TECHNISCHE UNIVERSITÄT DRESDEN

Department of Computer Science Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

Seminar Task

Final Presentation

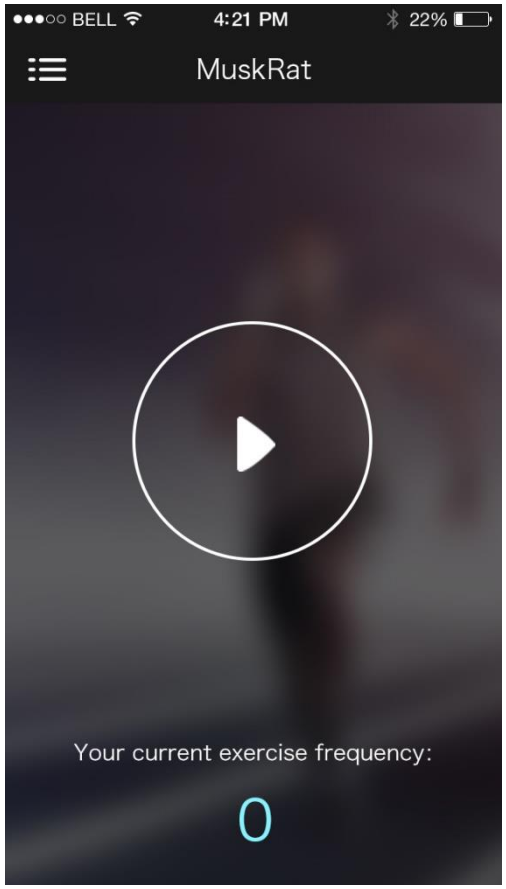
GroupNo.16
Team: Jun Sun & Zhen Xiao

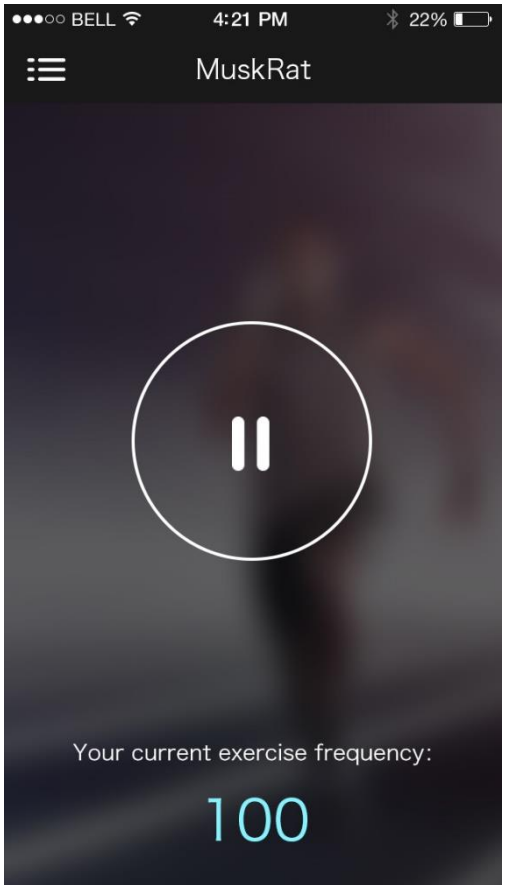
- Main Concept:

SIMPLE!!!

