Posture Fixer

Jia Lee,
ChengPeter Qian,
Lécuyer Cédric

Plan

- Introduction
- Requirements
- Related work
- Architecture
- Software/Hardware required
- Project schedule

Introduction

Purpose : Keep a good position when we seat

Problem description : Many people seat in a bad posture for a long time. If makes people's spine tense much.

Solution description : Use multiple sensors to detect if the user is sitting in a bad posture, and if so, send an alert to his smartphone.

Provided :

- A smartphone application
- Two sensors (One on his chair, one in front of him)

Requirements

Functional

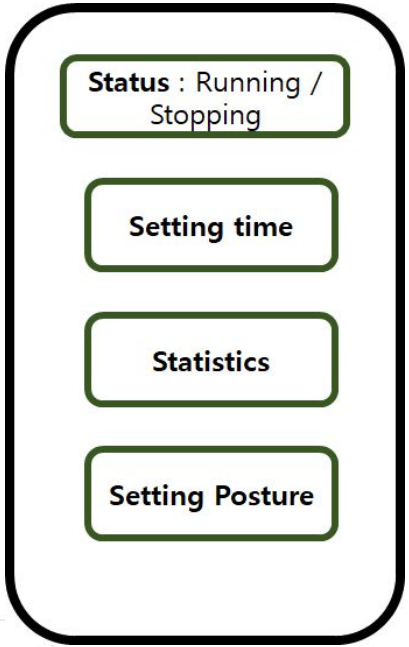
- keep track of user posture using sensors
- send alert to user if bad posture is detected
- keep track of user data and send to cloud continuously
- suggest exercises if bad posture persists

Non-Functional

- should receive sensor data every 5-10 minutes
- User interface must clearly indicate options such as start/end, time, and posture settings

