Gamification on User Daily Activities

José Pereira, Bruno Aguiar, Rosaldo Rossetti and Filipe Sousa

10th September 2014

Outline

- Problem and Motivation

- Project Goals

- Related Works

- MoverGami

- Evaluation

- Conclusions

Problem and Motivation

Most **people** perform **poor physical activity** in their daily routines which can be **harmful to their health**

- Childhood obesity

- Elderly People's physical activity difficulties

Project Goals

Aim: To motivate physical activity in users through Gamification techniques

- Development of a mobile application which motivates users through Gamification techniques

- Development of a web framework to manage system's content

- Implementation of a machine learning algorithm that adapts the application to different users

Related Works

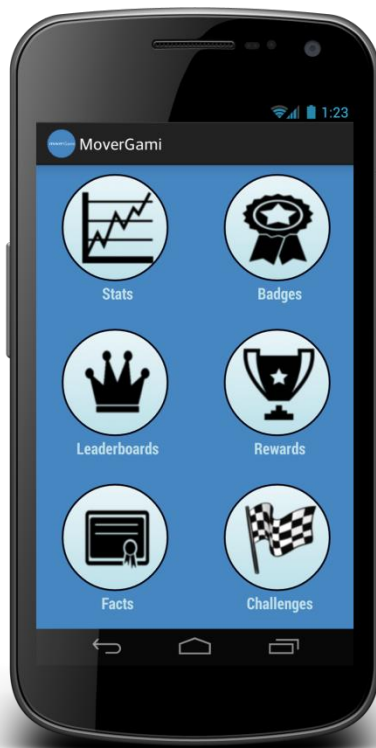## Applications Examples (1/2)

■ Foursquare
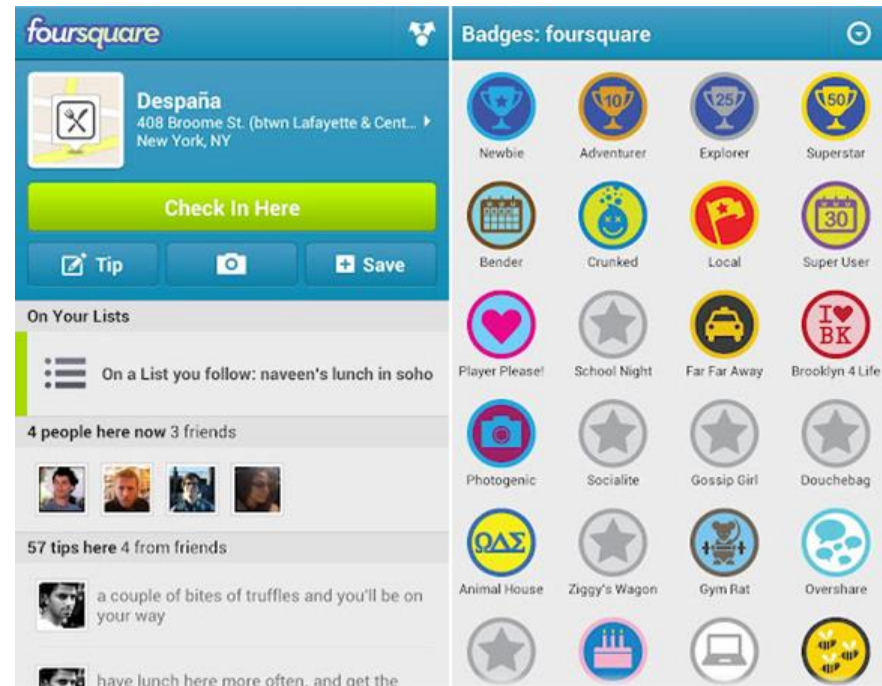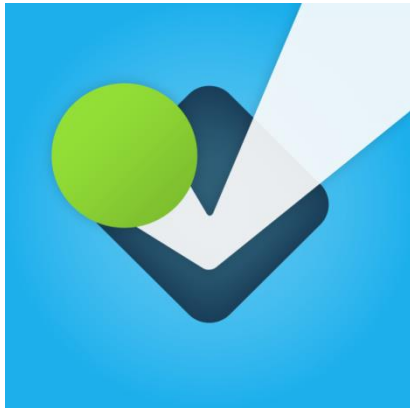
Related Works

