Abstract

The proposed project for the Take-Home Vitals Box entailed designing a device that can measure five human vital signs all in one. The vitals box can then send the data to a smartphone or computer via WIFI or Bluetooth. The purpose is to allow patients to record and track their vital signs from home and send the results to a medical professional. The device will be able to give medical aid to people who do not normally have access to healthcare.

Methods and Materials

Arduino Microcontroller: The Arduino Uno R3 has six analog ports and acts as a power supply for all the sensors. The Arduino software was used for coding and storing data of each individual sensor.

Circuit Design: A printed circuit board (PCB) was created using Autodesk Eagle design software to compact the circuits into one circuit board.

Sensors:
1. Electrocardiogram (ECG) - Used to measure heart rate, and blood pressure.
2. Photoplethysmogram (PPG) - Used to measure oxygen saturation level.
3. Infrared (IR) Thermopile - Used to measure temperature.
4. Linear strain gage – Used to measure Respiration rate.

Discussion/Results

The vitals-Box is a cheap and reliable alternative to staying in a hospital. It allows individuals living in a fallen state or who have little to no health care, an opportunity to stay healthy in the comfort of their own homes.

Conclusions

We would like to express gratitude to Dr. Korampally, Dr. Peterson, and German Ibarra. We also want to thank Northern Illinois University for providing funds and resources to aid in this project. Thank you for your support.

Acknowledgements