

Military Surveillance Robot with Image Processing

Asst. Prof. Mahendrasing A.Gurunasingani*, Ms. Shravani Dinesh Vijapure¹,
Ms. Mayuri Rajendra Chandure², Ms. Tejaswini Chandu Warghat³, Ms. Sakshi Gajanan Gandhe⁴,
Mr. Amit Prabhakar Kale⁵, Mr. Aves Baig Wazir Baig⁶

Guide, Department of Electrical Engineering

Students, Final Year Department of Electrical Engineering

R.V. Parankar College of Engineering and Technology, Arvi, Maharashtra, India

mahendra141286@rediffmail.com, ijapureshravani@gmail.com, mayurichandure413@gmail.com,
varghtsavita@gmail.com, gandhesakshi4@gmail.com, kaleamit578@gmail.com, avesbaig980@gmail.com

Abstract: *Ensuring security in hostile and high-risk environments is a critical requirement in modern military operations. Traditional surveillance approaches often depend on human patrol teams or stationary monitoring equipment, which can expose personnel to dangerous conditions and limit the effectiveness of surveillance coverage. Advances in robotics, embedded electronics, and computer vision have enabled the development of intelligent robotic platforms capable of performing monitoring tasks remotely.*

This study presents the design and development of a mobile military surveillance robot integrated with image processing capabilities. The proposed robotic system is designed to perform real-time monitoring of sensitive areas, detect suspicious movements, and identify possible landmines in hazardous zones. A camera mounted on the robotic platform captures live video from the surrounding environment and transmits the data to a remote monitoring station using wireless communication. Image processing techniques are applied to analyze the captured video frames for detecting objects, movement patterns, and unusual activities.

By integrating mobility, sensing technologies, and automated visual analysis, the system improves situational awareness in dangerous environments while minimizing the need for direct human involvement. The proposed solution offers an effective and reliable technological approach for surveillance tasks in modern defense applications.

Keywords: Military Surveillance, Image Processing, Mobile Robot, Landmine Detection, Wireless Communication, Security Systems