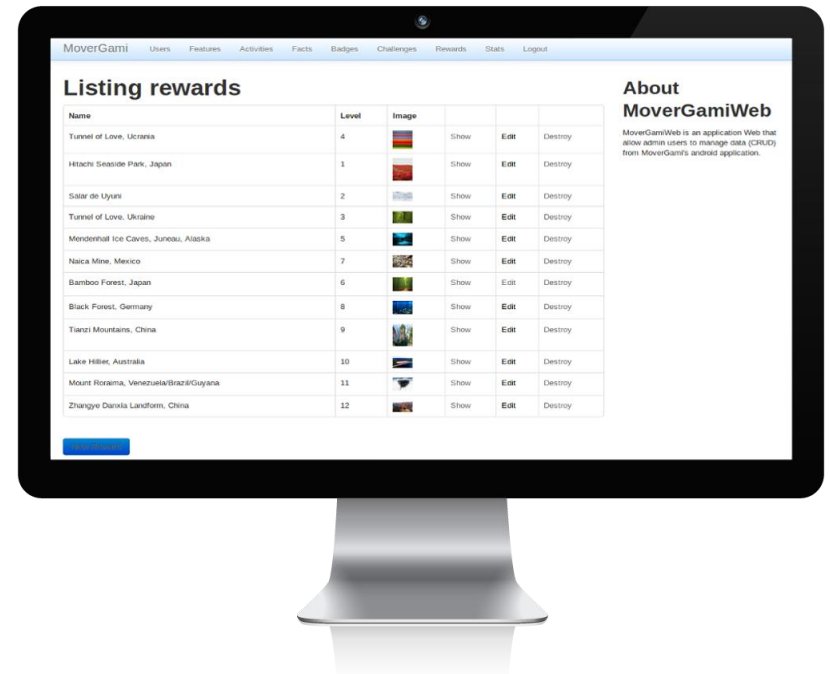## Applications Examples (2/2)

- Zombies, Run!

MoverGami

■ Mobile Application

■ Web Framework

© Fraunhofer Portugal 2014

MoverGami

Mover

- **Utilization of Mover application**
  - Reads data from the phone **accelerometer**
  - **Identifies** what type of **activity** the user is doing
    - walking
    - running
    - tilting, etc.
  - And **quantifies**:
    - distance traveled
    - energy expended
    - number of steps, etc.
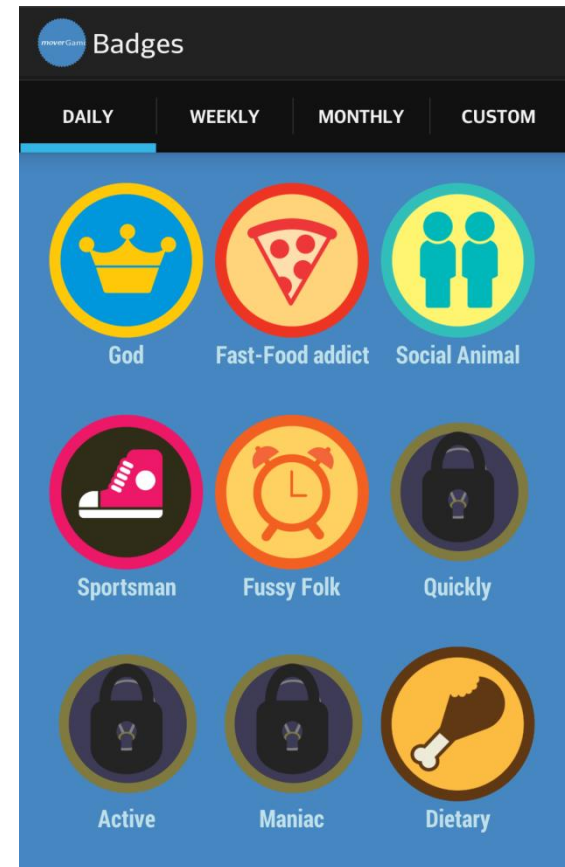
MoverGami

