EV Charge: A Novel Approach to EV Charging Infrastructure

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In a world where the shift to electric vehicles is growing exponentially, reliable charging infrastructure is vital to sustain current and future demand. Current charging infrastructure is unreliable for many reasons, a large one being the unreliability of network connectivity required to authenticate payments and initiate charges. Unreliable charging networks raise several concerns: they risk stranding EV drivers, waste users' time and energy locating chargers, discourage EV adoption, and increase fossil-fuel reliance. EV Charge was created to address this issue by shifting payment from EV chargers to mobile devices. The prototype consists of an app on which users enter their vehicle's charging status and pay for a charge. After a transaction, the user connects to the charger via Bluetooth. The user then initiates a simulated charge on an Arduino wired to an LED circuit from the app. Research suggests EV Charge can eliminate up to 55% of charger failures caused by network connection issues. EV Charge also brings improvements to the EV charging app market. EV Charge's streamlined design consolidates numerous popular EV charging apps into a single, easy-to-use platform, offering users seamless access to various charging networks in one place. With EV Charge, manufacturers can save significant costs since EV Charge eliminates certain components in a charger, e.g., touchscreens and payment terminals, while also increasing revenue given that chargers will have less downtime. Estimates suggest that if implemented in past level two chargers, manufacturers could have saved $64,000,000 to $103,000,000 and almost $36,000,000 for level three chargers.

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