INTRODUCTION OF PROJECT

Energy harvesting from kinetic energy and momentum is an innovative approach to generating electricity using **piezoelectric, triboelectric, and electromagnetic** principles. These methods convert mechanical motion—such as **vibrations, impacts, and rotations**—into electrical energy, which can be stored or directly utilized for various applications.

The system integrates **piezoelectric sensors, triboelectric nanogenerators, and electromagnetic induction coils** to efficiently capture energy from human motion. This harvested energy is then processed through an **energy management circuit** and stored in a **supercapacitor or rechargeable battery**, ensuring continuous power availability. To enhance convenience, a **wireless charging module** will enable seamless energy transfer to small electronic devices, such as smartwatches, fitness trackers, and medical sensors.

A **microcontroller** will oversee power flow, optimize energy conversion, and provide real-time monitoring of energy storage and utilization. Additionally, **advanced software tools** for circuit simulation, energy analytics, and power management will enhance system performance and efficiency.

By combining cutting-edge **hardware and intelligent software**, this project envisions a future where wearable devices and IoT applications can operate independently of conventional batteries, paving the way for a more sustainable and energy-efficient world.

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