

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).

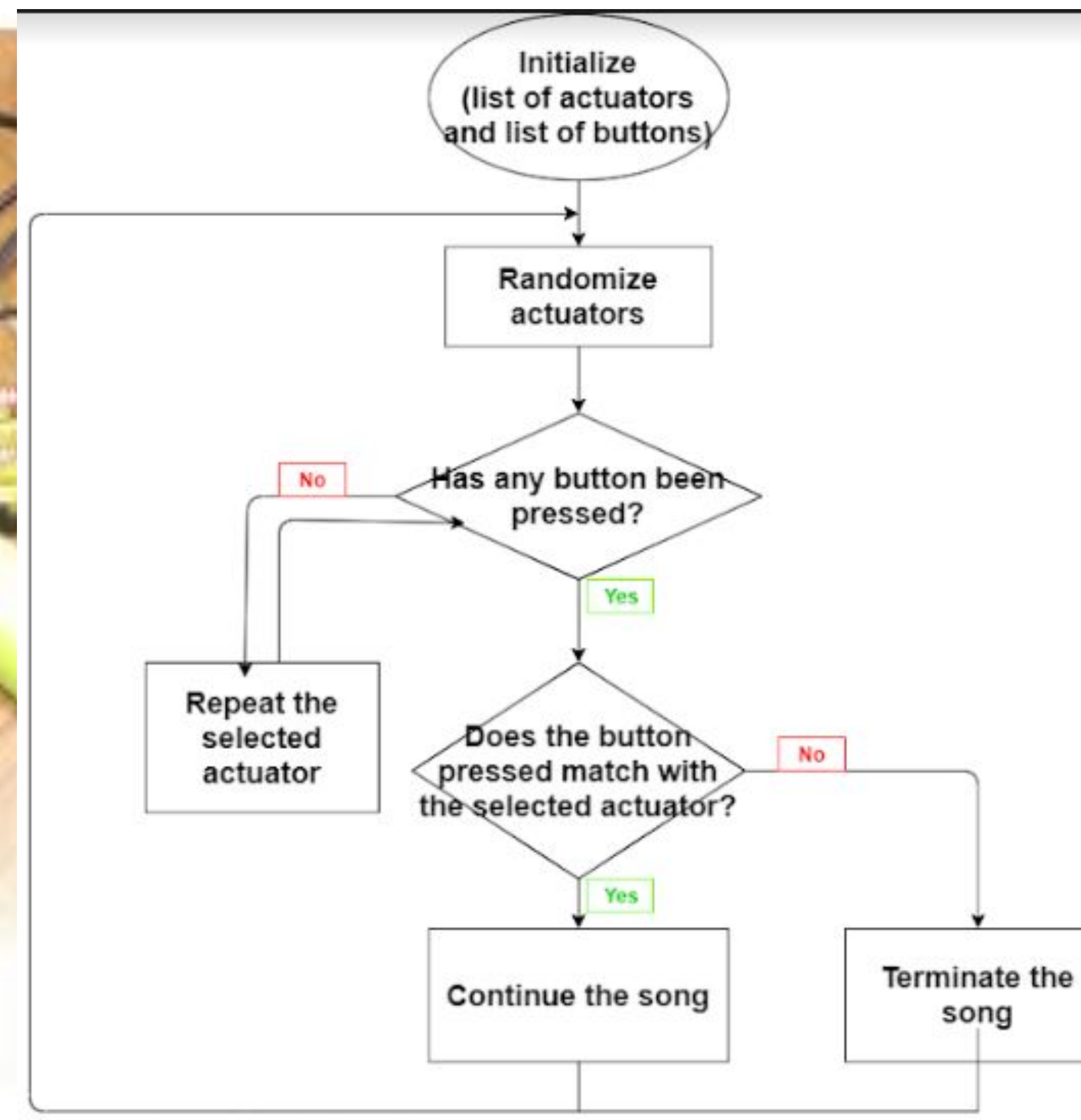
Overview

Over 10 weeks, our team designed and created our code in Python to operate the Touch Trainer. Our team was able to have a Raspberry Pi gamify the rehabilitation process to a rhythm game. Our program moves one random actuator to a specific BPM and the patient responds by pressing onto corresponding buttons to continue the program/game.

Goals And Objective

- Improve touch sense in impaired hand of stroke patients
- Use Raspberry Pi to create a gaming program to the physical device that can reinforce patients' rehabilitation process
 - Integrate the program with the device's mechanism
- Create a User Interface, including switches
- Create a program that includes music, rewards, and penalties.

