ABSTRACT

We demonstrate a pervasive social exergame platform called ExerLink that converts exercise intensity to game inputs and intelligently balances intensity/delay variations for fair game play experiences. Also, we show the potential of using multiple exercise devices as game controllers and incorporating multiple heterogeneous controllers into a game. Specifically, we consider a class of exercise equipment used for repetitive, individual, and aerobic (RIA) exercises such as treadmill running, stationary cycling, hula hooping, and jump roping.

Categories and Subject Descriptors

C.3 [Special-purpose and Application-based Systems]: Real-time and embedded systems; H.5.2 [Information Interfaces and Presentation]: User Interfaces—evaluation/methodology, input devices and strategies, prototyping

General Terms:

Design, Human Factors, Experimentation

Keywords:

Exergame, Exercise, Social, Pervasive, Heterogeneous

1. INTRODUCTION

We envision that pervasive social exergames supporting multiple exercise modalities will enable true ubiquitous social interactions, fostering social bonds and friendships. Further, such exergames will allow people with different exercising capabilities/preferences to gather from diverse situations and to play/exercise together. For instance, a homemaker running on a treadmill at home, a son who is a college student cycling in his school gym, the husband on a business trip using his jump rope, and a young daughter using a hula hoop at her friend's house can all meet virtually and exercise together over a multi-exercise game. They will be able to choose the right exercise appropriate for their given situation or preference, enjoying exercising together via social exergames.

However, realizing an interactive multi-player exergame using RIA exercise devices as game controllers gives rise to important challenges resulting from the differences between exercise modalities, e.g., rotating ropes and taking steps. First, converting exercise devices into game controllers requires exercise-specific considerations of sensor hardware and software support to acquire the exercise intensity metrics to be used as game inputs, e.g., exercise speeds. Traditionally such support has been provided only for specific types of exercise equipment such as stationary bikes. Second, it may cause significant imbalance in game performance among players who simultaneously utilize different types of controllers designed for different exercises. Little study has been done to understand the performance difference with heterogeneous devices and personal preferences/capabilities which is a unique problem in pervasive social exergames.

REFERENCES