Design

Posture Fixer

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Plan

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- High-Level Design
- Communication
- Architecture
- How it works
- Plans

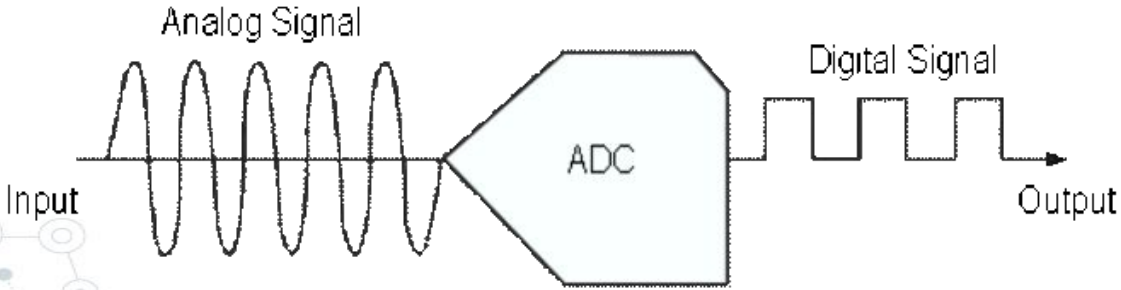
Introduction

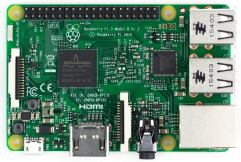
- Many people sit in a bad posture for a long time.
- It makes people's spine tense much.
- So, we will make "Posture Fixer", that can detect if the user is sitting in a bad posture, and if so, send an alert to his smartphone.

High level design

Raspberry PI

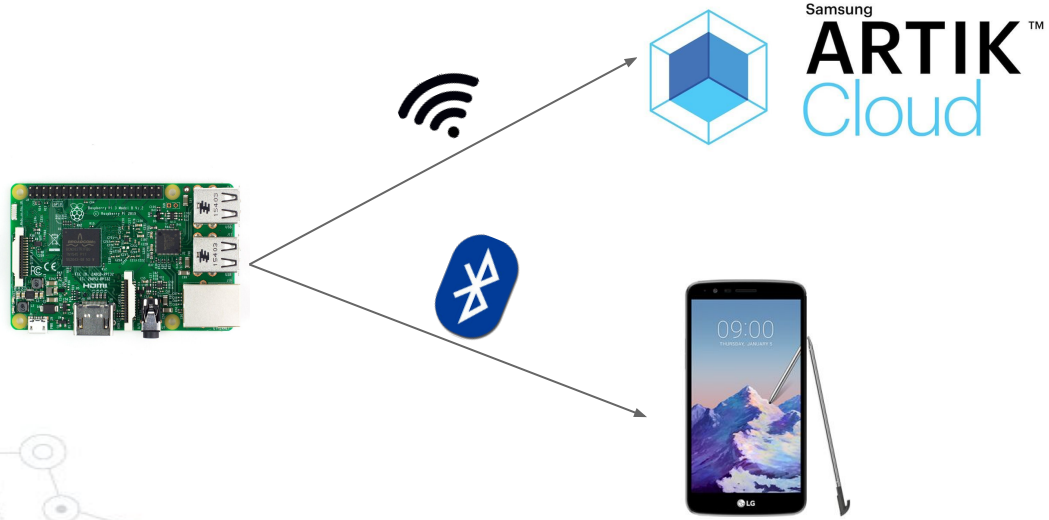
- Analog sonar sensor data is polled by raspberry PI periodically (5 minutes)
- Analog data gets converted to digital data through an analog-to-digital converter





Raspberry PI

- Data is then sent over to the cloud for storage
- Data is also sent to phone over bluetooth/wifi



Smartphone APP

Inclination :

- Calculate inclination
- Detect and inform user when inclination is wrong

Statistics :

- Ask for statistics to the Cloud
- Convert this data into graph

Smartphone APP

Interface :

- Enable user to start/stop application
- Provides statistics of user’s posture history
- Provides guidelines to user
- Gives suggestion to the user to fix his previous bad position

