Foot Step Power Generation and Automatic Street Light Control System

This project presents a Footstep Power Generation and Automatic Street Light Control System designed to harness energy from pedestrian movement and manage street lighting dynamically. The system leverages piezoelectric sensors to convert the mechanical energy of footsteps into electrical energy. This energy is then stored in a rechargeable battery through a charging circuit, ensuring a sustainable power source for the street lights.

The core of the system is an Arduino UNO microcontroller, which manages the energy distribution and controls the street lights based on ambient light conditions. An LDR (Light Dependent Resistor) is used to detect the surrounding light levels, triggering the automatic activation or deactivation of the street lights. The status of the system and its performance are displayed on an LCD display, providing real-time feedback.

Additionally, a switch is incorporated for manual control and system maintenance. This project not only aims to demonstrate a practical application of energy harvesting but also to enhance street lighting efficiency by adapting to varying environmental conditions. The integration of these components results in a system that is both energy-efficient and responsive to real-time changes, contributing to the broader goal of smart city development.

The major building blocks of this project are:

1. Piezo sensors.
2. Arduino UNO
3. LCD Display
4. Charging circuit.
5. Rechargeable battery.

6. Switch.
7. Street lights.
8. LDR.

Block Diagram: