Campus Surviellance And Assistance Robot Using Esp866 Wi-Fi Module

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ABSTRACT

The main goal of this project is to develop a highly adaptable robot that can perform multiple tasks, including carrying heavy objects and conducting remote surveillance in difficult-to-reach areas. The live video stream provided by the robot enables users to receive real-time information, making it useful for a variety of applications. Overall, this project aims to create a highly functional and beneficial robot that can be controlled remotely, carry significant loads, and provide real-time information through its live video stream. The Campus Surveillance Assistance Robot is an innovative solution that utilizes various technologies such as the ESP8266 WiFi module, solar panels, wiper motor, ultrasonic sensors, and Arduino Nano to enhance campus safety and security. This robot is designed to operate autonomously and perform tasks such as monitoring campus premises, detecting intruders, and sending alerts to security personnel. The integration of the ESP8266 WiFi module enables the robot to connect to the internet and transmit data, while the solar panels provide a sustainable power source. The wiper motor is used to clear any debris or obstructions on the robot's path, ensuring smooth navigation. The ultrasonic sensors detect any obstacles in the robot's path and allow it to avoid collisions. The Arduino Nano serves as the brain of the robot, controlling its various functions and ensuring smooth operation. Overall, the Campus Surveillance Assistance Robot offers a reliable and effective solution for enhancing campus safety and security.

KEYWORDS: Arduino, WI-Fi

1. INTRODUCTION

Campus Surveillance and Assistance Robot using ESP8266 WiFi module is a state-of- the-art technology designed to enhance security measures in educational institutions. This innovative robot is equipped with an ESP8266 WiFi module, which enables it to connect to the internet and provide real-time surveillance and assistance to students, staff, and visitors. The robot is equipped with a high-definition camera that streams live video footage to a monitoring center, where security personnel can monitor and respond to any suspicious activity. Additionally, the robot is programmed to provide assistance to students and staff members, such as delivering documents, carrying books, and guiding visitors to their desired locations. This technology is an innovative solution that can be implemented in universities, colleges, and schools to improve security measures, increase efficiency, and provide assistance to students and staff. With the Campus Surveillance and Assistance Robot using ESP8266 WiFi module,

educational institutions can ensure a safe and secure environment for everyone.

2. PROBLEM FORMULATION

Now-a-days tracing and attacking enemies at different areas are very much difficult for the soldiers. There is always a chance for loss of lives of the soldiers during war and emergency situations. With the aim of developing a high technology that serves high speed technology, advanced capacity to control the robots and to device new methods of control theory. The design of our project encourages developing a robotic vehicle based on Wi-Fi technology for the remote operation connected with the wireless camera mounted on the robot for monitoring purpose. The robot is embedded with Node mcu esp8266 microcontroller for desired operation and is generally used for monitoring purposes. The transmitting module on PC consist of the push buttons that send the commands to the receiving module for controlling the movement of robot either to right, left, forward, backward. In the receiving module of the robot two motors are interfaced with the esp8266 microcontroller to control its movement via motor driver IC. The Wi-Fi control has a range upto 400m that transmits the signals to the receiver

