

ABSTRACT

In response to dwindling fossil fuel reserves, there's been a global shift towards sustainable green energy solutions. The rapid progress of Electric Vehicle (EV) technology, alongside decreasing component costs, is fueling the rising popularity of EVs as a more environmentally friendly alternative to traditional vehicles. This study introduces an innovative approach where the State of Charge (SoC) of EV batteries is continuously displayed, and access to the nearest charging stations is readily available on the device screen. The proposed system goes a step further by directing EV drivers to a slot booking website from a curated list of nearby charging stations with the help of distributed computing, simplifying the process of reserving a charging slot. With the increasing commercial viability of EVs, there's a pressing need for an efficient slot booking system to reduce the time involved in charging and cater to the growing demand for more charging stations. The model presented for the booking system aims not only to improve efficiency but also to provide a cost-effective solution, addressing the changing needs of the expanding electric vehicle ecosystem. Additionally, the integration of real-time traffic data ensures optimal route planning to charge stations, further enhancing the user experience. This approach also includes predictive maintenance alerts for charging stations to minimize downtime and improve service reliability. By leveraging advanced algorithms, the system can dynamically allocate resources to balance the load across multiple charging stations, reducing wait times and maximize throughput.