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Arduino Robot Car Controlled via Android

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Abstract : This paper elaborates on the comprehensive design, development, and evaluation of an Arduino-powered robot car operated through an Android-based application. The system is built upon an Arduino UNO microcontroller, leveraging Bluetooth technology to facilitate seamless communication between the robot and the Android control interface. The primary objective of the project is to provide users with an intuitive and interactive means to control autonomous systems while ensuring simplicity, cost-efficiency, and reliability. The architecture of the system encompasses hardware and software integration, where the microcontroller acts as the central processing unit, handling signals received via Bluetooth and translating them into precise motor commands. The Android application serves as a user-friendly interface, enabling real-time control of the robot's movement and functionality. This paper delves into the technical aspects of system architecture, including the hardware components, wiring schematics, and Bluetooth module integration. Additionally, it highlights the software development process, emphasizing the programming logic, algorithm design, and debugging techniques employed. Testing and validation phases are thoroughly documented, showcasing the system's performance under various conditions, including speed, maneuverability, and Bluetooth signal range. The results confirm the project's success in achieving its goals, offering a robust and accessible solution for educational and practical applications in robotics.

Keywords : Arduino Robot, car, microcontroller, Bluetooth communication
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