTRASONIC SENSOR

Ultrasonic sensors are electronic devices that calculate the target's distance by emission of ultrasonic sound waves and convert those waves into electrical signals. The speed of emitted ultrasonic waves traveling speed is faster than the audible sound. Ultrasonic sensor detects the obstacles.

ARDUINO UNO

Arduino UNO is a low cost, flexible and easy to use programmable open-source microcontroller board. Arduino consists of both a physical programmable circuit board and a software or IDE part. The Arduino board is embedded with a chip and compiler that can be programmed by embedded c-language. It helps in receiving the input from the user and control the movement of robot.

INTERNET OF THINGS

The internet of things (IoT) is the network of physical devices, vehicles, buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. The IoT server is used to place the communication between the robot and operator.   The communication can be carried out sing the Arduino IDE software.

HDWiFicam

An HDWiFi enabled camera was used for this robot due to its high resolution and precision, long duration of standby power during operation. This security camera that feeds or streams its image in real time through a mobile or computer to computer network. It can be transmitting a signal using a wireless video transmitter. During usage, it transmits both audio and visual signal. This also contains SD card port which can be easily saved. Unlike an ESP camera (were the video streams only once), a hdwificam is generally connected by a Wi-Fi such as laptops or mobile phones. HdWifiCamPro is a P2P video transmission software, which supports audio, local photography, and local video recording.

LCD (Liquid Crystal Display)

LCD screen is an electronic display module and find a wide range of applications. It is a technology used for displays in notebook or and other smaller computers. Like light-emitting diode (LCD) and gas-plasma technologies, LCD allow displays to be much thinner than the cathode ray tube technology.

II. WORKING PRINCIPLE

In this method we are using Arduino UNO microcontroller which acts as the brain of the system as it controls the entire system and the programs are stored in it. Here we use 12v battery for the supply of the entire system. The robotic chase consists of a motor driver and four DC motor. Robot consist of LORA receiver in the receiver section and LORA receiver and transmitter sends signal one by one. Robot is controlled by the array switch used in the LORA transmitter side. LORA is used as the communication device. An ultrasonic sensor is used to detect the object and detection is processed in LORA receiver and the signal is transmitted Of LORA transmitter. HD WIFI camera have both the features of video and audio detection and they have features of recording and live streaming.
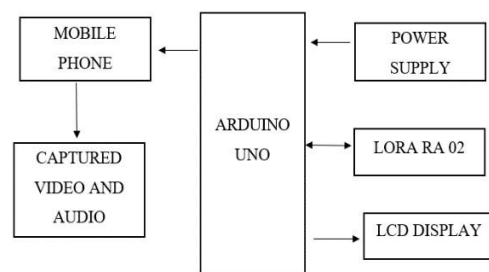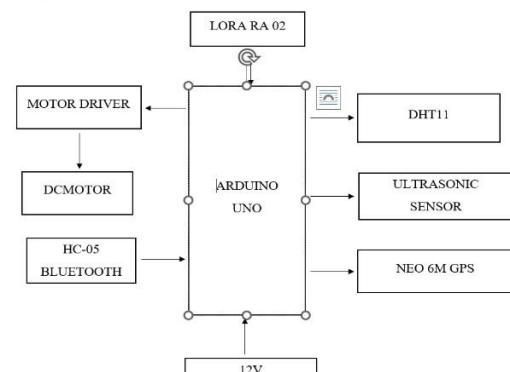
BLOCK DIGRAM

TRANSMITTER:

