Automated Cough Counting System

Senior Design Project 2017 - Tyler Coleman, Sally Diep, Zach Zager

THE PROBLEM

- Tuberculosis (TB) is among the **top 10 death causes** worldwide with millions of new cases every year.
- Over **95%** of TB deaths occur in low- and middle-income countries with limited access to laboratory resources.
- Cough analysis can decrease the time for detecting treatment failure from **6 months to 4-6 weeks**.

OUR SOLUTION

A low-cost, lab-free, wearable device to monitor cough rate and track patient recovery

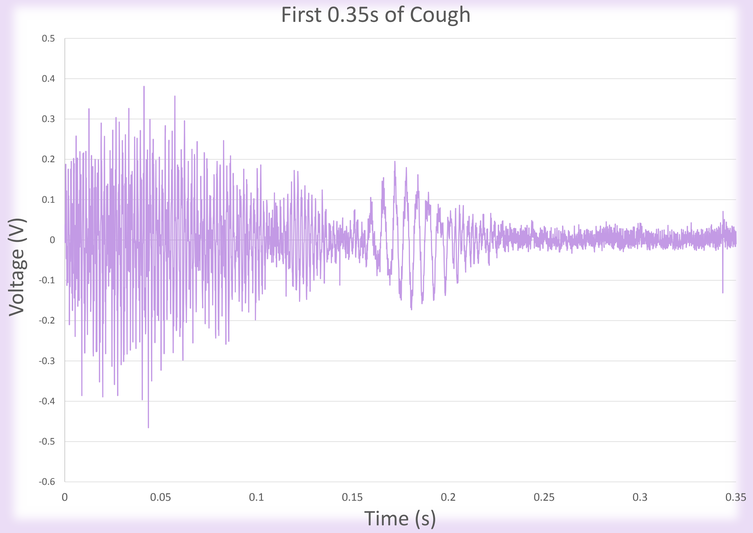
PREVIOUS DESIGNS

- Only takes in one channel of data (microphone or accelerometer)
- Sampling rate not fast enough
- 10-bit precision

OBJECTIVES

Develop a new prototype that can:

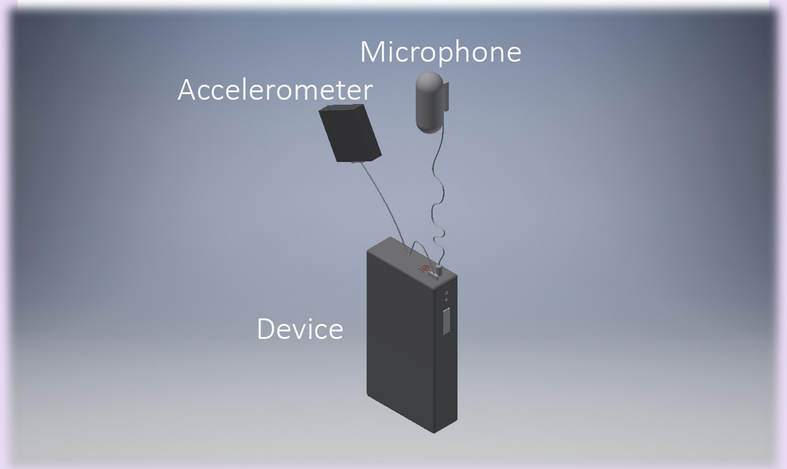
- Take in data from both microphone and 1-4 accelerometer(s)
- Sample data at a faster rate, 10kHz for mic and 2kHz for accels with 13-bit precision
- Process data in real-time



Team Periwinkle

WEARABLE DESIGN

- Usability testing
- Model development



FUTURE WORK

- Reduce the size to be wearable
- Time-stamp data and store in SD card
- Perform more in-depth timing calculations to improve the real-time processing algorithm
- Develop new Matlab algorithm on the server to analyze data from both mic and accelerometers