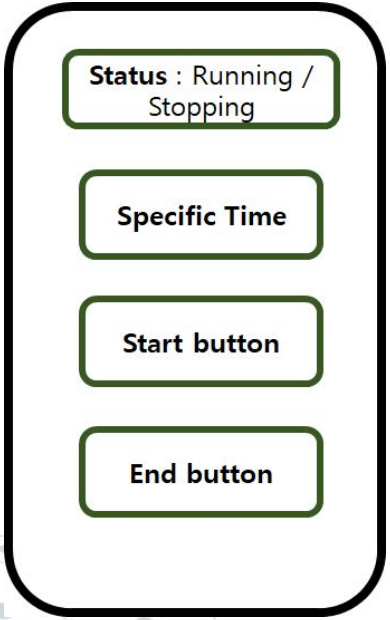
Requirements

1. First page of Application

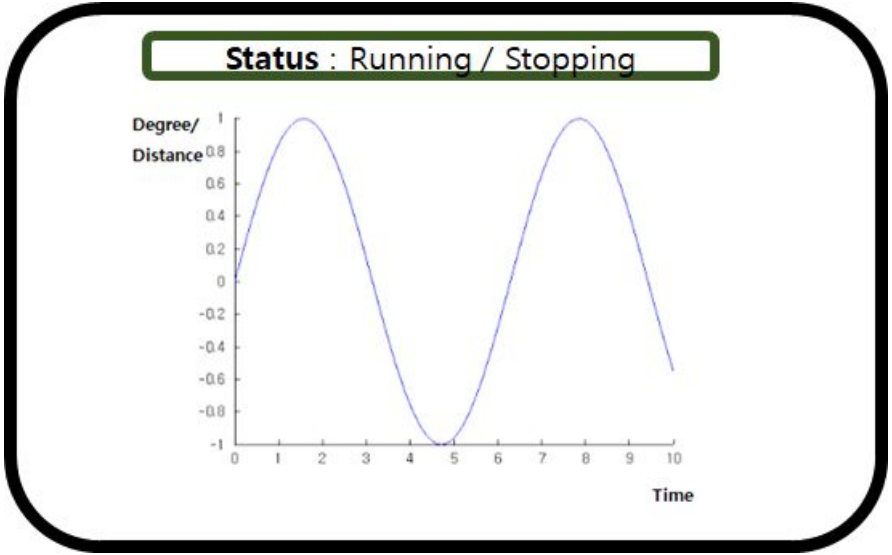


Interface

- Setting time



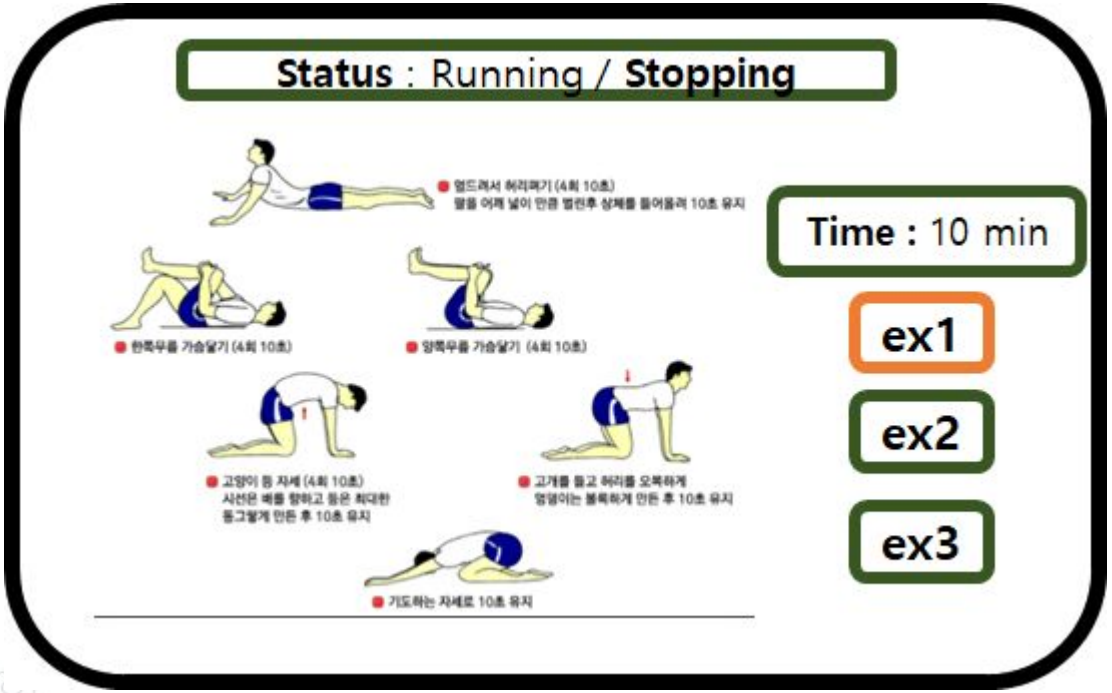
- Statistics



When the application stops after running.

- See the statistics during running time.
- Suggest the exercise for back based user’s statistics.
  - For example, if his posture was bad for one hour’s, suggest the exercise for 10 minuite’s.
  - If his posture was bad for two hours, suggest thes exercise for 20 minutes.

Interface


Status : Running / Stopping
엎드려서 허리펴기 (4회 10초)
양손 어깨 넓이 만큼 벌린후 상체를 들어올려 10초 유지
한쪽무릎 가슴닿기 (4회 10초)
양쪽무릎 가슴닿기 (4회 10초)
고양이 등 자세 (4회 10초)
시선은 배를 향하고 등은 최대한 둥그렇게 만든 후 10초 유지
고개를 들고 허리를 오목하게
엉덩이는 볼록하게 만든 후 10초 유지
기도하는 자세로 10초 유지
Time : 10 min
ex1
ex2
ex3

Related work (similar solutions, apps/services)

Similar solution #1: LUMO Lift

Apps/services

- Small device placed on user's shirt
- tracks posture, activity (exercise), history, and has wireless bluetooth syncing

