

***Errant: <description>***

***An iOS Fitness RPG***

A Major Qualifying Project Report

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**Abstract**

For design and development of

Errant: <Description>

By

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This report is focus on.

This document discusses…

Through the use of the iPhone’s new M7 chip, in conjunction with iBeacon Bluetooth devices, we created an iPhone role-playing game that is meant to encourage players to have a healthier lifestyle. The player engages in a real world role-playing game experience where the way they exercise in reality impacts their digital avatar’s traits and abilities. The goal of this game is to encourage exercise through in-game benefits to the player’s character, with the hope of eventually changing the player’s lifestyle to incorporate more exercise.

**Acknowledgements**

Our project could not have been completed without assistance from the following Ritsumeikan University students and faculty, as well as all of the Ritsumeikan University play testers as well as all Media Experience Design Lab members:

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* Kohno Hitomi:

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* Alex:
* Professors Lindeman:

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Through exercise

Through gameplay

* + - * 1. Player Attacks and Abilities
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Trait values vs. level

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**Introduction**

**Project Proposal and Purpose:**

This project sought to provide a real world role-playing game experience with the purpose of encouraging exercise and a healthier lifestyle. Using traditional role-playing game concepts combined with real-world location and exercise monitoring of the M7 chip found on new iOS devices, we planed to create a unique gameplay experience where the player feels that they truly are the character being represented on their device. We hoped that this would inspire players to go out into the world to explore play with others, rather than sitting together inside.

**Gameplay Inspirations and Related Works**

This project takes inspiration, in terms of both its concept as well as its gameplay, from numerous sources. The following are the major inspirations and influences behind this game.

**RPG and JRPG Genres**

Some of the major inspirations for this game are games from the role-playing game (RPG) and Japanese role-playing game (JRPG) genres. From these genres we were able to determine the primary method of gameplay that our players would be engaging in (turn based combat). Games such as Bravely Default and games from the Final Fantasy series number among our major influences.

**Ingress**

Ingress is a multiplayer augmented reality game. Players are divided into two factions and these factions compete to take control of the world. Player use their cell phones in order to set up virtual towers and capture areas of the Earth. Players try to increase the potency and range of their factions control while waging war on the opposing faction. Ingress was a major inspiration for this project because of its excellent mapping and use of real-world locations in gameplay. Our goal was to provide an experience with a similar use of real-world locations while at the same time not allowing for some of the poor gameplay habits that Ingress gave rise to, specifically playing the game whilst driving.

**Dungeons and Dragons**

Dungeons and Dragons is tabletop fantasy role-playing game that is typically played by groups of four to eight people. Normally the game features very few physical resources, typically only a set of die and pieces of paper. Guided by a non-playing person (knows as the dungeon master) player’s band together to travel through elaborate worlds and dungeons, defeat monsters, discover treasure, and even communicate with non-player characters.

We found inspiration through Dungeons and Dragons due its high levels of immersion and cooperative gameplay, deep and dynamic character creation mechanisms, and dynamic difficulty. Our goal was to try and achieve this level of immersion, while not allowing for a gameplay session to consist of hours of sedentary gameplay, which Dungeons and Dragons lends itself to.

**Find Mii**

Find Mii is a game built into the Nintendo 3DS handheld system. By leaving their system in sleep mode and bringing it with them during their day-to-day activities, players can collect other 3DS users’ characters. Later, these players can be used to defeat monsters and obtain treasure, which can be flaunted at other players. We found Find Mii very inspiring in its multiplayer gameplay mechanics as well as its simplicity.

**Other Related Works:**

* WhereIGo
* Chirp

**Team Members Roles**

Maxwell Perlman: Lead Designer and developer

Stefan Alexander: Lead Developer and designer

Asuka Wakao: Programmer

Kohno Hitomi: Artist

Alex Clemens: Artist

**Development**

**Xcode and iOS**

**Swift and Objective-C**

**Frameworks**

**Google Maps**

**SpriteKit**

**CoreLocation**

**CoreMotion**

**M7 Chip**

**Darwin**

**Accounts**

**UIPickerViewDelegates**

**Local Push Notifications**

**NSUserDefaults**

**NSTimer**

**AppDelegate**

**iBeacon Devices and Multiplayer Gameplay**

**Server and Database**

**GitHub**

**Design**

This section will cover every aspect of the design and balancing of this game, from our initial design decisions to our final play testing results and how they impacted the design.

