1. Identify the Problem

Before applying data mining we must first clearly identify the problem that we aim to address and the envisioned impact of addressing this problem.

Descriptive Analysis

* What is the current situation with respect to the problem? Provide examples of the issues that need to be addressed.
  + The problem of wearable bands.
    - Think about what is wearable bands?
      * Its aim is to collect data.
        + What data?
        + To collect data in a seamless, all-around way that is barely noticeable.
        + Such data is then used to derive useful information about the user.
        + Hopefully, knowledge can be generated from such information.
      * What is so diff about wearable bands?
        + What is its absolute advantage?

It is wore on the wrist of users.

**Data of more kinds can be collected**

**If want to investigate useful thing about wearable bands, should look into what is the distinctive kinds of information that is ONLY collectable by wearable devices but not by other kinds of technologies.**

**Heart rate 🡨 basically it.**

Data can be collected at ALL TIMES.

* + - * I guess, think about major brands out there…
        + Apple watch, fitbit, jawbone, Microsoft band, etc.
        + More vertical ones: whoop
* What are the surrounding events and other factors that may be contributing to or correlated with the current situation?
* What data exist that describe the current situation?

Normative Analysis

* What is the desired alternative situation? Provide examples that demonstrate the desired improvement.

Stakeholders

* Which individuals, businesses, or other agencies care about this problem and why?

Impact

* What is the envisioned impact of transitioning from the current to the desired alternative situation?

2. Define Objectives and Metrics

Objectives

* What are you trying optimize, increase, decrease, or otherwise change in order to transition to the desired alternative situation?

Metrics

* How will you measure these changes?

3. Understand the State-of-the-Art

* What data sources have been investigated?
* What data mining methods have been applied to the data?
* How were the methods evaluated and what were the evaluation outcomes?
* Given what others have already done, why does the problem remain unsolved? What makes it difficult?

Descriptive analysis

Wearable devices have brought data-collecting to the next level. To be able to collect advanced data like Heart beat per minute, and spatial data such as GPS coordinates and accelerometer have enabled us to monitor the condition of a device user 24/7.

This research is particularly interested in the connection between BPM (beats per minute) and changes in accelerometer reading. Factors that may influence BPM includes temperature, positioning of the body, and if the user is actively engaged in any sports. In this aspect, sudden jumps in BPM are expected to be somewhat linked to changes in accelerometer reading, as the accelerometer measures acceleration forces in any direction which can only be caused by movement of the device.

Normative analysis

Major players in the smartwatch market are namely Apple, Samsung, Fitbit, and Pebble, etc. Such products can be described mostly to be a platform product – a product that provides some functions and applications for the users to use in their own ways. Despite the firms’ inclinations of providing horizontal platform devices, the findings of this project should interest more vertical producers of wearable devices. Firms that are more interested in leveraging the tremendous data-collecting capacity of the modern day wearable devices should be interested in finding out exactly what they can do with the massive amount of data that is being collected on a 2-second-interval basis. This paper believes that commercial value can be derived from the data-driven analysis and understanding of wearable device user behaviors.

Stakeholders:

Any business with an intention of designing products related to BPM monitoring & studying maybe interested in this project.

Impact:

Objectives: to investigate the correlation between sudden jumps in heart rate per minute and changes in accelerometer reading.

Metrics:

Heart rate per minute (BPM), also need to define what is a “spike” or “jump” in BPM.

Accelerometer reading