3. OBJECTVIES OF THE PROPOSED WORK

To design and develop a Campus Surveillance and Assistance Robot using ESP8266 WiFi module that is capable of providing real-time surveillance and assistance to students, staff, and visitors in educational institutions. To evaluate the effectiveness and efficiency of the Campus Surveillance and Assistance Robot in enhancing security measures, increasing efficiency, and providing assistance to students and staff. To identify and address any potential ethical, legal, and privacy concerns related to the use of the Campus Surveillance and Assistance Robot in educational institutions. To explore and propose potential improvements and future directions for the design and implementation of Campus Surveillance and Assistance Robots using ESP8266 WiFi module in educational institutions. To contribute to the existing literature on the topic of Campus Surveillance and Assistance Robots using ESP8266 WiFi module and provide insights that can inform future research and development in this area.
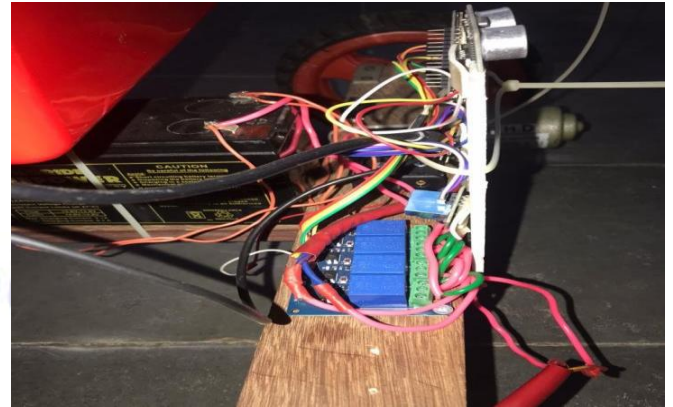
3. RESULTS AND DISCUSSION
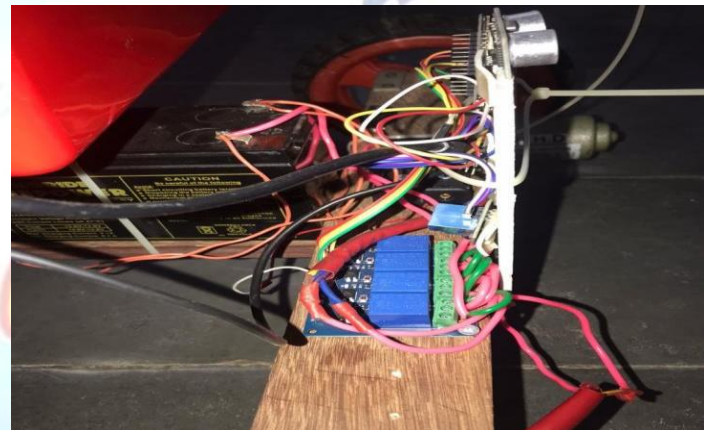

Fig 1 Hardware Model

Fig :2 Hardware Model Connection

Relay module is connected to both wiper motors and battery, Ultrasonic sensors are connected the arduino and relay, Node mcu is connected to the relay module, solar is connected to the Battery. The output results for your project will depend on the specific goals and objectives you have set for it. Here are some possible output results:A functioning robot: The first output result for your project will be a functioning robot that can carry a significant amount of weight using wiper motors from a car. This will involve designing and building the chassis, integrating the wiper motors and motor controller, and programming the NodeMCU module for WiFi control. WiFi and Android integration: The second output result for your project will be the integration of WiFi and an Android phone for remote control and live video streaming. This will involve programming the NodeMCU module for WiFi connectivity and developing an Android app for controlling the robot and viewing the live video stream.Weight carrying capacity test: Once the robot is built, you will need to test its weight carrying capacity. This will involve adding weights to the robot and

measuring the maximum weight it can carry without malfunctioning. Control range and video streaming range test: You will also need to test the control range and video streaming range of your robot. This will involve testing the WiFi and NodeMCU module range in different environments and measuring the quality and stability of the live video stream. Optimization and improvements: Finally, you may need to optimize and improve your robot based on the test results and feedback. This may involve making adjustments to the design, adding new features, or improving the performance and stability of the robot.

4. CONCLUSION

The implementation of a campus surveillance automatic robot using the ESP8266 WiFi module has several benefits, such as providing a more efficient and cost-effective way to monitor campus security. With the robot's ability to move around the campus, it can cover more ground than traditional surveillance systems.The ESP8266 WiFi module enables the robot to connect to the internet and transmit live video feeds to the central control room, allowing security personnel to monitor the campus in real-time. The robot can also be programmed to detect any unusual activity or unauthorized access, triggering an alarm to alert the security team. However, it is important to consider the potential privacy concerns and ethical implications of such a system. It is crucial to ensure that the system is not used to invade the privacy of students or staff, and that any data collected is protected and used only for security purposes.Overall, a campus surveillance automatic robot using the ESP8266 WiFi module has the potential to enhance campus security and safety, but careful planning and implementation are necessary to ensure it is used in a responsible and ethical manner

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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