Smartphone APP

Communication :

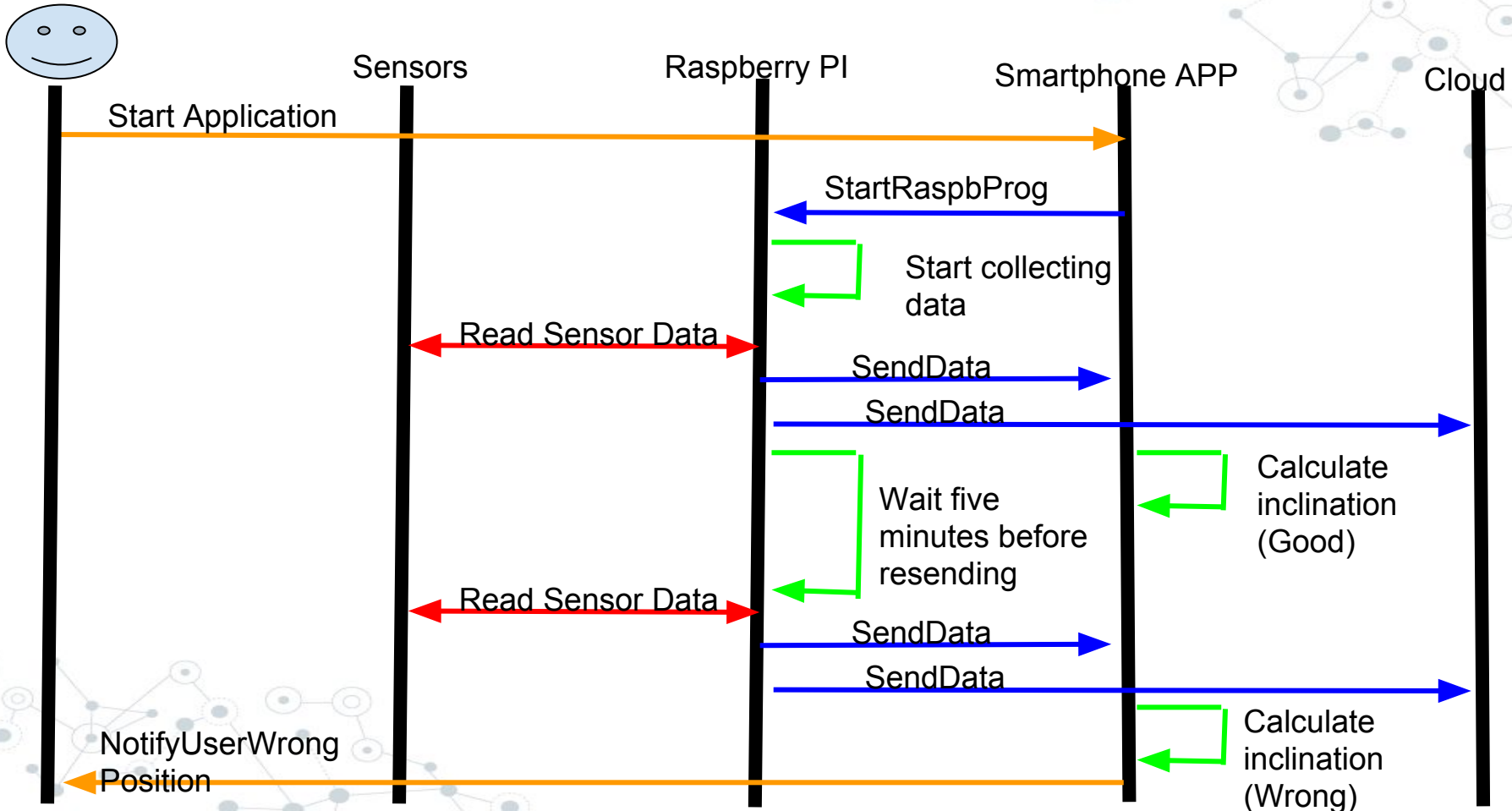
- Does the link between a specific user and raspberry and Cloud

