

Rehab Robotics: Touch Trainer

Advisors: Dr. David Reinkensmeyer, Dylan Reinsdorf
Teammates: Shengling Li (Team Leader), Huy Ho, Phillip Park, Albert Lorenzana

Background

Currently, the Center for Disease Control reports that someone in the United States has a stroke every 40 seconds, resulting in approximately 790,000 people having a stroke every year. Patients after suffering from a stroke lose somatosensation in one of their hands. The loss of somatosensation weakens the sense of touch (tactile sensation).

Overview

The overarching goal of the project is to create an engaging rehabilitation device to help post-stroke patients retain a sense of touch. For the winter quarter, the focus will be on user interface. First, the casing and design are improved to enhance users' ergonomics. Second, a Graphic User Interface (GUI) is integrated with the game algorithm finished from Fall Quarter. The GUI is displayed on a LCD screen, where there are option buttons.

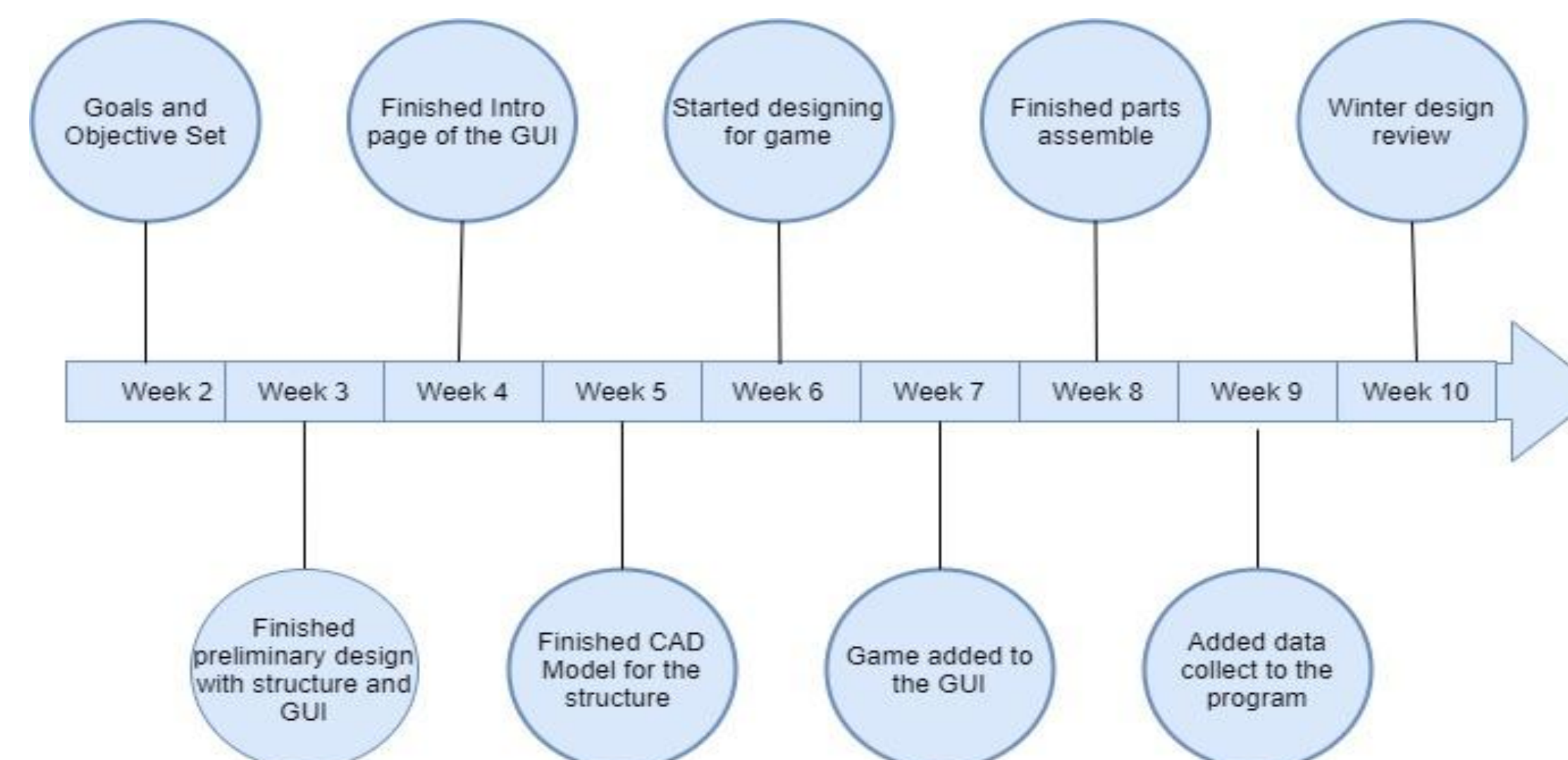
Goals And Objective

- Adding LCD screen to device
- Creating Graphic User Interface (GUI) with interactive buttons to allow users to start the game at their own pace, pause the game, track their progress, and pause the game
- Improving structural design for users' comfortability
- Implementing a feedback algorithm to the game to indicate users' progress

Current Status



Timeline



Innovation

- Interactive GUI allowing users to play the game at their own pace and to track their progress
- Design has actuators push onto patient fingers to test if patient can accurately feel which finger is being pushed by the actuator
- Mobile rehabilitation kit
- Design isolates fingers to help patients focus sense of touch

Requirement

- The button must be able to match with corresponding actuator
- Program must be a game with rewards and penalties for gaming purpose
- Program must contain a feedback system that improve user's performance
- Device must be portable to be able to use at home
- Device should be portable to be used on both hands
- Device should be easy to use

What is for Next?

- Implement feedback system that gauge user's performance to set difficulties of the game
- Continue to enhance the GUI

Contact Information

Dr. David Reinkensmeyer

Dylan Reinsdorf

drinken@uci.edu

dreinsdo@uci.edu