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VISION SPY ROBOT USING IOT

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ABSTRACT

A mobile autonomous robot for detection of terrorist in the army field has been developed and tested in laboratory and in field conditions. Electronic design and autonomous control system of the robot are optimized for the requirements of the operating environment, namely, in war field. The analysis of detectable physical phenomena led to a selection of necessary sensing principles. Four types of sensors for measurement of physical properties of the distributed infrastructure were integrated into the mobile platform and tested in laboratory conditions. The presented mobile inspection method provides a viable solution to the task of monitoring the war field conditions. Now a day many illegal activities like crossing borders through forest regions, planting landmines, etc. to keep an eye on such activities there is a need for some spying device that can spy on the restricted areas or some forest or territorial region where a human cannot go due to risk. In this paper, we have described a type of spy robot that is "long range spy robot with night vision camera". This system Long Range Spy Robot with Alcohol sensor and temperature, humidity sensor is very innovative as this system allows operating a robot irrespective of the distance. To drive the system, the user has to formulate a call to the phone coupled to this robot and once the call is received, the user will have to make use of the keypad to transmit data commands to the robot. The data commands will make the robot either go in forward, then backward, left, or right direction. The system makes use of a night vision-enabled spy vision-enabled help of which the user can view the area captured by this spy camera which will be mounted on this robot. The user will be able to view the area captured by this spy camera not only during the daytime but also during the night. All the areas captured by this spy camera can be viewed in a mobile application or PC.

Keywords : Internet of Things (IoT), Spy Robot with Vision Camera

INTRODUCTION

Considering the number of people engaged in mining directly, the high investment andoperational costs of mining activities, the uncertainty of various mining units, and the dangerousnature of mining operations, increasing the safety of these people while workingisanunavoidable issue. By analyzing the accidents in disaster management underground mines inIran,it can be deduced that most fatalities are related to harmful gas leakage, objects dropoff onthehead, and not using helmets by the staff. Therefore, a IoT & Vision based robot withthecapability of measuring harmful gases (regarding the type of the mine), temperature andhumiditymeasurement, and detection of altitude and atmospheric pressure. Unexpected accidentsandexisting

dangers in underground mines could provide a stressful and dangerous workplaceforworkers and operational facilities that impose considerable life and financial threats. Hazardsofworking in underground mines require particular attention to all influential factors of safetydueto the circumstances emerging from area constraints, environmental pollutants, geologycomplexities, inadequate light, etc.For spying purposes, a new version of a wirelesslyoperatedcar has been proposed. This robot is a portable espionage robot with a wireless communicationsystem. A camera, motor drivers, batteries, and two moving wheels make up the spy robot.

LITERATURE SURVEY

Rescue System for Coal Mine Workers using Different Sensors Based on WIFI and ETHERNET, In this project we are implementing location detector, safety measures for mine workers which is most essential in underground mining areas/lanes. Here we are presenting MEMS based sensors network used to monitor the environment parameters of underground mine area and sends all sensed parameters/data to NodeMCU controller.

- NodeMCU controller is used to build a fully automated measuring system with reliability, high accuracy and smooth control. Upon detecting critical conditions/issues alert system starts and the same information is transmitted/passed to remote location by initiating modules based on WIFI and ETHERNET communication Methods.
- The observed changes in the parameters will also be displayed in pc which makes easier for the underground control center to monitor and to take necessary immediate action to avoid damages and alerts through a mobile message despite the best efforts of operators, accidents on mine sites remain an industry wide problem.
- The reasons for accidents are diverse. Building on experience in the development of advanced assistance systems including: Adaptive Cruise Control; Automatic Emergency Button; Worker Protection; Lane Departure Warning Hazard gas detecting sensor in coal mine, Rescue operation in coal mine is extremely dangerous due to several factors.
- It is particularly very harmful for the rescuers to get into the coal mine tunnel in disaster without the prior knowledge of environment because the subsequent explosions may likely to occur at any time it is therefore essential to detect the explosive environment details such as toxic gases, high temperatures and also to perform a visual inspection of miners, trapped in collapsed tunnel through a wireless camera.

These details will help the rescuers to make a preparatory plan and to equip themselves for carrying the rescue operation defensively. This project designs a Modified Helmet for coal mines. It is composed of a mechanism to bear the rest of the subsystems and also to assist the location, a control system to control and a communication system to transfer the environment data acquired through the WIFI and other sensors.

