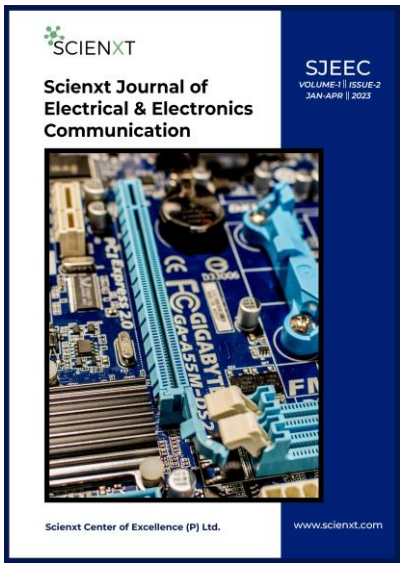

A-I Enable V2G Power Management For Sustainable Feature

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Abstract:

The integration of Artificial Intelligence (A-I) into Vehicle-to-Grid (V2G) power management systems heralds a transformative approach to achieving sustainability in the energy sector. This paradigm shift encompasses three pivotal components: broadcasting, scheduling, and dynamic pricing. A-I-enabled broadcasting facilitates real-time communication between electric vehicles (EVs) and the grid, enabling precise load forecasting, grid stability assessment, and responsive demand management. Scheduling algorithms driven by A-I optimize the charging and discharging schedules of EVs within the V2G network, aligning them with grid capacity and renewable energy availability, thus minimizing costs and environmental impact. Dynamic pricing models, empowered by A-I, adapt fluidly to grid conditions and demand patterns, encouraging consumers to charge during off-peak hours or contribute excess energy back to the grid during peak demand, thereby fostering a more sustainable and economically efficient energy ecosystem. In combination, A-I- driven features hold the promise of a greener, more resilient energy future, but they also require careful consideration of regulatory frameworks and cybersecurity to ensure their successful integration.

Keywords:

Artificial-Intelligence, V2G, Dynamic Pricing, Broadcasting, Scheduling