Mobile Application

- Intended for **Android** users

- Displays user **personal statistics**

- Sends data to the **cloud**

- "**Gamified**" component of the system
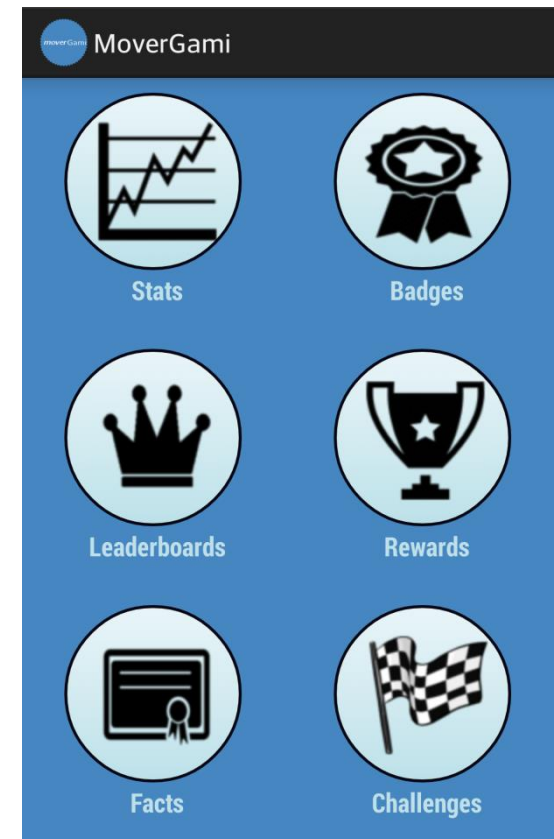
MoverGami

Gamification Model: Badges (1/2)

- Compared to "**medals**"

- Arouse a need on users to **collect** them

- **Unlocked** by completing **achievements**

- Organized by **timeframe**
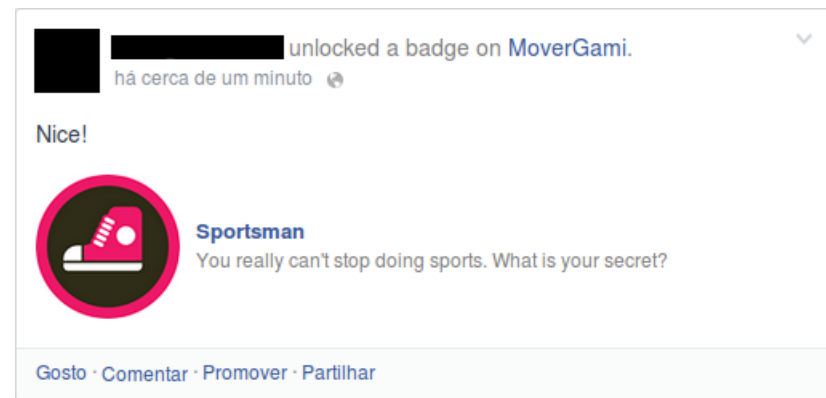 - Daily
  - Weekly
  - Monthly
  - Custom

MoverGami

Gamification Model: Badges (2/2)

- Sharing on Facebook

MoverGami

Gamification Model: Leaderboards

- Creates a **social experience**

- Encourages **competition** among users

- **Personalized leaderboards**
  - Tell exactly where the player stands relative to others

