Game-based Tele-rehabilitative Solutions for Stroke Patients

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Research
Title: Game-based Tele-rehabilitative Solutions for Stroke Patients
The goal of this project was to iterate through the design cycle, focusing on both hardware and software, to create better solutions for healthcare. Mr. Rose researched hardware components to measure some form/function of the body requiring training. Moreover, he investigated software components to enable interactive visualization of real-time data of body form/function, much like a video game for encouraging users to make progress in their training. After conducting research on conditions, such as heart disease and stroke, and examining the treatments, i.e. exercises, he picked one measurement that can be used to assess the patient's progress with an exercise and determine which sensor(s) could appropriately measure it. Next, he developed a hardware prototype and addressed data visualization using software of participants' choice (Processing, Unity, etc.), and integrated the entire solution with a gaming environment.
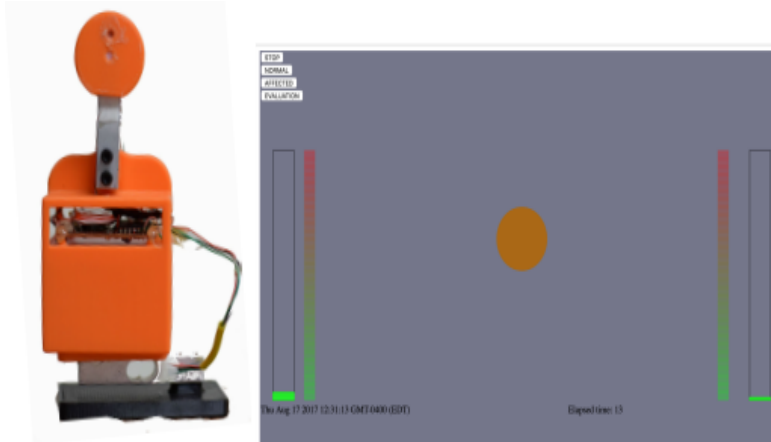

Figure: Game-based rehabilitation solution
Lesson Plan
Title: Physical Computation Therapy
In this lesson, students will select a condition such as heart disease, stroke, etc., and examine the treatments, i.e., exercises, that exist for it. Then they will choose at least one measurement that can be used to assess the patient's progress with an exercise and determine which sensor(s) can appropriately measure it. Once a hardware prototype is developed, students will visualize the data using a software of their choice (Processing, Unity, etc.).

Figure: Physical computation therapy