

Problem Statement

The wearable health-monitoring market is exploding, but an important aspect of daily health that is not yet addressed by the market is body hydration levels. Hydration is a key health indicator and thousands die from dehydration related incidents every year. The goal of our project is to develop a compression shirt that can detect body hydration trends by measuring skin impedance changes and alert the wearer of dropping hydration. Our target audience is the everyday athlete.

Product Requirements

Fulfilled:

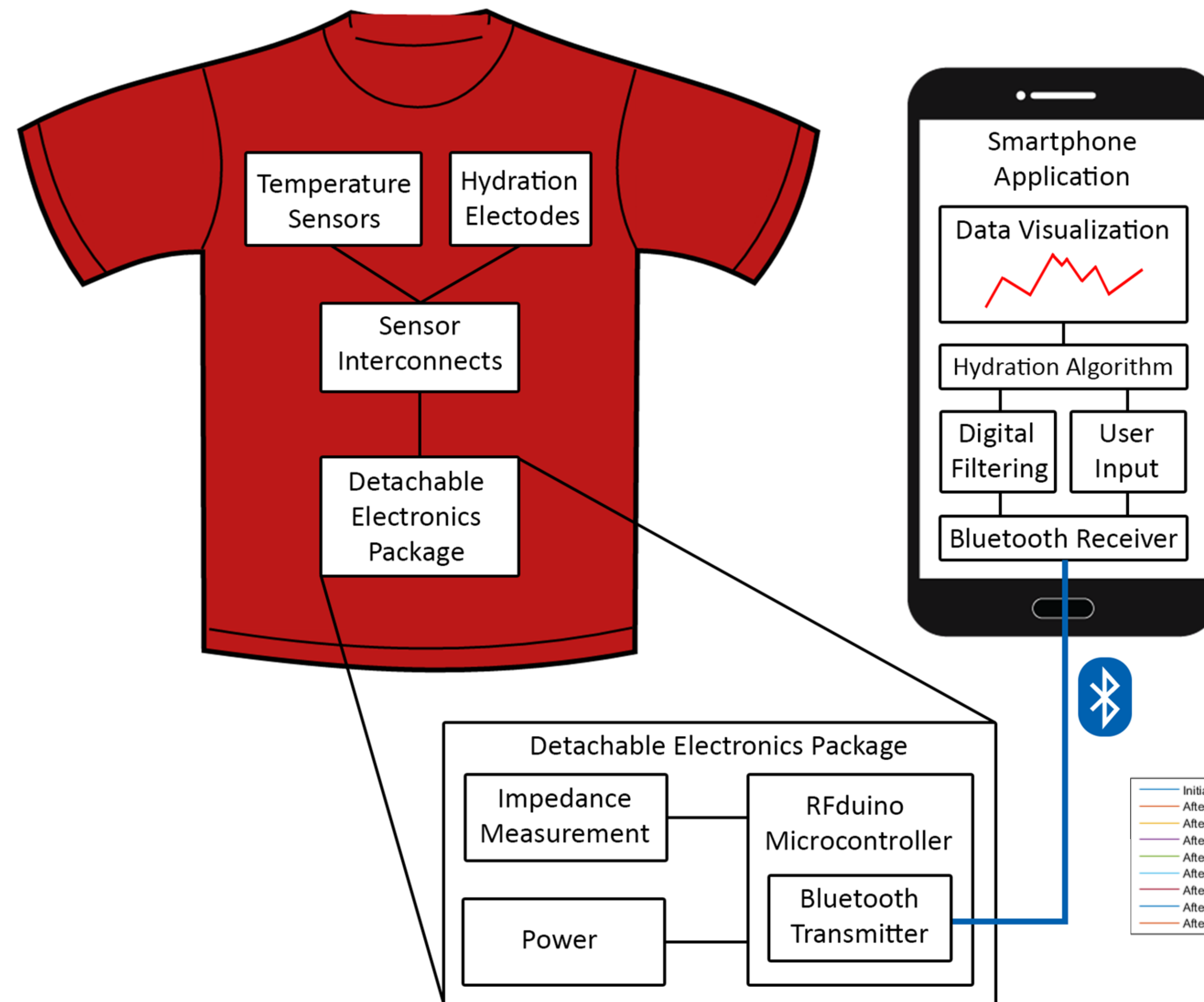
- Detect hydration trends
- Measure axillary temperature
- Perform noise cancellation
- Interface to mobile application

Unfulfilled:

- Launderable at least 20 times

Design Challenges and Solutions

- Electrode locations to avoid sweat and motion which interfere with sensor readings
- No industry standard for hydration algorithm; developed one by measuring skin impedance over time
- Launderability while maintaining electrical conductivity



Technology Used

RFduino, AD5933 Network Analyzer, Bluetooth Low Energy, Rechargeable Power System with MiniUSB, ADXL345 Accelerometer

Next Steps

- Extensive motion testing
- Completely enclosed and launderable electronics package
- Sweat resistant sensors (TE)
- Material testing for improved launderability (TE)

Exercise Testing Results