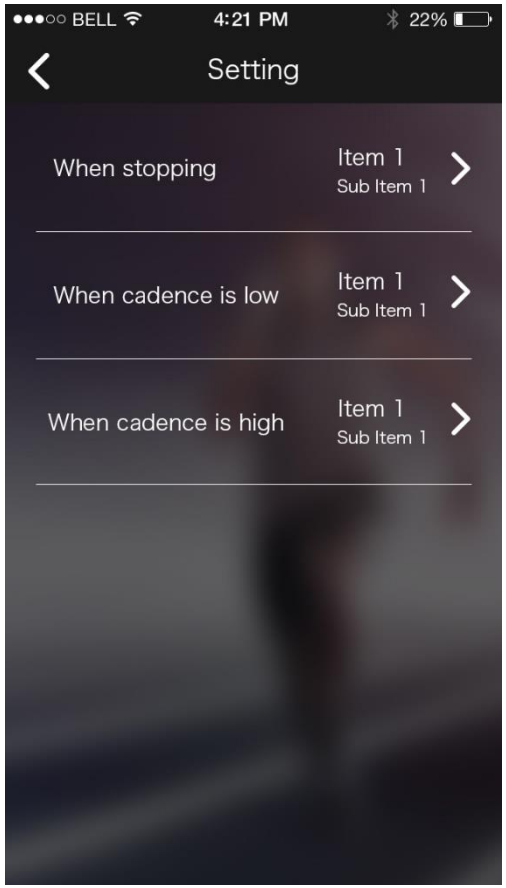
screen shots

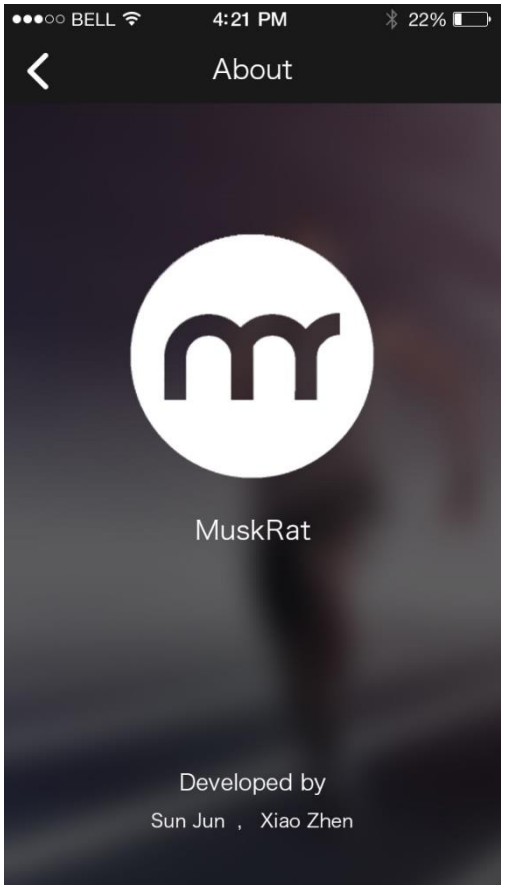
- Now our main UI looks like this:





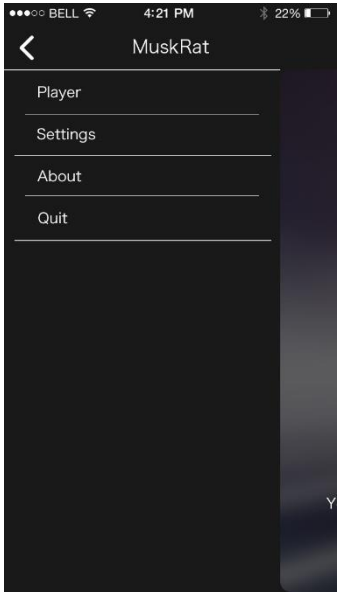
- Setting and About UI:

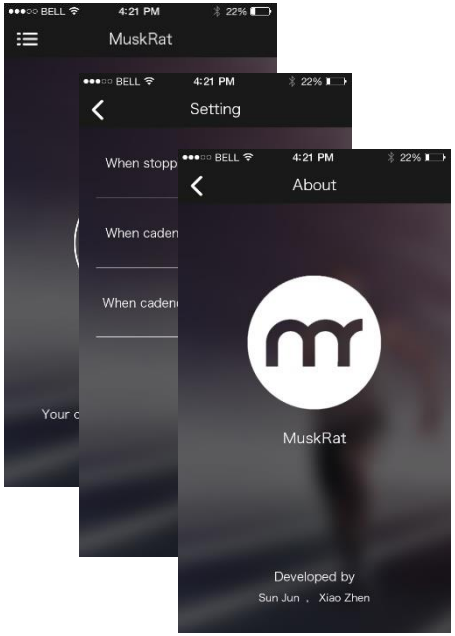




UI Design

- Based on jfeinstein10 / SlidingMenu library
- SlidingMenu + Fragments * 3





Technical Details

- How to get cadence data?

Technical Details

- How to get cadence data?
- Running a background service.
- It contains a footfall detector and push data in some interval.

Background Service

```
private final Runnable mUpdateCadenceTask = new Runnable() {
    @Override
    public void run() {
        int cadence = footFallDetector.getCurrentCadence();
        if (clientHandler != null) {
            Message message = Message.obtain();
            message.arg = cadence;
            clientHandler.sendMessage(message);
        }
        serviceHandler.postDelayed(this, 2000);
    }
};
```

Footfall Detector

- Get acceleration data from acceleration sensor

Footfall Detector

- Get acceleration data from acceleration sensor
- Find vertical acceleration
  - The axis which has biggest average acceleration value is close to vertical.
  - Because the earth gravity is a constant.

Footfall Detector

- Get acceleration data from acceleration sensor
- Find vertical acceleration
  - The axis which has biggest average acceleration value is close to vertical.
  - Because the earth gravity is a constant.
- Calculate average acceleration in a time period

Footfall Detector

- Get acceleration data from acceleration sensor
- Find vertical acceleration
  - The axis which has biggest average acceleration value is close to vertical.
  - Because the earth gravity is a constant.
- Calculate average acceleration in a time period
- Filtering, each value above average + threshold is considered as a foot fall

Footfall Detector

- Get acceleration data from acceleration sensor
- Find vertical acceleration
  - The axis which has biggest average acceleration value is close to vertical.
  - Because the earth gravity is a constant.
- Calculate average acceleration in a time period
- Filtering, each value above average + threshold is considered as a foot fall
- Calculate cadence, in step per minute

Assessment

- Contribution:
  - Developed a cadence detector that can actually work.
  - Developed a music player that can work with it.

Assessment

- Contribution:
  - Developed a cadence detector that can actually work.
  - Developed a music player that can work with it.

- Limits:
  - Finally we gave up implementing a speed detector
  - Too much work combined with the cadence detector
  - It is too enegy consuming

Discussion

- Music Player is quite simple
  - Cannot download musics
  - Uses musics and playlists locally only

Discussion

- Music Player is quite simple
  - Cannot download musics
  - Uses musics and playlists locally only
- This has good sides:
  - Users already have plenties of choices
  - This app is designed for exercising

Discussion

- Music Player is quite simple
  - Cannot download musics
  - Uses musics and playlists locally only
- This has good sides:
  - Users already have plenties of choices
  - This app is designed for exercising
- And bad sides of cource:
  - Not so “Powerful“

Thank You!