- Organized by:
  - Experience Points (XP)
  - Number of badges unlocked
  - Current Level

moverGami Leaderboards		
BY XP	BY BADGES	BY LEVEL
Name		**Experience**
1 John		2000
2 Brandon		1010
3 Robert		908
4 Quentin		823
5 Carlos		660
6 Mary		100
7 Peter		100
8 Anne		100
9 Jacob		100
10 Eduard		100
11 Gabriel		100

MoverGami

Gamification Model: Challenges

- **Challenge** users to perform more physical activity

- Users **receives XP** by completing challenges

- Composed by:
  - **Trigger** – restriction which activates the challenge
  - **Goal** – what the user must accomplish

Challenges

CURRENT CHALLENGE

You should burn 1.0 kcal in 86400 seconds. Complete this challenge to earn points and unlock rewards!

132

COMPLETED CHALLENGES

Resistance

Improve your health.

Heal your sickness.
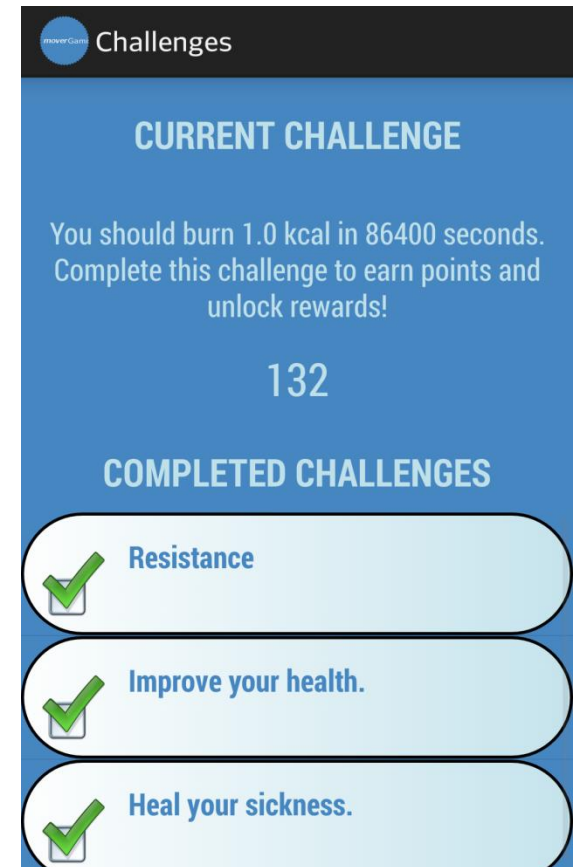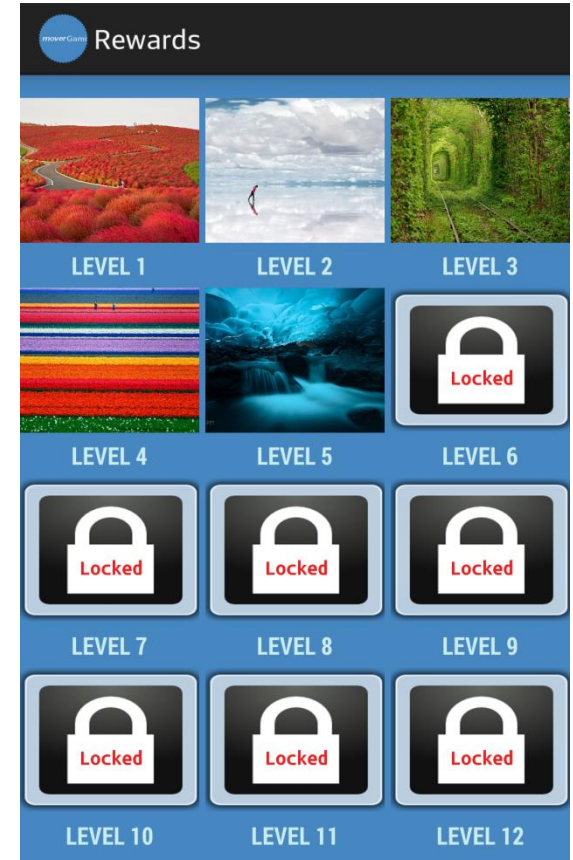
MoverGami

Gamification Model: Facts

- Offer some cultural fact or curiosity in form of **"Did you know?" dialogs**

- Users are unaware of the existing Facts on the system
  - Cause **curiosity** on the user

Facts

COMPLETED FACTS

✓ Your distance traveled (72.0 meters) is equal to Church of the Holy Archangels length.

