LeapPhysio

Introduction

The aim of the project LeapPhysio is to support the physiotherapist during the treatment of hand injuries. Patients will be able to practice the preconfigured and adjusted exercises independently e.g., at home. This efficiently supports the healing process of the patient's injuries.

FIGURE 1: MAIN MENU

Leap Motion

The Leap Motion works with 2 cameras (CMOS sensors) and 3 LEDs sending out infrared light. The CMOS sensors translate the back light which is falling on them in tension, so that you can determine the position of the hand with the aid of stereoscopic images. This is done with an accuracy of up to 1/100 mm, on condition that the hand is in the coordinate system of the controller (25-600mm above).

Leap Physio

The project has been done in close collaboration with a physiotherapist (Praxis Lebenswert, Christiane Pasker, Schwaigern). Five hand exercises were determined, that have be implemented with the Leap Motion (see Figure 1). These exercises aim to make everyday movements after hand injuries possible again. Since the potential for the patient movements may be very limited initially, it was important that you can individually set a timeout when the exercise is terminated, even if the patient did not complete the whole exercise. To guide the patient as much as possible during the exercise, the graphical user interface was kept as simple as possible (see Figure 2). The patient will find information about the progress of his exercises, such as the number of repetitions that he (still) has to do, the training set itself, and the countdown until the timeout of the exercise. On the right side, he has both, a textual description with a picture, and also a narrated video tutorial. Of course, the countdown timer stops during the video tutorial.
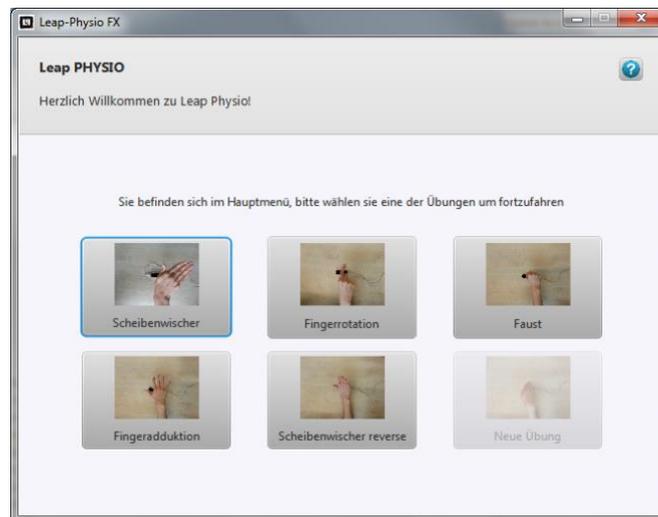

FIGURE 2: SCREENSHOT WIPER

Prof. Dr.-Ing. Gerrit Meixner
UniTyLab
Heilbronn University

Phone: +49 7131 504 6731
Fax: +49 7131 25 24 70
E-Mail: Gerrit.Meixner@hs-heilbronn.de

Max-Planck-Str. 39
74081 Heilbronn, Germany
http://www.unitylab.de