A Virtual Reality Adaptive Exergame for the Enhancement of Physical Rehabilitation Using Social Facilitation

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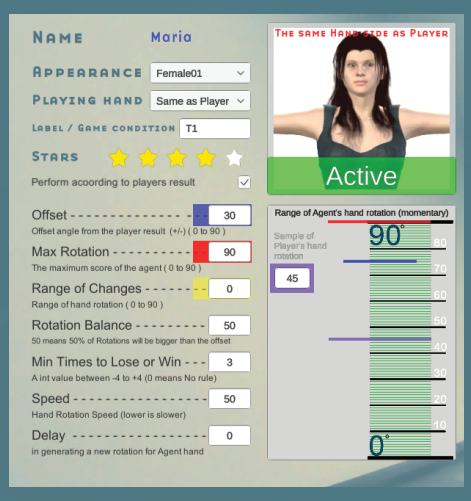
FACE-UP

A flexible VR exergame with collecting data option, where the player is required to repeat the supination-pronation movement of the affected wrist joint, similar to that done within a physiotherapy session.

The players should aim to charge the battery of a virtual car, by rotating their wrist. The higher the degree of hand rotation, the more the cars are being charged. The player can play the game alongside a customized virtual agent. At the end of each round, the cars are racing and will be boosted according to the charge level of their battery.

FEATURES



CUSTOMIZABLE AGENTS

FACE-UP provides the ability to create any number of agents and customize their game behavior and appearance. Their performance can be dynamically adjusted to the performance of each patient.

PERFORMANCE TRACKING

FACE-UP tracks the performance of the patient and collects data that can be useful for the patient and the health professional.

EXPANDABLE

FACE-UP offers the capability to add more indoor environments, outside views, game modes and a virtual crowd.

SYSTEM REQUIREMENTS

NVidia GeForce GTX 1060 (or higher)
16 GB RAM (or higher)
1.4 GB Disk Space
Oculus Rift (CV1) HMD
Xsens Wireless Motion Tracker (MTw)

CREATED WITH

Unity
Autodesk 3ds Max
Adobe Photoshop
Reallusion Character Creator
Adobe Mixamo

PROPOSED STUDY

The aim of the study to investigate the impact of the virtual agent's performance, which can dynamically change at run time, on the patients rehabilitation effectiveness in relation to each patient's individual characteristics.

The findings of the proposed project will direct further the development of a VR application that may improve rehabilitative care of stroke survivors in the future and contribute towards guidelines for the use of social facilitation in the development of other VR systems used in rehabilitation.

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ACKNOWLEDGMENTS

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 739578 and the Government of the Republic of Cyprus through the Directorate General for European Programmes, Coordination, and Development.

Cyprus University of Technology · GET Lab · RISE UP Research Centre on Interactive Media Smart Systems and Emerging Technologies · VR Well-Being · ICAT-EGVE 2020 2-4 December, Orlando