

Gestobot: Smartphone and Gesture Controlled Robotic System

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Abstract: *This paper presents the development of GESTOBOT, a smartphone and gesture-controlled robotic system designed to provide an intuitive and wireless human robot interaction platform. The system integrates a robotic arm with a mobile base, enabling both object manipulation and directional movement within a single framework. Hand gestures are captured using flex sensors and inertial sensors such as accelerometers and gyroscopes embedded in a wearable glove or smartphone interface. The acquired signals are processed and transmitted wirelessly via Bluetooth or RF communication to a microcontroller-based receiver mounted on the robot.*

Upon reception, the control unit interprets the signals and drives DC motors and servo motors through an H-bridge motor driver to execute the desired actions. The mobile platform performs movements such as forward, backward, left, right, and stop, while the robotic arm replicates finger motions for grasping and handling objects. The proposed system eliminates conventional joystick-based control, enhancing portability, flexibility, and user convenience. This approach demonstrates significant potential for applications in surveillance, hazardous environment operations, assistive systems, and educational robotics..

Keywords: Gesture-controlled Robotics, Smartphone-Based Control System, Assistive Device, Flex Sensor, Wireless Communication

