An Integrated Monitoring And Alerting Design Structure of Night Vision Patrol Robotic System

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Abstract- *Self-propelled patrolling vehicles can patrol periodically in the designed area to ensure the safety like men do. The proposed vehicle cannot only save manpower, but also ensure the performance without mistakes caused by man. It is different from the traditional patrolling system which is limited by the manpower and the fixed camera positions. To improve such situation, this system proposes a self-propelled patrolling vehicle which can move automatically to a wider range and record the monitored live image or video by WEBCAM within a predefined patrolling route. Besides, the user can use the mobile device or website to connect to the vehicle at anytime and anywhere. This system contains a sensory network and night vision camera mounted on the robot which can capture the images, record it and then it will send it to the control station. With this system it has the ability to transmit real time video and audio signal to the control station. The sensor network is used to detect the unethical activity of human such as violence, alcohol usage in public place, fire and smoke. The emergency alert is fixed in this system and it produces high siren sound when it detects any unethical activities. Themotion of the robotic system is based on artificial intelligence. It can be controlled by self. This type of project can be used in the night time as well as in day time. It consists of a mic and a camera which will record a high quality video and send it to control station. The system will mainly be used to detect different activities in the outside area and report it to the control station. Many of the police departments now are using the different types of robots for performing different dangerous activities.*

Keywords- night vision patrol robot, artificial intelligence, sensor network.

I. INTRODUCTION

In the past several years, evident advances in mobile robotics have occurred and roboticists have increasingly turned to Artificial Intelligence (AI) techniques to endow robots with perception, reasoning, planning and learning capabilities. Even though single agent solutions are still one step ahead of general multi-agent solutions, with the robustness inherited by distributed AI, multi-agent systems have been increasingly proposed, providing tools for the development of complex systems and mechanisms for coordination of the behavior of independent agents. Considerable scientific work presented recently span across the boundaries of Robotics and AI, and in the particular case of multi-robot systems (MRS), these works are usually verified through multi-agent simulations or controlled test scenarios.

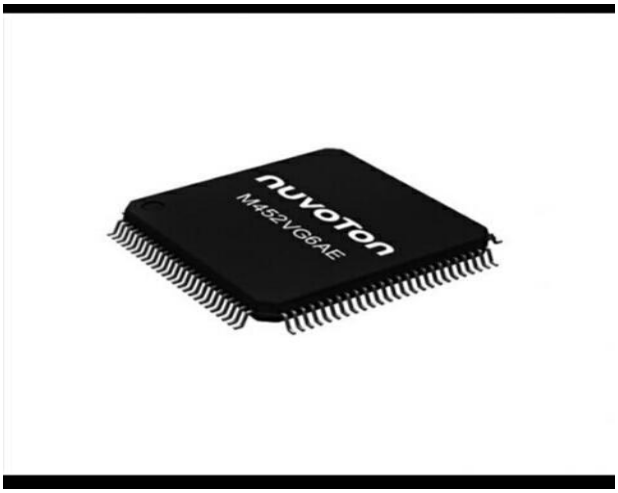

Fig: Nuvoton microcontroller

In this context, there have been several advances in robot patrolling. Security applications are a fundamental task with unquestionable impact on society. Combining progress witnessed at the behavior-level with the technological evolution observed in the last decades, it becomes clear that robot assistance can be a valuable resource in surveillance missions. In this system, we propose a distributed robot solution for outdoor patrol. Robots are mobile and have the ability to travel in the field, collect environmental samples, act or trigger remote alarm systems and inspect places that can be hard for static cameras to capture. These capabilities free human operators from executing tedious, repetitive or monotonous tasks, e.g. mine clearing or patrolling in hazardous environments, enabling them to be occupied in nobler tasks like monitoring the system from a safer location and taking advantage of robots' expendability.

II. EXISTING SYSTEM

The robot is playing important role in daily life. It can be used for security purpose,to reduce the time ofwork and increases the work efficiency. Thesecurity of roadarea, home, office and building is important aspect of human life. The paper gives an idea of improving the patrolling ability of police in a local area. This system contains a night vision camera mounted on the robot which can capture the images, record it and then it will send it to the control station. With this system it has the ability to transmit real time video and audio signal to the control station. This type of project can be used in the night time as well as in day time. It consists of a mic and a camera which will record a high quality video and send it to control station. The system will mainly be used to detect different activities in the outside area and report it to the control station. Many of the police departments now are using the different types of robots for performing different dangerous activities.

Problem identifications

- The system is designed by using raspberry pi controller which leads the high power consumption. So that need large power rating energy source.
- Designing cost is high

III. PROPOSED SYSTEM

The proposed system design is based on NUVOTON controller. With this system it has the ability to transmit real time video and audio signal to the control station. The sensor network is used to detect the unethical activity of human such as violence, alcohol usage in public place, fire and smoke. The emergency alert is fixed in this system and it produces high siren sound when it detects any unethical activities. The motion of the robotic system is based on artificial intelligence. It can be controlled by self. This type of project can be used in the night time as well as in day time. It consists of a mic and a camera which willrecord a high quality video and send it to control station.

IV. BLOCK DIAGRAM

PARTROL UNIT

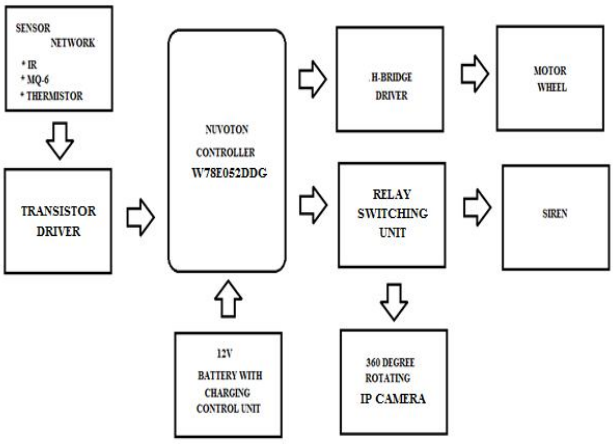

Fig: Block diagram of the proposed System

HARDWARE REQUIREMENTS

- IR sensor module
- MQ-6 sensor (GAS / SMOKE / ALCOHOL)
- Thermistor
- Wireless camera
- 12V DC motors
- 12V Battery
- NUVOTON microcontroller
- Voltage regulator (12V /5V)
- H-bridge driver (IC L293D)
- Wheels
- TV
- RF Tuner

SOFTWARE REQUIREMENTS

- Embedded ‘C’
- KEIL
- ISP (In Serial Programmer)

V. CONCLUSION

According to this system, whole area surveillance is done using the night vision camera with sensory network and also automatic system. This system is an automatic smart way for night vision patrolling.

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