PROBLEM STATEMENT

Traditional surveillance systems are often limited by their fixed positions and narrow field of view, making them less effective in detecting suspicious activities in large and complex environments. Furthermore, traditional surveillance systems lack the ability to recognize and track objects, which can result in false alarms or missed detections .To address these issues, an Android controlled vision-based spy robot using IoT is proposed as a solution. The robot will be equipped with a camera and computer vision algorithms to recognize and track objects in its environment, enabling it to detect suspicious activities and alert the user. The robot will also be connected to the IoT platform, allowing for remote control and monitoring of the robot from any where with an

internet connection.The proposed solution aims to provide an efficient, low-cost, and remotely controllable surveillance system that can be customized to meet specific requirements and adapted for different scenarios. The Android application will provide an intuitive and user-friendly interface for controlling and monitoring the robot, making it accessible to a wider range of users. The proposed solution can be used for a wide range of applications such as security and surveillance, exploration, and environmental monitoring.

PROPOSED METHODOLOGY

The architecture for improving safety in the mining industry encompasses a multifaceted approach involving technology integration, monitoring, and response mechanisms. At its core, the architecture consists of three interconnected layers: Data Collection and Monitoring, Data Processing and Analysis, and Actionable Insights and Response.

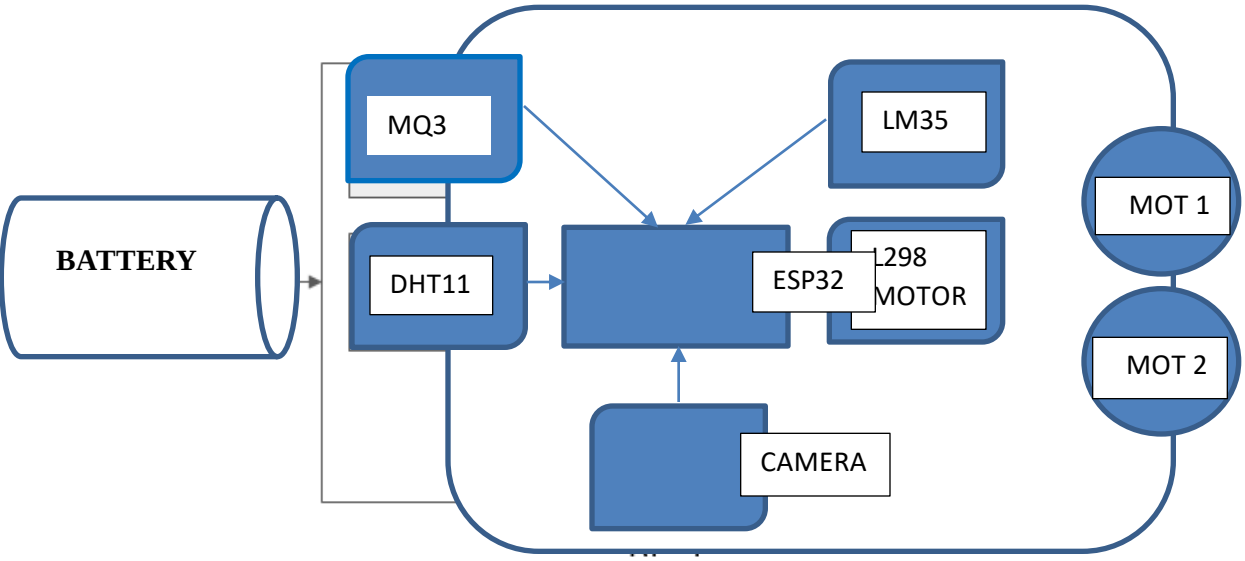
DATA COLLECTION AND MONITORING:

- **IoT Sensors:** Deploy a network of IoT sensors to monitor environmental parameters, including harmful gasses, temperature, humidity, and atmospheric pressure. These sensors are strategically placed throughout the mine, both in open-pit and underground sections, to capture real-time data.
- **Vision-Based Robots:** Utilize autonomous vision-based robots equipped with cameras and environmental sensors to navigate underground areas, collect data, and conduct inspections in hard-to-reach or hazardous zones.

DATA PROCESSING AND ANALYSIS:

- **Data Transmission:** Wireless data transmission hardware securely transmits data from sensors and robots to a centralized server or cloud-based platform for processing.
- **Centralized Data Hub:** The collected data is stored and processed in a centralized data hub, where it is subject to real-time analysis. Advanced analytics algorithms identify anomalies and potential safety hazards.

FLOW CHART/ DATA FLOW DIAGRAM / USE CASE DIAGRAM



FUTURE SCOPE

In future we plan to increase the accuracy of our proposed model and planning to increase the cameras pixel and range . we plan to increase the speed of the robot and by adding more higher range sensors can increase the accuracy of the robot.

CONCLUSION

In conclusion, the vision-based undercover agent using IoT project demonstrates the successful development of a low-cost, remotely controllable robot that is equipped with a vision system. By leveraging the capabilities of IoT and computer vision technologies, the robot is capable of recognizing and tracking objects in its environment and transmitting live video feeds to the user's mobile device. The Android application provides a userfriendly interface that allows users to remotely control the robot's movements, monitor its surroundings, and receive real-time alerts in case of any unusual activity .

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