SENIOR PROJECT IDEA

Project Title: Security guard mobile robot for security guard assistance and Web-Application for monitoring

Members of project :

1. KITTITAT SONGSAKSEREE 64070503404
2. WORADON SAMPHANPHAISARN 64070503447
3. PHITHATSANAN LERTTHANASIRIWAT 64070503478

Advisor : Dr. PRAPONG PRECHAPRAPRANWONG

Co-Advisor : Dr. KHARITTHA JANGSAMSRI

Idea of Project & Background:

Our team, driven by an interest in robotics, image processing, and security technology, has identified several challenges in traditional security operations. Typically, security personnel are required to both patrol various areas and monitor CCTV footage simultaneously. This dual responsibility can lead to fatigue, inefficiency, and an increased likelihood of errors. For instance, a security guard might miss critical incidents while patrolling, and manually reviewing CCTV footage is time-consuming and prone to human error. Additionally, some areas may be difficult or dangerous to access, posing a risk to personnel and leaving gaps in security coverage. To address these issues, we propose the development of a mobile security robot that assists security personnel by patrolling and monitoring areas, coupled with a Web-Application for real-time monitoring and control of the robot. The robot will leverage advanced image processing techniques to detect and identify objects or individuals, allowing for automated threat detection and enhancing the overall security response.

Objective:

1. To develop a mobile robot capable of assisting security personnel in patrolling and monitoring areas.

2. To implement image processing algorithms for detecting unauthorized individuals, suspicious objects, or specific security threats in real-time.

3. To create a Web-Application that allows for real-time monitoring and control of the robot remotely.

4. To enhance security by reducing risks and improving coverage in areas that are difficult or dangerous to access.

Scope of Work:

1. Design and develop a mobile robot equipped with cameras, sensors, and image processing capabilities to patrol and monitor areas.

2. Develop and integrate image processing algorithms that can detect and identify unauthorized individuals, suspicious objects, or predefined security threats.

3. Develop a Web-Application that connects with the robot, providing real-time video feeds, object detection alerts, and control features.

4. Conduct testing of the robot and Web-Application in real-world scenarios to ensure reliability, accuracy, and effectiveness.

5. Integrate the system to allow seamless operation between the robot and Web-Application, ensuring robust communication and data transmission.

Expected Result:

1. A functional mobile robot capable of autonomously patrolling and monitoring designated areas, with image processing capabilities to detect and identify potential security threats.

2. A Web-Application that allows security personnel to monitor and control the robot remotely, with real-time video streaming and automated threat detection alerts.

3. Improved security efficiency by minimizing the need for manual patrols, reducing the risk of human error, and providing automated threat detection.

4. Enhanced safety and security in areas that are difficult or dangerous for human personnel to access, with a proactive approach to identifying and responding to potential threats.

(Dr. Prapong Prechaprapranwong)