Goal

- Find a way for healthcare experts to monitor the health problems of their patients and to observe their day to day progress.
- Find if there is a way for patients to become motivated to fix their health problems and everyday life via a virtual contingency management system.

Motivations and Objectives

- **Motivations**
  - Management for health care can be expensive, but if guidance can be given through a virtual system, costs for the user can be lowered dramatically.

- **Objectives**
  - Create a system that provides rewards in the virtual world for health progress in the real world.
  - Use sensors to gather information about the everyday health of the user in the real world.

Application of Virtual Contingency Management System

**Contingency Management** is a form of reinforcement in which patients are rewarded for following their given health programs. Because this is a *Virtual* Contingency Management System, the users are given virtual rewards, such as upgrades in the created game.

The process is as follows:

1. Collect data from user during the day

   ![Shimmer sensor](image)

   2. Shimmer streams and store the data in the subject's mobile devices

   ![Shimmer device](image)

   3. Algorithms performed on data to determine fitness state

   ![Fitness algorithm](image)

   4. Higher fitness leads to greater rewards in the virtual world, i.e., more upgrades in the game

   ![Upgrade examples](image)

Facebook Application

- Social Media integration created as an additional method of reinforcement.
- Users can observe the scores of their friends, and of others who are following the same program.
- This creates friendly competition between users, motivating them to achieve more upgrades, thus motivating users to improve fitness levels in the real world.

References

- Unity Game Engine <https://unity3d.com/>
- Shimmer Sensing <http://www.shimmersensing.com/>