Fig no 1.2

Fig no 1.3

III. OUTPUT

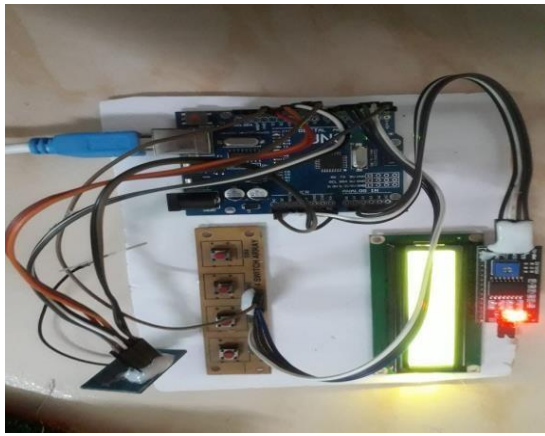These are the output which are observer our project while underworking
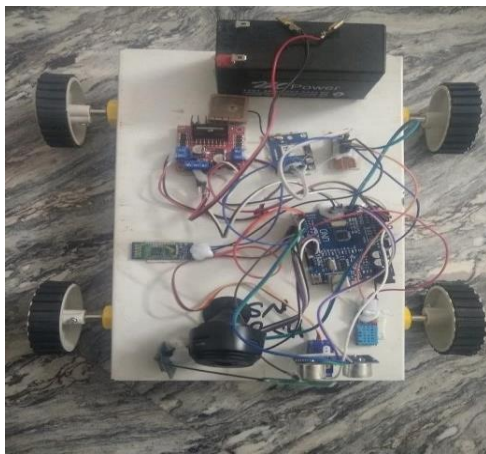
Fig no 1.4 Transmitter section

Fig no 1.5 Receiver section

Fig, shows the hardware setup of system and surveillance of the human in the suspected areas.

The device consists of HD camera in the receiver section of the robot. The robot which moves in the suspected area detects the obstacle with the help of ultrasonic sensor through the Arduino UNO microcontroller and stops the motors in which robot stops running. We can be able to watch out the live streaming using HD camera and also detects the audio of the suspected person. Temperature and humidity of the particular area is being monitored in serial monitor. Location of the robot is being traced out and shown in serial Monitor.
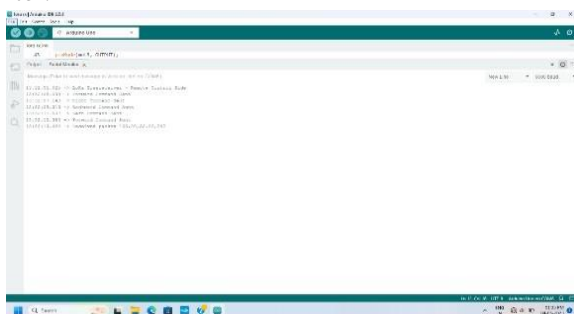

Fig no 1.6 Control of motor, Temperature, humidity, and location shown in serial monitor

The output shows the moving direction of the robot and displays temperature, humidity, and location of the respective location
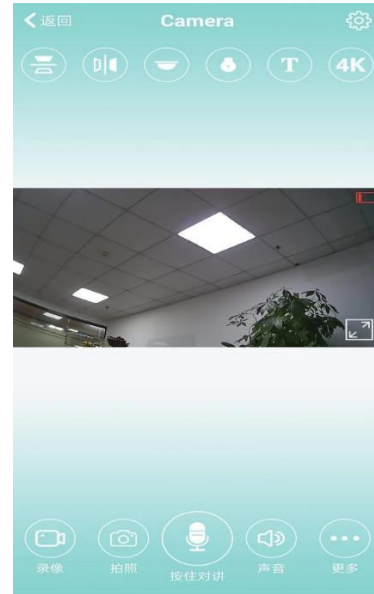

Fig no 1.7 Video and Audio output

IV.CONCLUSION

The design of the surveillance robot for human detection is to improve the use of technologies in rescue operation and in border areas to capture the suspected criminal and that can be able to capture audio. It can be controlled by using array switch. The result we have found to be effective alternative for surveillance because in rescue operation and in border areas there will be no local communication networks. We can be able to receive data in long-range using lora module. Our robot is also small and light weight so it is easy to operate into area where human access is impossible and this kind of robot also monitor suspected criminal. In fact, employing LORA communication technique and using Internet of things, we expanded the coverage and a robot setup is successfully implemented.

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