✓ The number of calories burned by your activity (540.0 kcal) is equal to a Big Mac energetic value.

✓ The number of calories burned by your activity (295.0 kcal) is equal to a Cheeseburguer energetic value.

✓ Your distance traveled (3340.0 meters) is equal to Monaco Circuit length.

MoverGami

Gamification Model: Rewards

- Unlocked by experience earned and consequently **leveling up**

- Collection of **images**

MoverGami

Machine Learning

- Adapt the application to different **levels of user physical activity**

- **Automatic creation** of new Challenges

- **Q-Learning** algorithm implemented
  - Fixed **number of states** and **actions**
  - Uses user **current activity** and **level of activity** in previous **2** hours as **states**

MoverGami

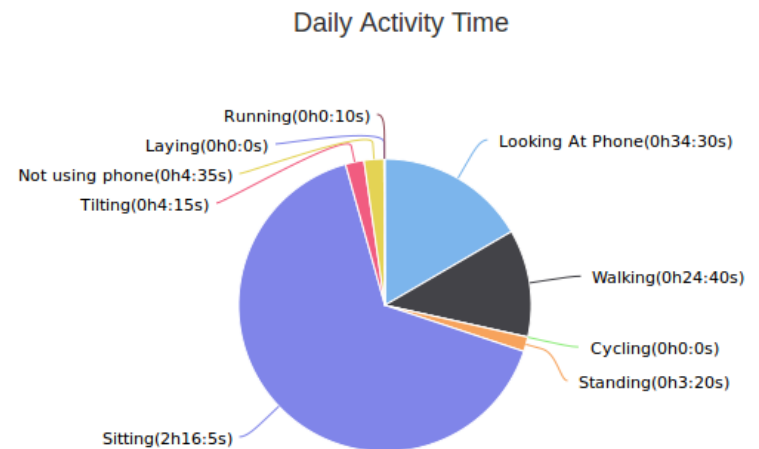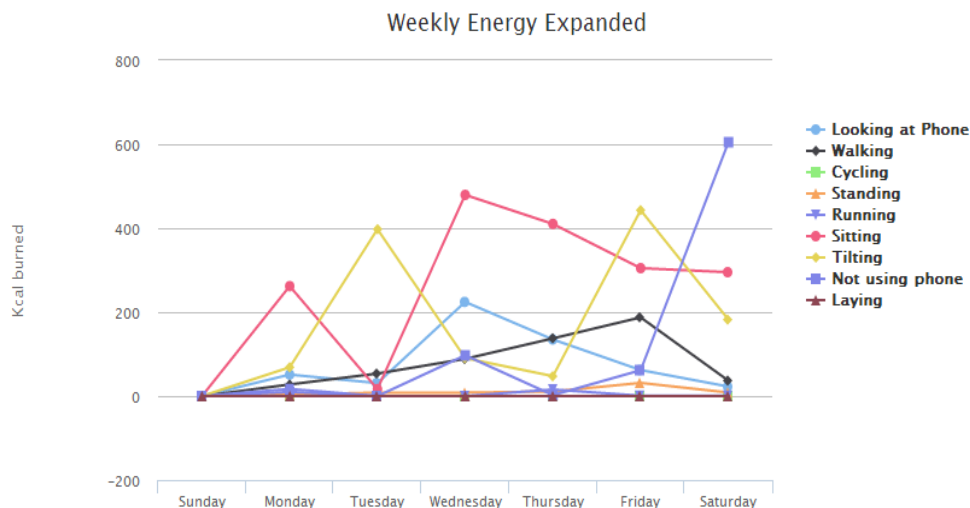## Web Application (1/2)

