A Demonstration of the PATHway System for Technology-enabled Exercise-based Cardiac Rehabilitation

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ABSTRACT

We described an invited demonstration to MMHealth'16 of a platform for technology-enabled exercise-based Cardiac Rehabilitation (CR). The demo focuses on one technical aspect of a much broader lifestyle intervention program i.e. real-time estimation of a user's adherence to an exercise programme.

1. OVERVIEW

The PATHway project[1] is developing a technology platform to help empower patients to more effectively self manage Cardio-Vascular Disease (CVD). The platform enables socially-connected personalised exercise sessions as part of a broader lifestyle intervention program. The modular platform, see figure 1, delivers the exercise programme through an ExerClass with a virtual avatar. The invited demonstration at MMHealth'16 will show how users interact with the system including navigation, manual data entry, real-time movement sensing, analysis of exercise movements and automatic adaptation of exercise based on a user's physiological response. We particularly emphasise the operation of the following modules:

- Motion Capture: a Microsoft Kinect coupled with optional wearable inertial measurement units can be used to capture human motion;

- Exercise Evaluation: the captured motion is compared to gold-standard pre-capture data for the various exercises to be performed;

- Physiological Data: the Microsoft Band is used to capture physiological data, specifically user heart-rate in this demonstration, which is used to adapt the nature of the exercise being performed;

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[1]See: http://www.pathway2health.eu/

- User Interface: an attractive user friendly and understandable virtual environment is the basis of the system's GUI.

(a) Using the system

(b) The ExerClass

Figure 1: The PATHway demonstrator

2. CONCLUSION

The platform will be demonstrated at the MMHealth'16 workshop whereby participants will have the opportunity to try the system for themselves.