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# User Manual for Hand Mobility Monitoring and Analysis

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**Abstract:** This project uses a Leap Motion controller to track hand movements through a series of games designed to help hand mobility. These games allow for real-time feedback on how users are progressing through an exercise and if they are archiving their goals. Analysis of the hand tracking allows for a record of progression to be recorded for care providers to create reports that can contain a mixture of both tables and graphs along with their own commentary of results.

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# Installation

## Server

For the project to be installed an apache server running PHP 7 and an SQL database must be available. To install the required software to run the project download and install xampp available from <https://www.apachefriends.org/download.html> .

Once xampp is installed, the database scheme for the project must be executed in order for the database to be usable for the project.

To do this, execute the following command “*mysql scheme.sql*” where scheme is the file located at build/database of the project directory. After this create a new user called project with the password project, and give access to the new database scheme created.

After this is done place the contents of WebSite folder into the C:\xampp\htdocs folder.

## Client

The client requires only a browser to work for care providers, however for patients the leap motion controller requires that the service and driver are installed. To install these components go to <https://www.leapmotion.com/setup/desktop/windows> and download and install the required software.

# How to Use

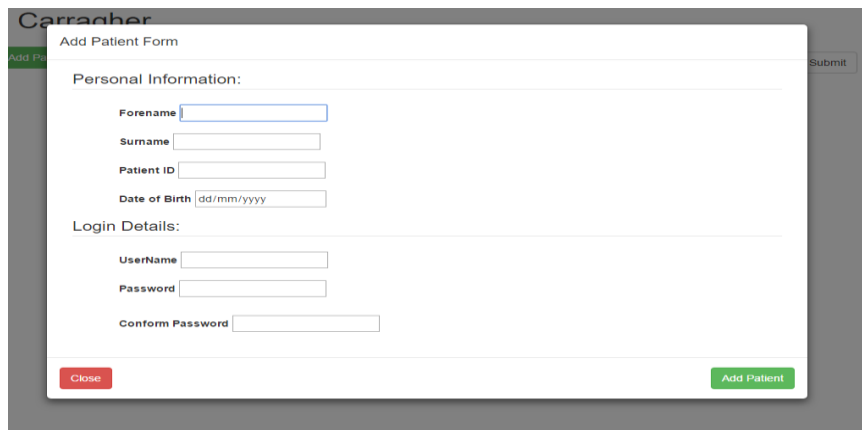
## Care Provider Portal

### Login To account

To log into your account go to the homepage of the site and enter you log in details into the box labelled “Login to Care Provider Portal” Once you information has been verified you will be redirected to your portal.

### Add Patient

To add a patient to your account click the “Add patent” button on the top left hand side of the portal. Doing so will make the following form appear.



Fill in the information about the patient and then get them to create a username and password for their account.

### Access Patients account

To access a patient's account to change exercise parameters or to view the generated results of their exercises, place their identification number in the search bar on the top right of the portal.

### Add an Exercise

To add an exercise to a patient, first access a patient's account as described before. Then select "Exercise Scheme" and then "Add Exercise".

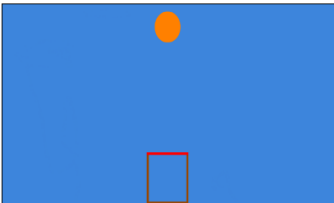
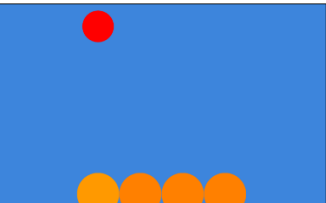
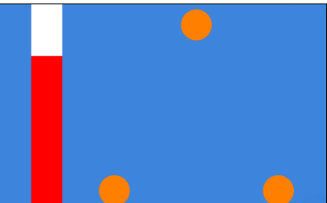
Welcome Richard Carragher  
Level: pro

[Add Patient](#)  [Submit](#)

Name: Test Subject  
Date of Birth: 2017-05-17

[Exercise Scheme](#) [Report Generation](#) [Patient Feedback](#)

[Set Exercises](#) [Add Exercise](#)

 Finger Separating	 Tip To Tip	 Wave
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Click on the required exercise and a form will appear with all information about the exercise that can be changed.

Exercise Addition Form

Name: Wave

Repetitions:

Sequences:

Targets: Left Hand Right Hand

extension : <input type="text"/>	extension : <input type="text"/>
flexion : <input type="text"/>	flexion : <input type="text"/>

[Close](#) [Add Exercise](#)

Once done click add Exercise button on the bottom right. You may review the exercise under set exercises tab.

### Change Exercise

To change an exercise or to remove it first access a patient's account and then go to Exercise Scheme and the set Exercises. To change any exercise click on the green change

exercise button. This will bring up a form similar to that of the exercise additional form from above.

You can make any change you want from this form including removing a target completely by placing -1 as its input.

### **Create a Report**

To create a report for a patient, first access the patients account and then go to Report Generation. From there you will have four options to choose from. The first two Add Graph and Add Table are responsible for gathering information about a patient and a selected exercise.

Once the element is added to the report comments may be added by typing into a comment box below a table or graph.

By clicking export to PDF a pdf will be generated from all graphs and tables within the report page. If this page is blank no report will be exported.

## **Patient Portal**

### **Login To account**

To log into your account go to the homepage of the site and enter you log in details into the box labelled "Login into Patient Portal" Once you information has been verified you will be redirected to your portal.

### **Complete Exercise**

To complete an exercise first click on the exercise tab to view available exercises. Click on an exercise to begin it. For you to perform an exercise the leap motion controller must be plugged into your computer and it must be active. If the leap motion is not active before the exercise was started the page must be reloaded.

Online instructions for how each exercise should be complete are included with each exercise. These should be followed until a completion message appears. It is important to note that the page will redirect you back to the main page, after data is sent to the care provider. If any changes are done to the page before this can be done data collected will be lost.

### **Leave Feedback**

To leave feedback for your care provider, go to the Feedback tab and then write your comment into the text box available, then once you done click the submit button. Your comment will then be sent and you can view your past comments on the same page.