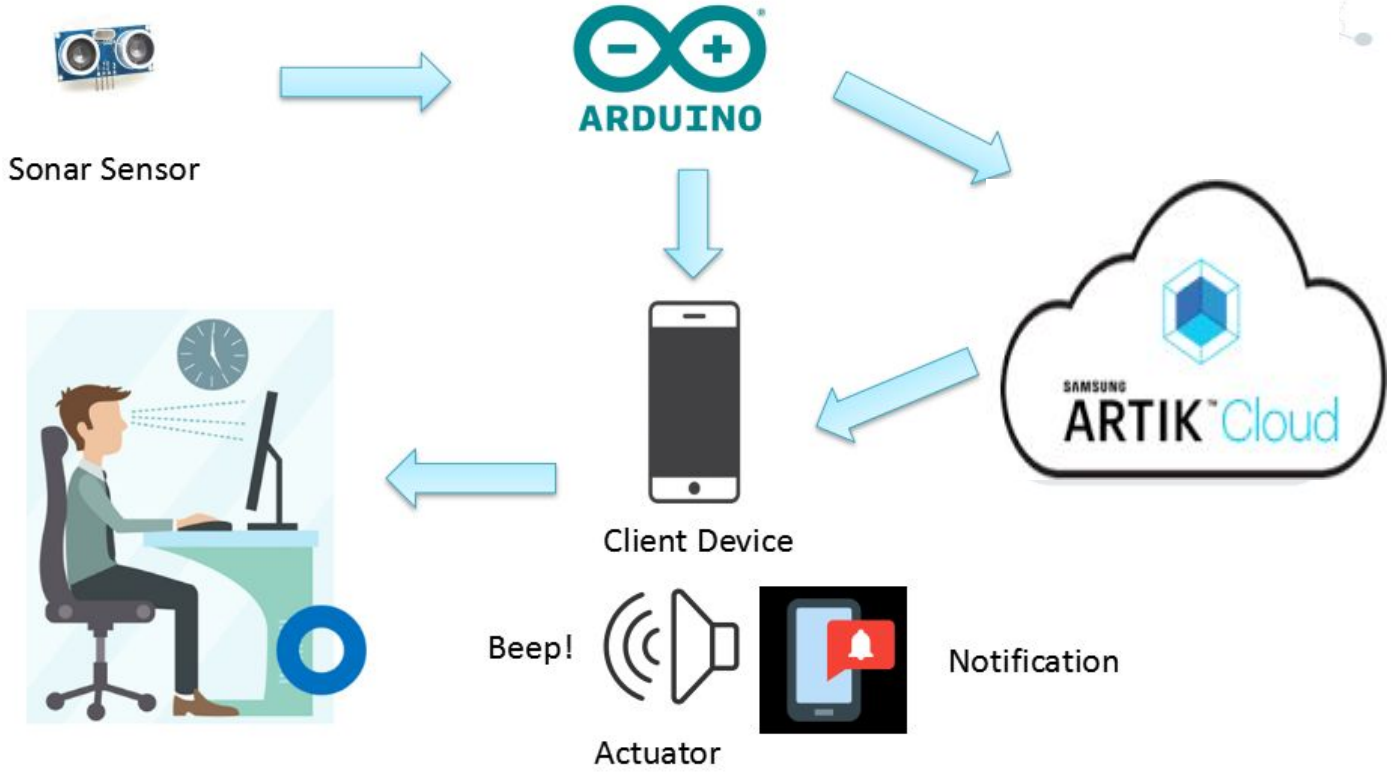
Related work (similar solutions, apps/services)

Similar Solution #2: Darma

Apps/services

- Seat cushion filled with 1mm fiber optics
- Low energy bluetooth
- Sync via cloud
- Uses posture, heart beat, respiration data

Architecture



Software/Hardware required and to be developed

Hardware :

2 proximity sensors (or most) :

One in front of him (TOP)

