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Footsteps Power Generation using Piezo Electric Sensor with IoT Based

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Abstract: *Footstep power generation using piezoelectric sensors with IoT integration is an innovative approach to harnessing renewable energy from human motion. This system utilizes piezoelectric materials, which generate electrical energy when subjected to mechanical stress, such as footsteps on a specially designed platform. The generated energy can be stored in batteries or directly utilized for low-power applications like LED lighting, sensors, or IoT-based monitoring systems. The integration of IoT technology enables real-time data collection, monitoring, and analysis of energy generation, ensuring efficient utilization and predictive maintenance. This system finds applications in high-footfall areas such as railway stations, shopping malls, airports, and pedestrian pathways, where continuous movement can contribute to sustainable energy solutions. By leveraging smart monitoring through IoT, the efficiency of power generation can be optimized, and performance data can be analyzed for future improvements. The project not only promotes clean energy but also demonstrates an innovative step toward smart city development and sustainable energy solutions, making it a viable alternative for energy harvesting in urban environments.*

Keywords: Piezoelectric sensor, Footstep power generation, IoT monitoring, Renewable energy, Smart city solutions

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