

Level-4 Autonomous Robot for Late-Night Patrolling, Crime Monitoring, and Live Streaming

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Abstract

This paper presents a Level 4 autonomous robotic system for late-night patrolling, crime surveillance, and live video streaming, integrating advanced technologies like LIDAR for spatial tracking, encoder motors for precise movement, and a 360-degree rotational camera for real-time monitoring. Utilizing ROS 2, SLAM, and Gazebo, the system creates accurate virtual environments for navigation in complex areas. It employs an LSTM model trained on the UCF Crime Dataset for detecting suspicious activities and YOLO for real-time weapon detection. Upon detecting threats, the system sends immediate alerts with GPS. Experimental results validate its effectiveness, demonstrating its potential as a scalable and reliable automated security solution.

Keywords

Autonomous robotics, LSTM, crime surveillance, ROS 2, SLAM, UCF Crime Dataset, suspicious activity detection.