Cloud

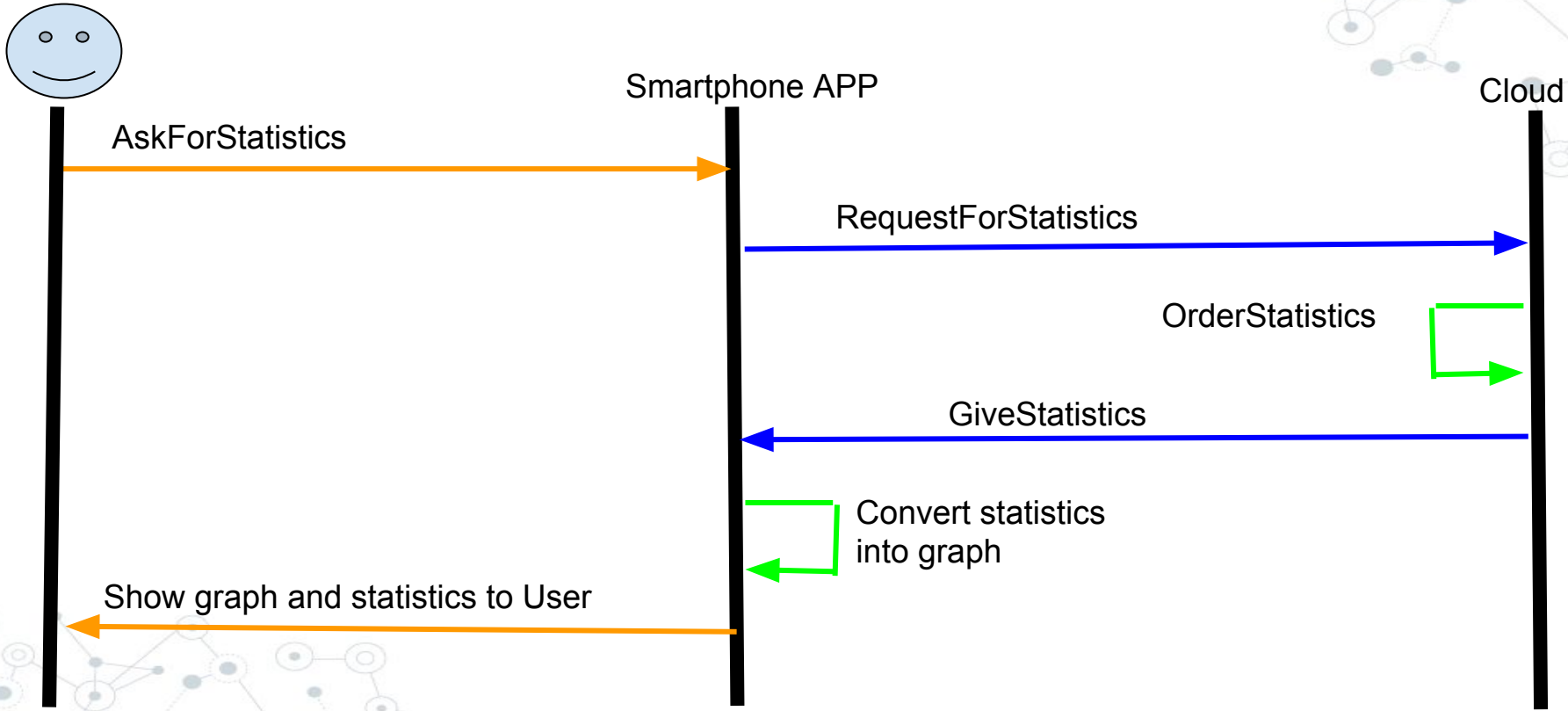
- Used as database, collect every data
- Gives user long-term statistics
- Can support multiple users

