UNT Senior Design Capstone Experience 2025 – 2026

Detecting Disease Contacts

Team Size: 4 to 5

Introduction:

Currently there is a lack of accurate data on how many different contacts that a person makes in a single day. This is a problem when you attempt to study the way airborne diseases spread in a population. Previous attempts at recording this data have been widely viewed as unusable because of the variations in accuracy of the chosen data acquisition methods.

Problem Description:

Pervious implementation is still not accurate in detecting disease contacts. Probably, we need more sensors and background processing to accurately detect contacts. The data from the sensors needs to be pushed to cloud and processed in the cloud. The processed data can then be used to make decisions about the contacts. A simple smartphone application can also analyze the data and provide statistics about the contacts.

High Level Requirements:

1. Accurate detection of contacts within a set threshold distance
2. Categorization of the contacts based on distance, duration of contact, and frequency of contacts
3. Realtime computation of detection and categorization of contacts done in cloud
4. A simple smartphone application to show the statistics about contacts to the users

Constraints:

- Discreet and wearable
- Use commercial components (This is a proof of concept prototype)
- Uses a battery for 12-hour operation
- Packaging and size considerations for transportation should be considered.

Deliverables: Software, Schematics, Components, Operating manual, and known bugs.