■ **Framework** for administrators

■ Provides **CRUD operations** on MoverGami's **game elements**

- Badges
- Challenges
- Facts
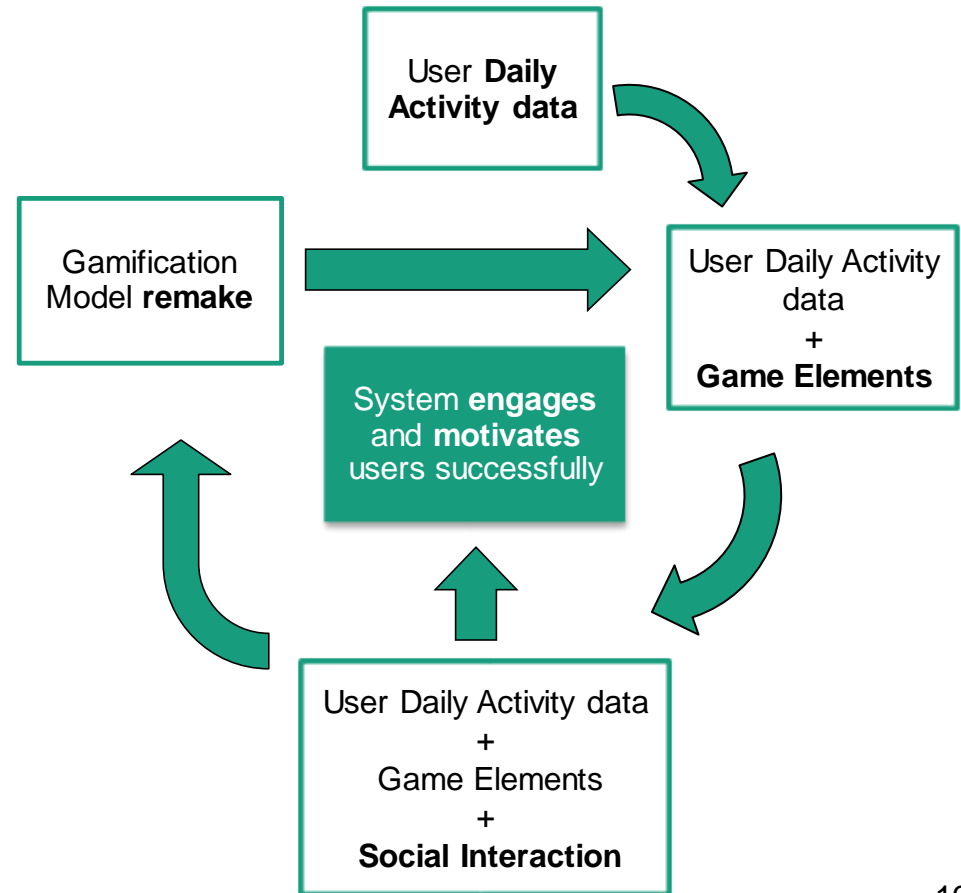- Rewards

MoverGami

Web Application (2/2)

- **Offers users statistics**
  - Represented graphically
  - Organized by timeframe

Evaluation

- **Designed test procedures** for MoverGami

- Field tests will be conducted soon with **selected subjects**

User **Daily Activity data**

Gamification Model **remake**

User Daily Activity data
+
Game Elements

System **engages** and **motivates** users successfully

User Daily Activity data
+
Game Elements
+
Social Interaction

Conclusions

- The **web framework** component allows an appropriate **management** of game elements and user profiles

- MoverGami **extends** Mover in order to **influence** the user to adopt a **healthier lifestyle**

- MoverGami presents the **potential to motivate** users to increase their **daily activities**

Questions