![Fraunhofer PORTUGAL logo]

MoverGami

GAMIFICATION OF ACTIVITY MONITORING

The main objective of this project is to analyze and improve users' physical activity using Gamification techniques through an Android application and a web framework.

Context

One of the main problems of people, especially when reaching an adult age, is continue to perform physical activity and having an active lifestyle. Instead they adopt unhealthy habits that in a long term may be harmful to their health.

This current situation motivates the necessity of analyze the effect of Gamification techniques in people's behavior in order to motivate them to improve their level of physical activity.

When performing more physical activity these people will be adopting a more active and healthier lifestyle with great benefits to their quality of life.

Project Goals

The project developed consists in the development of a mobile application along with a web framework that aims to evaluate the effect of Gamification techniques in users' lifestyles. As more specific goals the project includes:

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Fig1. MoverGami Mobile Application.

- Development of an Android application which motivates their users to increase their daily physical activity (walking, running, etc.) through Gamification techniques;

- Development of a web application which works as a framework directed to users who want to add new content to the system;

- Implementation of a machine learning algorithm which adapts the use of the application to each level of user physical activity.
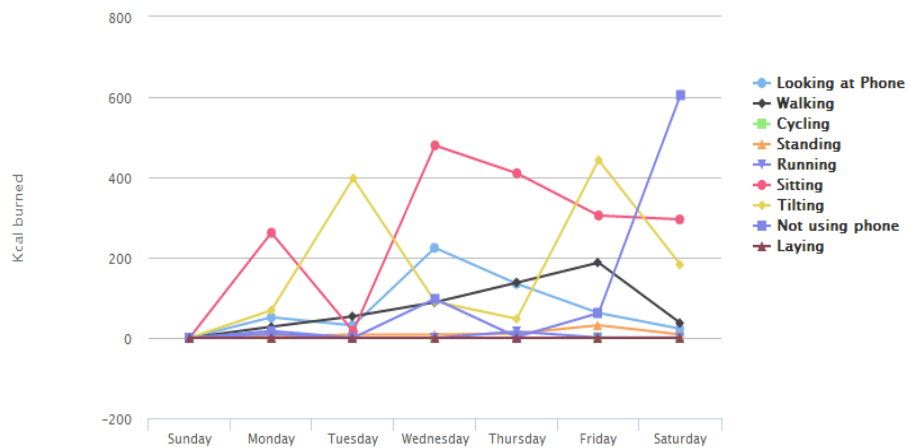
Fig2. Example of a user's weekly activity.

Mobile Application

The proposed solution is a mobile application named MoverGami complemented with a web application MoverGamiWeb. This application uses data obtained from Mover, a mobile application previously developed at Fraunhofer, which while running on background of a smartphone tracks and monitors all the user's physical activity, identifying periods of walking, running, sitting, among other daily activities. The Mover application also quantifies the meters traveled, velocity, calories burned and time performing some activity.

The MoverGami application allows the users to access their information, view statistics, obtain new challenges, and collect badges or rewards. The accumulation of the retrieved data builds up the user's personal stats and with these statistics the application user is able to unlock or complete game elements (see left side) created using the web framework. In order to adapt MoverGami to different levels of users' physical activity and to encourage inactive subjects to perform more activity, a reinforcement learning algorithm was implemented.

Web Framework

MoverGamiWeb is a web application working as a framework for administrators, which will allow the management of the game elements by creating, editing or deleting them. Also, it allows administrators to keep up with users' activity by seeing their statistics represented graphically and organized by different timeframes (see figure above).

Future Work

Building a system that engages users continuously, is a task that implies many observations and its evaluation process can take several weeks. MoverGami application provides real-time feedback on users' activity and has the potential of reinforcing physically active lifestyles and behaviors.

Future tests with a larger group of subjects evaluated over time are required to validate the application impact on lifestyle changing.