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Wireless Remote Controlled Multi-Purpose Robot using Raspberry PI

Sakshi Gandhi[1], Prof. P. Y. Pawar[2], Prof.D. R. Anekar[3], Pratham Porwal[4], Rahul Pavaskar[5], Shreya Sapkal[6].
Sinhgad Academy of Engineering, Pune, India[1,2,3,4,5,6]
Savitribai Phule Pune University, Pune, India.
sakshigandhi03.sae.it@gmail.com,pypawar.sae@sinhgad.edu,
dranekar.sae@sinhgad.edu,prathamporwal.sae.it@gmail.com,
rahulpavaskar04.sae.it@gmail.com, shreyasapkal.sae.it@gmail.com.

Abstract: *Over the past five decades, robotics and associated technologies have evolved into indispensable components across numerous industries, particularly in advanced manufacturing. Moreover, their application has extended beyond production-centric domains to encompass pivotal roles in military and law enforcement sectors, owing to advancements in sophistication, reliability, and compactness. This paper proposes the implementation of a real-time object detection system capable of precisely identifying and locating recognized objects, presenting a significant and practical advancement. Integrating various modules such as GSM and GPS with a Raspberry Pi, along with an array of sensors including metal and flame sensors, an L293 Motor driver, HC-SR04 Ultrasonic sensor, and HC-05 Bluetooth, this system facilitates seamless recognition and localization of objects in real-time. The Bluetooth connectivity feature enables remote control of the device, while a built-in camera captures images of unidentified individuals, thereby enhancing its surveillance capabilities. The incorporation of a motor driver ensures secure and controlled movement of the robot, while the ultrasonic sensor detects obstacles within its proximity. Additionally, the metal sensor swiftly identifies metallic objects, relaying their locations to the administrator, whereas the flame sensor promptly detects fires, enabling the system to dispatch location data for immediate response. This holistic approach renders the proposed system a versatile tool applicable across a spectrum of scenarios, ranging from security and surveillance operations to emergency response initiatives.*

Keywords: Raspberry Pi, Buzzer, Metal Sensor, Flame Sensor, GSM, GPS, L293 Motor driver, HC-SR04 Ultrasonic sensor, HC-05 Bluetooth, Camera.

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