**Initial Design Decisions**

This subsection will address the initial design consideration that took place before development began.

**Understanding Our Audience**

The first major consideration when the design process began was to determine our target audience. We determined our audience to be between 17 and 60 years of age. Additionally, we concluded that there were two major subgroups of players that we would be focusing on: those who are looking for a multiplayer gameplay experience and those who are looking for encouragement to exercise more. Finally, we determined that the game would be targeted to both an American and Japanese audience.

**American and Japanese Audience**

In recent history, mobile have become exceedingly, especially amongst our target audience. This, in conjunction with the omnipresence of iPhones on an international scale, informed out decision to develop a game for iOS.

Based on research we conducted of both he American and Japanese app stores for iOS, we were able to understand the types of applications that were currently popular. In fact, the research confirmed that we were developing the correct game for our target audience. In the American application market, amongst the most popular applications were those related to fitness, while in Japan, the most popular applications were games, specifically role-playing games.

**Violent vs. Non-Violent Gameplay**

We considered non-combat oriented gameplay, thinking combat possibly too violent. However, we concluded that due to the age group of our target audience, combined with the vast popularity of combat-oriented games in the Japanese market, that combat-oriented gameplay was not too mature or a concept for the game.

**Experiential Goals**

The primary experiential goal of this game is to create an engaging gameplay experience that encourages exercise through gameplay. The ultimate goal being that once players have stopped playing the game, that the game will have had a permanent effect on their exercise habits, hopefully encouraging the player to incorporate more exercise into their daily life. The secondary goal of this game is to encourage players to exercise and play games as a group, rather than alone.

**Combat System**

**Entities**

**Traits**

**Speed and Combat Order Calculation**

**Player**

**Character Growth**

**Through exercise**

**Through gameplay**

**Player Attacks and Abilities**

**Enemies**

**Possible Growth Rates**

**Trait Values vs. Level**

**Types**

**Testing Procedure**

**Computer Automated Testing**

**Player Based Testing**

**Future design areas and expansion possibilities**

Very Low:

* Offset =
* Minimum =
* Maximum =

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Offset | Minimum | Maximum |
| 1 | 0 | 0 | 1 |
| 2 | 1 | 1 | 2 |
| 3 | 1 | 2 | 3 |
| 4 | 2 | 3 | 4 |
| 5 | 2 | 4 | 5 |
| 6 | 3 | 5 | 6 |
| 7 | 3 | 6 | 7 |
| 8 | 4 | 7 | 8 |
| 9 | 4 | 8 | 9 |
| 10 | 5 | 9 | 10 |

Low:

* Offset =
* Minimum =
* Maximum =

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Offset | Minimum | Maximum |
| 1 | 1 | 0 | 2 |
| 2 | 2 | 2 | 4 |
| 3 | 3 | 4 | 6 |
| 4 | 4 | 6 | 8 |
| 5 | 5 | 8 | 10 |
| 6 | 6 | 10 | 12 |
| 7 | 7 | 12 | 14 |
| 8 | 8 | 14 | 16 |
| 9 | 9 | 16 | 18 |
| 10 | 10 | 18 | 20 |

Medium:

* Offset =
* Minimum =
* Maximum =

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Offset | Minimum | Maximum |
| 1 | 2 | 0 | 3 |
| 2 | 4 | 3 | 6 |
| 3 | 6 | 6 | 9 |
| 4 | 8 | 9 | 12 |
| 5 | 10 | 12 | 15 |
| 6 | 12 | 15 | 18 |
| 7 | 14 | 18 | 21 |
| 8 | 16 | 21 | 24 |
| 9 | 18 | 24 | 27 |
| 10 | 20 | 27 | 30 |

High:

* Offset =
* Minimum =
* Maximum =

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Offset | Minimum | Maximum |
| 1 | 3 | 0 | 4 |
| 2 | 6 | 4 | 8 |
| 3 | 9 | 8 | 12 |
| 4 | 12 | 12 | 16 |
| 5 | 15 | 16 | 20 |
| 6 | 18 | 20 | 24 |
| 7 | 21 | 24 | 28 |
| 8 | 24 | 28 | 32 |
| 9 | 27 | 32 | 36 |
| 10 | 30 | 36 | 40 |

Very High:

* Offset =
* Minimum =
* Maximum =

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Offset | Minimum | Maximum |
| 1 | 4 | 0 | 5 |
| 2 | 8 | 5 | 10 |
| 3 | 12 | 10 | 15 |
| 4 | 16 | 15 | 20 |
| 5 | 20 | 20 | 25 |
| 6 | 24 | 25 | 30 |
| 7 | 28 | 30 | 35 |
| 8 | 32 | 35 | 40 |
| 9 | 36 | 40 | 45 |
| 10 | 40 | 45 | 50 |

For the following equations, the value of “random” is a randomly generated random number between the minimum and maximum values (inclusive).

Logarithmic:

* Formula:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Level | Very Low | Low | Medium | High | Very High |
| 1 | 2:3 | 3:5 | 4:7 | 5:9 | 6:11 |
| 2 | 4:5 | 6:8 | 9:12 | 12:16 | 15:20 |
| 3 | 6:7 | 10:12 | 15:18 | 20:24 | 25:30 |
| 4 | 8:9 | 13:15 | 20:23 | 27:31 | 34:39 |
| 5 | 8:9 | 15:17 | 24:27 | 33:37 | 42:47 |
| 6 | 10:11 | 18:20 | 29:32 | 40:44 | 51:56 |
| 7 | 11:12 | 21:23 | 34:37 | 47:51 | 60:65 |
| 8 | 12:13 | 23:25 | 38:41 | 53:57 | 68:73 |
| 9 | 13:14 | 26:28 | 43:46 | 60:64 | 77:82 |
| 10 | 14:15 | 28:30 | 47:50 | 66:70 | 85:90 |

Linear:

* Formula:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Level | Very Low | Low | Medium | High | Very High |
| 1 | 1:2 | 2:4 | 3:6 | 4:8 | 5:10 |
| 2 | 4:5 | 6:8 | 9:12 | 12:16 | 15:20 |
| 3 | 6:7 | 10:12 | 15:18 | 20:24 | 25:30 |
| 4 | 9:10 | 14:16 | 21:24 | 28:32 | 35:40 |
| 5 | 11:12 | 18:20 | 27:30 | 36:40 | 45:50 |
| 6 | 14:15 | 22:24 | 33:36 | 44:48 | 55:60 |
| 7 | 16:17 | 26:28 | 39:42 | 52:56 | 65:70 |
| 8 | 19:20 | 30:32 | 45:48 | 60:64 | 75:80 |
| 9 | 21:22 | 34:36 | 51:54 | 62:72 | 85:90 |
| 10 | 24:25 | 38:40 | 57:60 | 76:80 | 95:100 |

Exponential:

* Formula:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Level | Very Low | Low | Medium | High | Very High |
| 1 | 0:1 | 1:3 | 2:5 | 3:7 | 4:9 |
| 2 | 3:4 | 5:7 | 8:11 | 11:15 | 14:19 |
| 3 | 5:6 | 9:11 | 14:17 | 19:23 | 24:29 |
| 4 | 9:10 | 14:16 | 21:24 | 28:32 | 35:40 |
| 5 | 12:13 | 19:21 | 28:31 | 37:41 | 46:51 |
| 6 | 17:18 | 25:27 | 36:39 | 47:51 | 58:63 |
| 7 | 21:22 | 31:33 | 44:47 | 57:61 | 70:75 |
| 8 | 27:28 | 38:40 | 53:56 | 68:72 | 83:88 |
| 9 | 32:33 | 45:47 | 62:65 | 79:83 | 96:101 |
| 10 | 39:40 | 53:55 | 72:75 | 91:95 | 110:115 |

**Gameplay Guide**

**First gameplay experience**

**Subsequent gameplay experiences**

**Production Timeline**

**Produced Materials**

**Code**

**Art**

**Reference Materials and Tools**

**Original Design and Proposal**