Communication

Communication with sensor Part

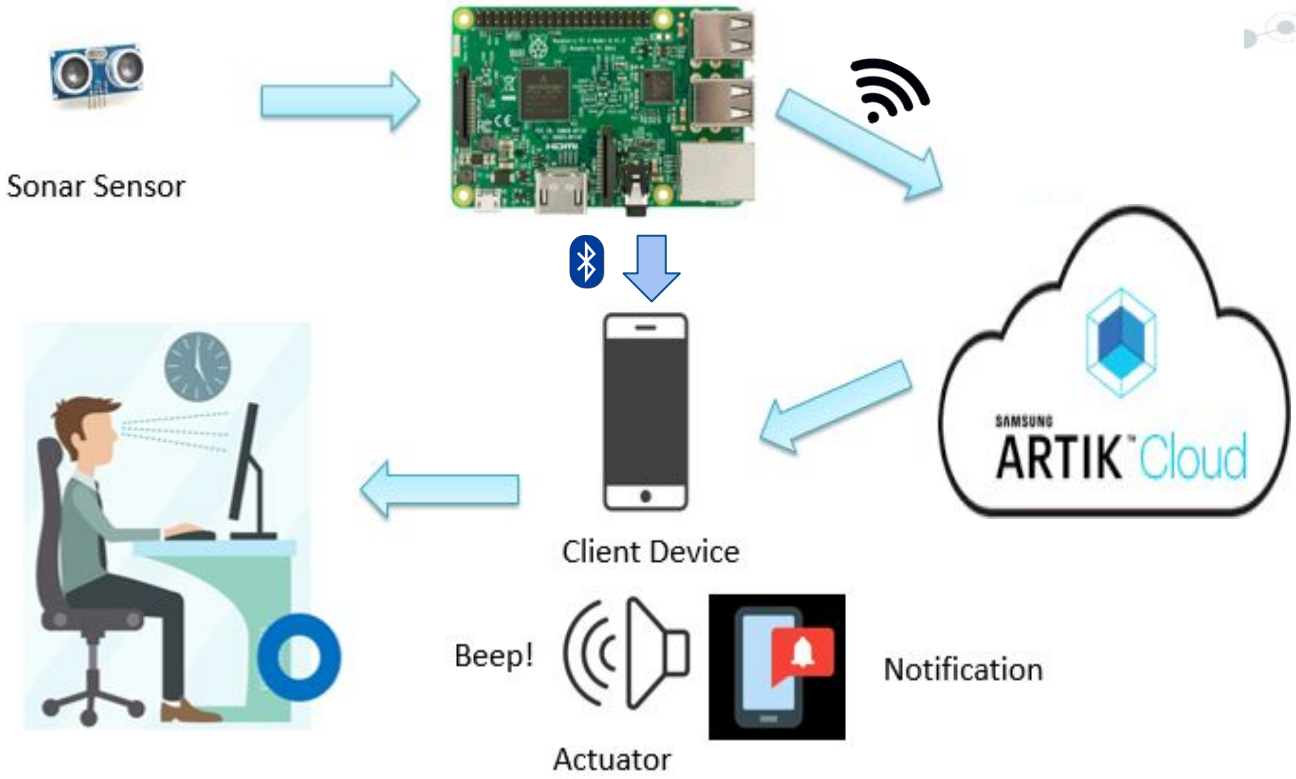


Communication for statistics



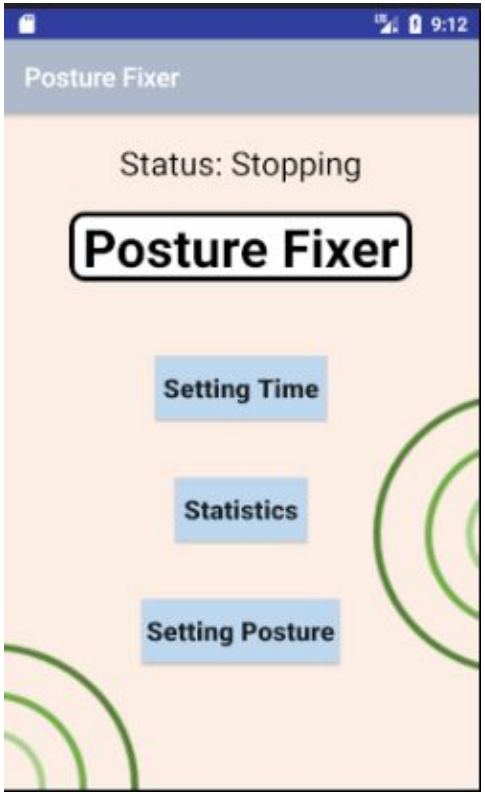
Architecture

Architecture



How it works

Welcome Page



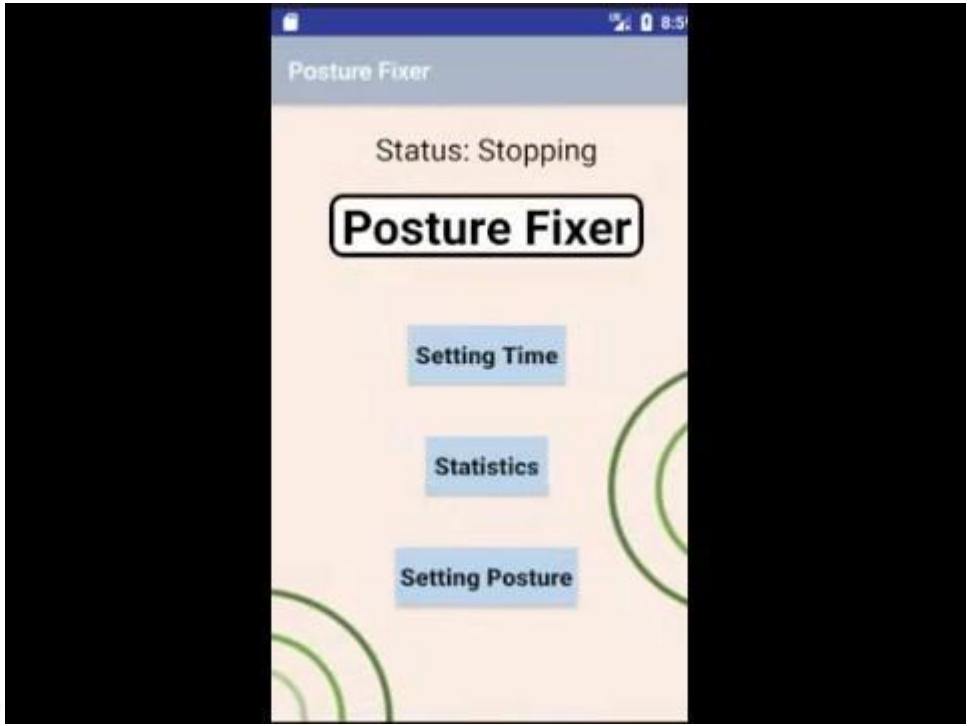
Setting Time - specific time

https://drive.google.com/open?id=1dP3xWBdcD3O36qsW6oIOKftCg4xFBYb3

Setting Time - Button

https://drive.google.com/open?id=1bqpP78rtjk3NfUhpVGCrYME3Z3EIkBD7

Setting Posture



https://drive.google.com/open?id=1DfOsWahwjQ2WHgj5B80S1XlXoFE1dp7D

Plans

Plan

- We made basic function and UI of Android App
- Remaining work
  - Sending sonar sensor data from Raspberry Pi to Cloud (~11/30)
  - Sending sonar sensor data from Raspberry Pi to App (~11/30)
  - Sending data from Cloud to App for statistics(12/1~12/7)
  - Draw graph using data in App(12/1~12/7)
  - Make equation for deciding whether Posture is good or bad (12/1~12/7)

Appendices

- Proposal presentation: https://docs.google.com/presentation/d/1mPka3o9Z_TKMSviaAPKNeDv78ohkpxW6ljdrkyaTXtU/edit?ts=59e6e68d#slide=id.g270fc8a2a8_0_42
- Requirements presentation: https://docs.google.com/presentation/d/1do6esaTsl_NTU8wtmG-OQR-oYSvhouKGlJo0PmHZSfA/edit?usp=sharing