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Smart Hybrid Electrical Vehicle Charging Station and App Controllation Bus

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Abstract: *This project presents the design and development of a Smart Hybrid Electric Vehicle (HEV) system integrated with an intelligent charging station and app-based control for public transportation, specifically focusing on buses. The hybrid electric vehicle combines the advantages of both internal combustion engines and electric motors to offer improved fuel efficiency, lower emissions, and smoother performance. By utilizing lithium-ion batteries as the primary energy storage component, the system supports both plug-in charging and renewable energy sources, promoting sustainability and reducing reliance on fossil fuels. The app-controlled bus system integrates advanced features such as automatic braking, real-time speed adjustment, and obstacle detection through ultrasonic sensors, thereby enhancing passenger safety and driving efficiency. The implementation of smart grid technology allows for dynamic management of power generation, distribution, and consumption, ensuring optimal energy use across the system. Additionally, the mobile application provides users and operators with intuitive control over various vehicle functions, contributing to smarter urban mobility. The proposed solution aims to offer a cost-effective, eco-friendly alternative for public transportation while aligning with global efforts to combat climate change and encourage the adoption of green technologies.*

Keywords: Smart Hybrid Electric Vehicle, App-Controlled Bus, Smart Charging Station, Renewable Energy Integration

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