

Programmable Embedded Systems (EE60098)

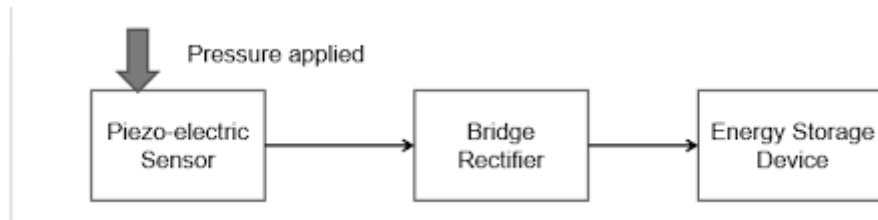
Homework 2

Submitted By
Pratyush Jaiswal
18EE35014

1. Design the Power harvesting on the shoe: The sensor will be in the shoe and will get the ax ay az values when activity like walking happens and gets stored in an SD card. When the SD card is read using any system the analysis of that can be done.

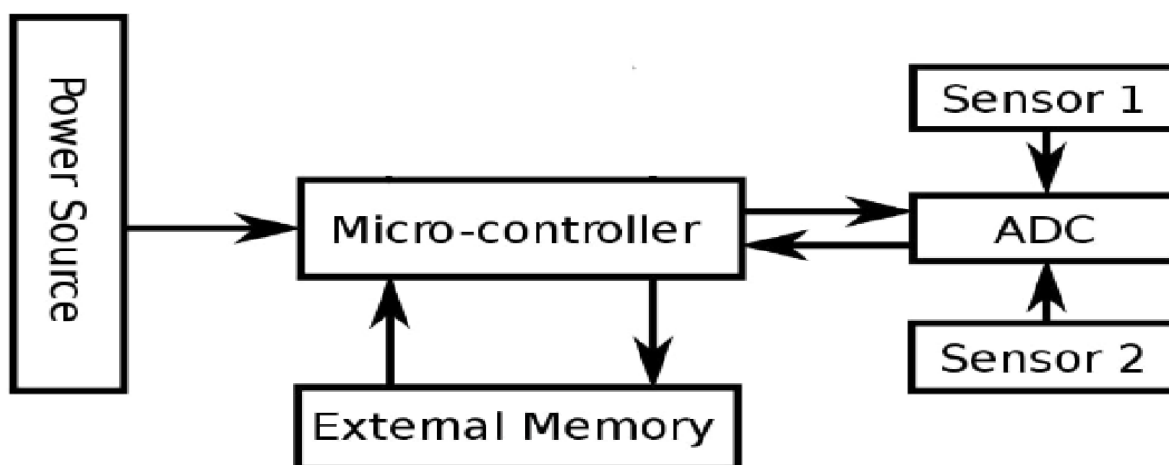
Block diagram

Broader aspect of power harvesting part can be summed as :



Since the foot faces very fast kinetical changes, the power that can be drawn isn't constant and its storage is the only option, not only that. We need proper electronic circuits to perform charging of energy sources.

Data Acquisition and storage :

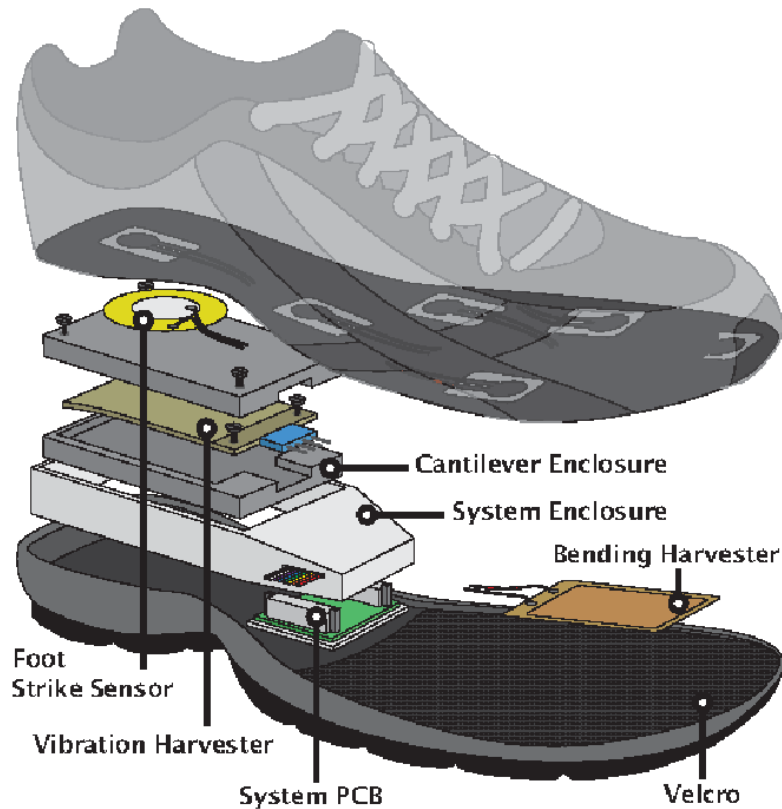


NOTE: Using digital accelerometers we can avoid the use of an ADC and directly connect it to the microcontroller via I2C protocol. Thus the use of a microprocessor(in deployment) / microcontroller gives

the freedom to use a variety of suitable sensors, paired with any SD Card protocol and huge scope of further improvement.

