Open source health monitoring and evaluation systems using python

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Introduction

What are Health monitoring systems:

- Various sensors monitor health parameters
- Sensors are integrated with processing and memory units
- Data is analyzed in online and offline mode
- Data reflects status of subject's health

Why Open Source

- Reduce cost
- Induce innovation
- Faster development processes
- Universal access to quality health

RPi

- Credit card sized computer
- Quite powerful (1 GB RAM, Quad core 1 GHz processor)
- Internet and wireless connectivity

Sensors

- Heartbeat measurement sensor
- Blood pressure measurement sensor
- Temperature measurement sensor

Experiments

Two proposed experiments:

- Classifying runners
- Sleep detection in elderly patients

Classifying runners

- Problem statement
  - Runners run differently but are evaluated on similar parameters
  - We aim to classify running patterns and accordingly evaluate the runners for thier type of running

Hardware

- Sensors: Accelerometer and Gyro
- Platform: Arduino
- Software for data analytics: Python

Electronic schematics for hardware

In Progress ...

Data analytics

In Progress ...

Sleep detection in elderly patients

- Problem statement
  - Elderly pateints wearing continous health monitoring system can save device energy if device can detect sleep
  - Sleeping is usually associated with calm physical and mental state

Hardware

- Sensors: Temperature ad heartbeat monitor
- Platform: Arduino
- Software for data analytics: Python

Electronic schematics for hardware

In Progress ...

Data analytics

In Progress ...