

# Arduino-Based Smart Wheelchair with Voice and Gesture Control using Mobile Phone

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**Abstract:** *This project presents an Arduino-based smart wheelchair controlled via voice and gesture inputs from a mobile device, designed to assist individuals with mobility impairments. The system integrates an Android application that sends commands to the wheelchair via Bluetooth, allowing users to control movement through voice commands and gesture-based tilt controls. Depending on the direction of the acceleration or voice command like LEFT, RIGHT, FORWARD, BACKWARD, STOP and*

*EMERGENCY the wheel chair directions can be changed. This can be controlled by using a microcontroller.*

*An IR sensor ensures safety by detecting obstacles and stopping the wheelchair automatically, while an emergency button triggers a siren to alert nearby individuals in distress. The prototype demonstrates an innovative, cost-effective, and accessible solution, improving indoor mobility while minimizing reliance on physical controls. By leveraging smartphone integration, this system enhances user convenience and adaptability in real-world scenarios.*

**Keywords:** Arduino UNO, Tilt motion, Voice Commands, HC-05