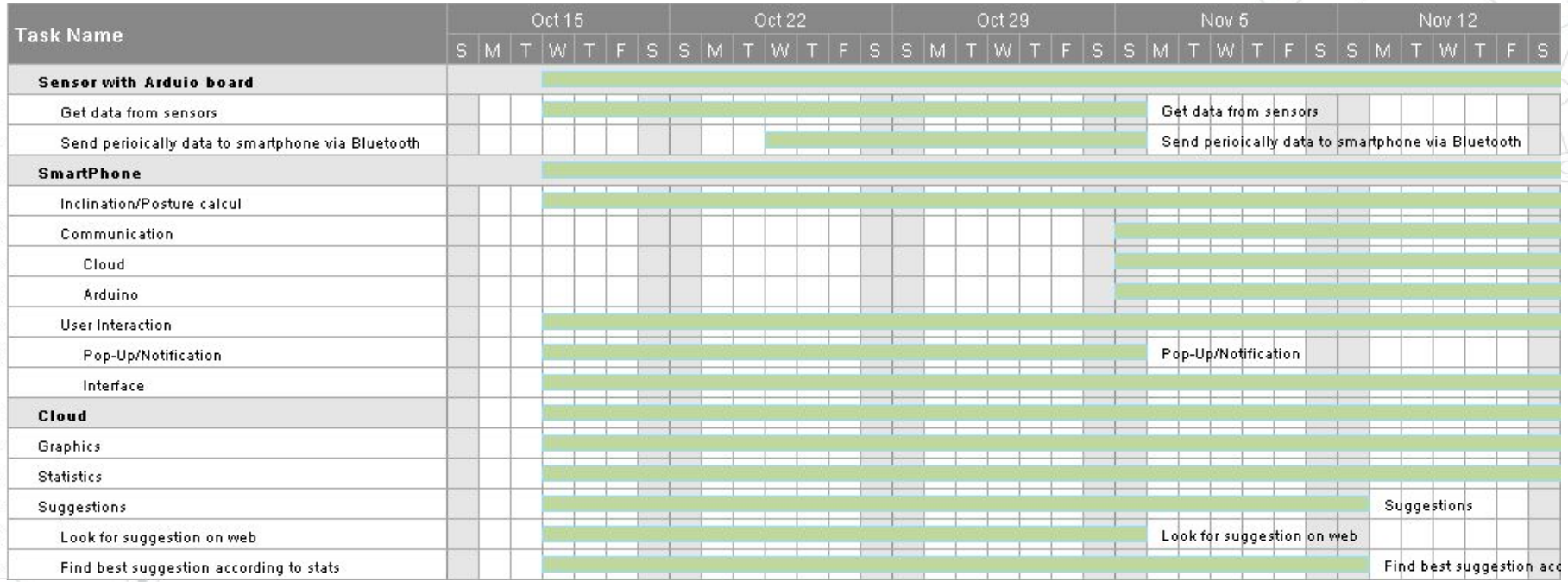
One in back of his seat (Bottom, closest to floor)

Arduino (or Samsung Artik Board)

