

Design and Development of Electric Vehicle Charging Station with Solar Power

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Abstract: *Electric vehicles (EVs) are gaining significant traction as a viable and eco-friendly substitute to traditional gas-powered vehicles. These vehicles rely on charging their batteries to operate proficiently. While EV charging has conventionally been contingent on the electrical grid, the emergence of solar-powered chargers presents a fascinating opportunity. Solar chargers harness clean and renewable electricity, aligning with the pollution-free nature of electric cars and yielding positive environmental outcomes. In this research paper, we propose the design of a solar-powered EV charging station that leverages solar energy to charge EVs. To optimize the utilization of solar power while ensuring similar battery levels across all vehicles, we map out a Linear Programming approach for charging EVs. We evaluate the performance of our algorithm using both real-world and synthetically derived datasets, showcasing its ability to equitably distribute the available electric charge among EVs across different seasons with varying demand profiles.*

Keywords: EV, Battery Charging, Arduino, Wi-Fi Controller, IoT, Solar.

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