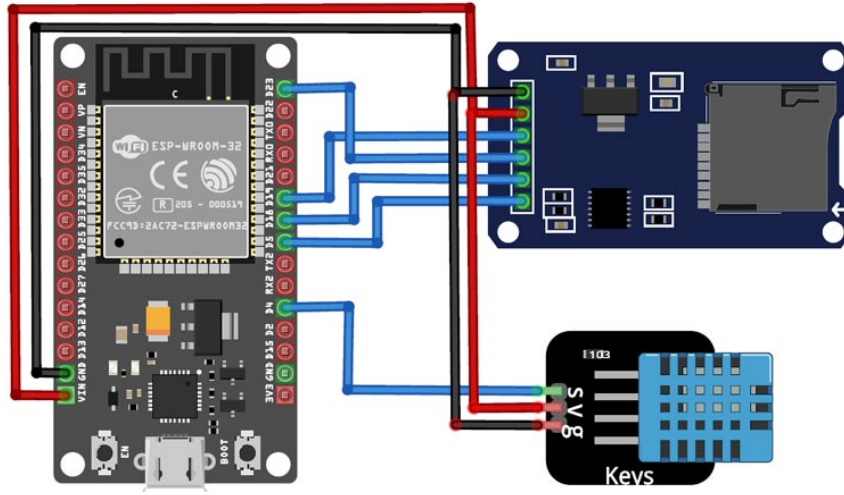
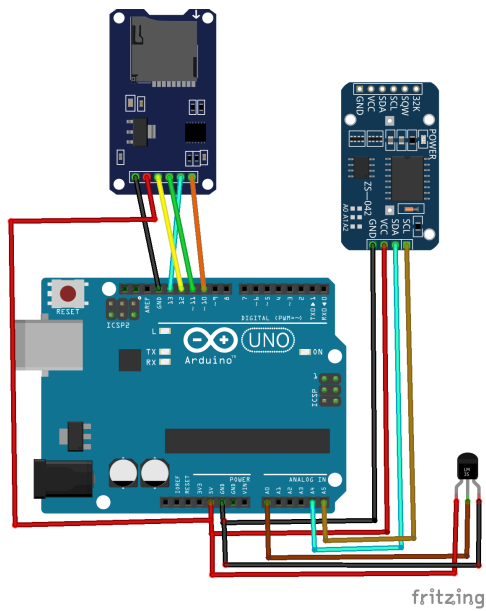
Components:

Power harvesting system :



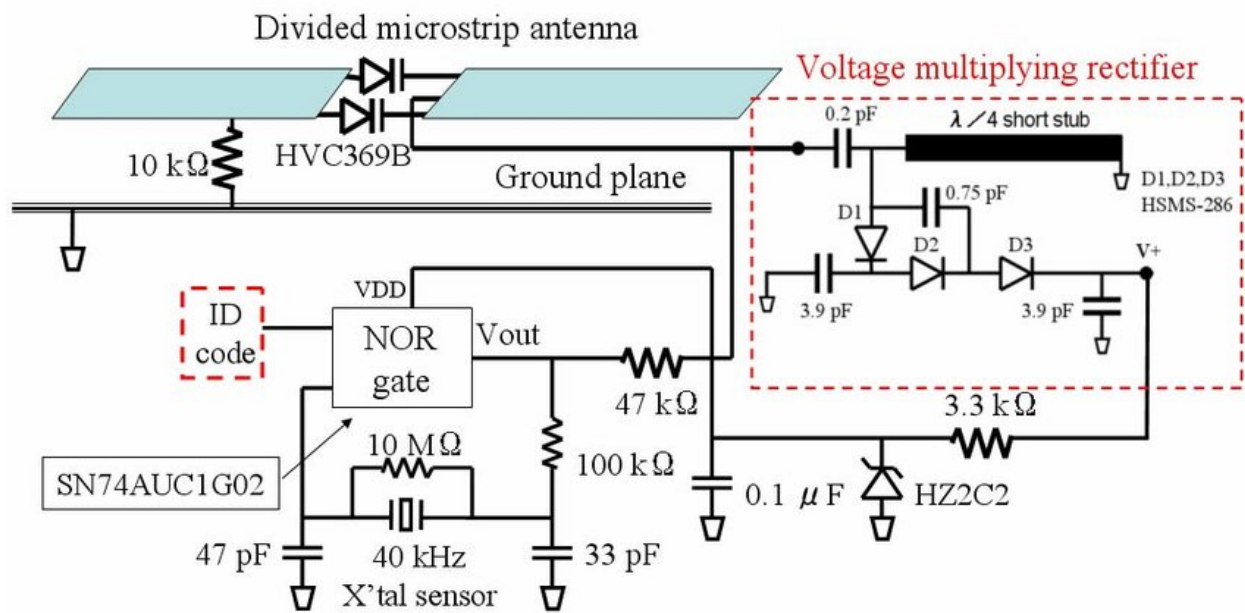
Data Acquisition :

We can use a microprocessor of choice to interface the data sensor to the data storage SD card.



2. Write details about passive RFID temperature sensor with the architecture.

RFID sensor tags detect environmental changes and events and communicate the data wirelessly to an RFID reader. These telemetry products are ideal in situations where measurements need to be remotely and automatically captured. Depending on the RFID temperature sensor tags, the tags could sense variances in motion, humidity, temperature, pressure, and more.



Circuit diagram of a temperature sensing passive RFID tag