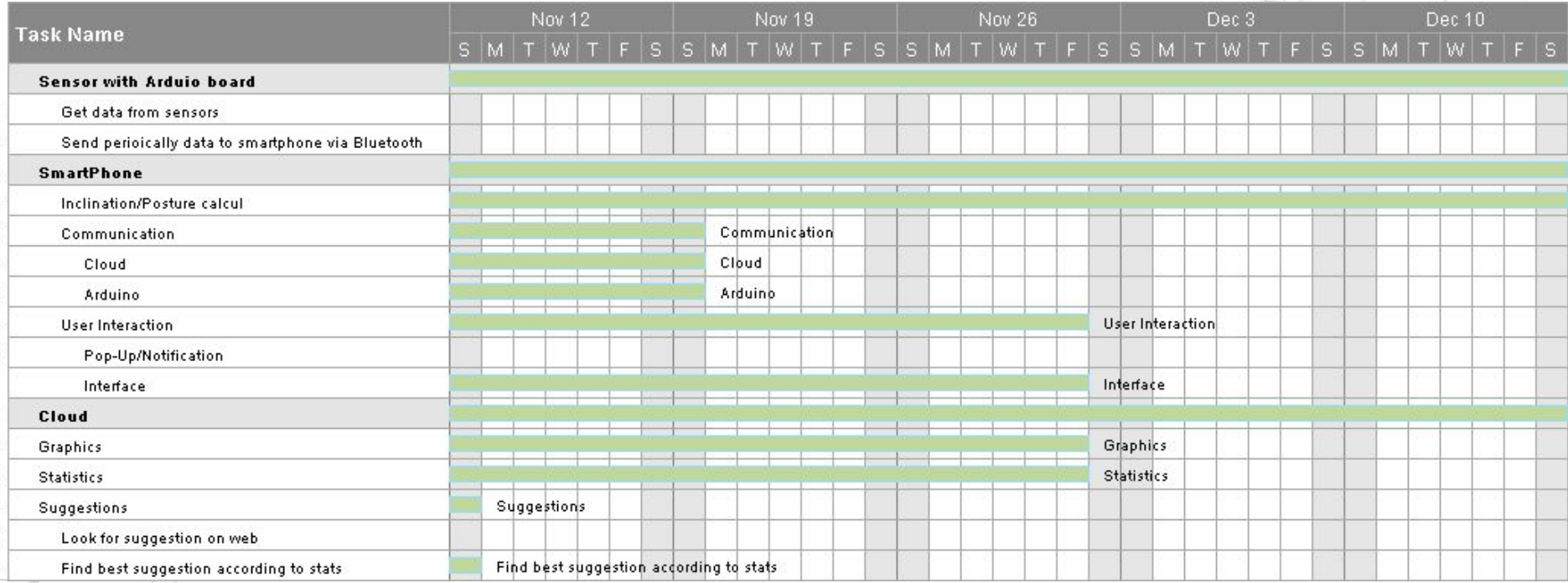
Software :

- - One for sensors (Arduino). Arduino send data to smartphone by bluetooth
- One part for the inclination/posture calcul. Done on smartphone
- One for user interface (Pop-up, what user sees). Done on smartphone
- Statistics, suggestions provided by the Cloud to the smartphone when requested.

Schedule


Task Name
Oct 15
Oct 22
Oct 29
Nov 5
Nov 12
S M T W T F S S M T W T F S S M T W T F S S M T W T F S S M T W T F S
1 Sensor with Arduio board
2 Get data from sensors
Get data from sensors
3 Send perioically data to smartphone via Bluetooth
Send perioically data to smartphone via Bluetooth
4 SmartPhone
5 Inclination/Posture calcul
6 Communication
7 Cloud
8 Arduino
9 User Interaction
10 Pop-Up/Notification
Pop-Up/Notification
11 Interface
12 Cloud
13 Graphics
14 Statistics
15 Suggestions
Suggestions
16 Look for suggestion on web
Look for suggestion on web
17 Find best suggestion according to stats
Find best suggestion acc

Schedule


Task Name
Nov 12
Nov 19
Nov 26
Dec 3
Dec 10
S M T W T F S S M T W T F S S M T W T F S S M T W T F S S M T W T F S
1 Sensor with Arduio board
2 Get data from sensors
3 Send perioically data to smartphone via Bluetooth
4 SmartPhone
5 Inclination/Posture calcul
6 Communication
Communication
7 Cloud
Cloud
8 Arduino
Arduino
9 User Interaction
User Interaction
10 Pop-Up/Notification
11 Interface
Interface
12 Cloud
13 Graphics
Graphics
14 Statistics
Statistics
15 Suggestions
Suggestions
16 Look for suggestion on web
17 Find best suggestion according to stats
Find best suggestion according to stats