Current Status



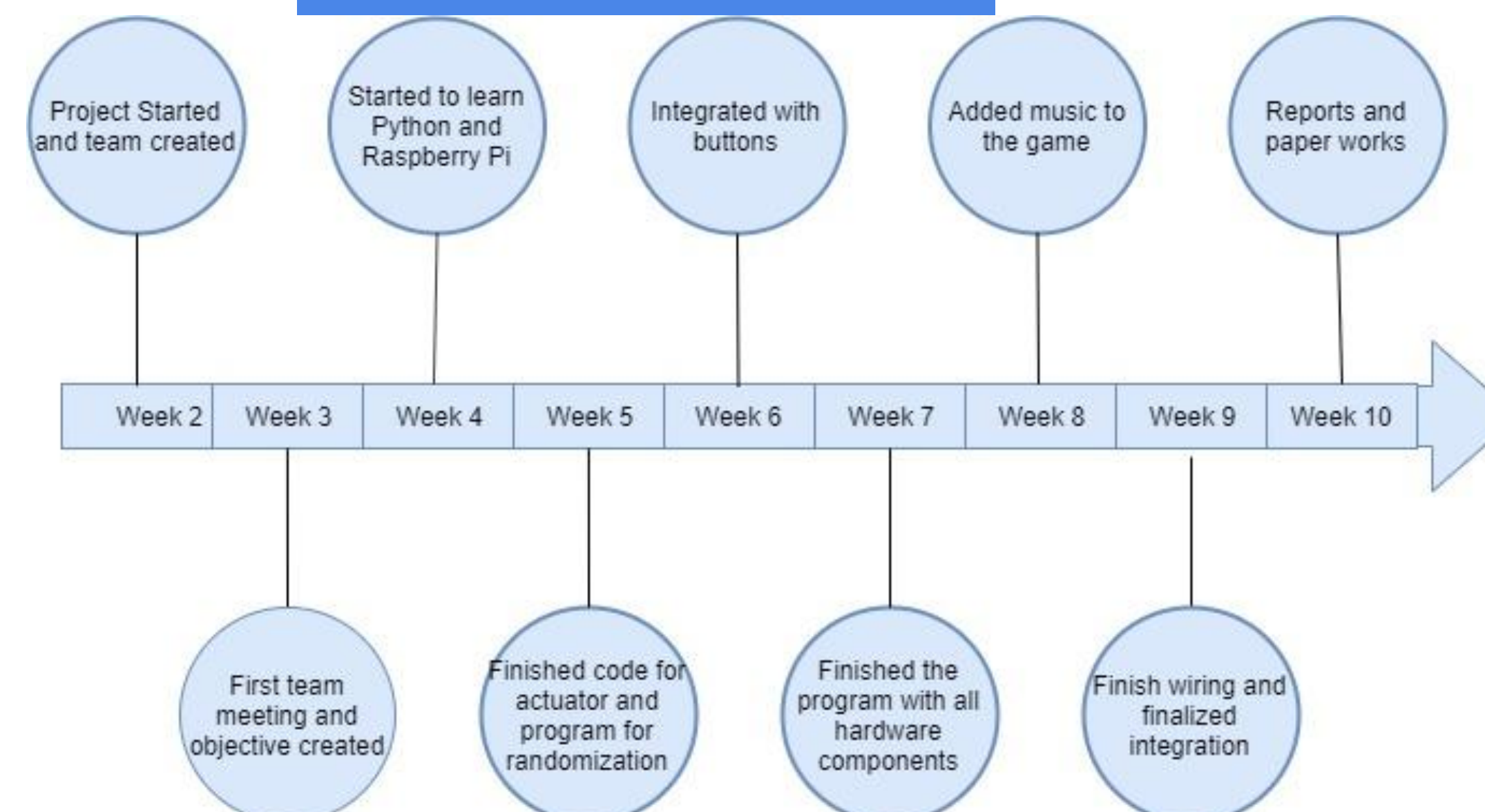
Innovation

- 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
- Program must contain a feedback system that improve user's performance
- Device must be portable to be able to use at home

Timeline



What is for Next?

- Improve the mechanical design to be more ergonomic
- Add a screen to help users keep track of their progress
- Implement feedback system that gauge user's performance to set difficulties of the game

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