

**ANT'S KART ANDROID MOBILE GAME**

**JELLY ROSE MACATBAG**

**ANA MORENA ECHALAS**

**HERWIN B. ESTABILLO**

**INSTITUTE OF COMPUTING STUDIES**

**ILOCOS SUR POLYTECHNIC STATE COLLEGE**

**SANTA MARIA, ILOCOS SUR**

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**(Computer Graphics and Animation)**

**MARCH 2016**

**TABLE OF CONTENTS**

TITLE PAGE	i
APPROVAL SHEET	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
EXECUTIVE SUMMARY	vii
TABLE OF CONTENTS	viii
LIST OF TABLES	x
LIST OF FIGURES	xi

**Chapter 1 INTRODUCTION**

Project Context	1
Purpose and Description	5
Statement of the Objectives	6
Scope and Limitations	6

**Chapter 2 REVIEW OF LITERATURE**

Review of Literature	8
Android Applications based on the Dev't of the Ants Kart App	10

**Chapter 3 TECHNICAL BACKGROUND**

Iterative Model	13
-----------------	----

**Chapter 4 METHODOLOGY**

Gantt chart of Activities	16
Project Team Assignment	17
Data Gathering Procedure	18

*Bachelor of Science in Information Technology*



Data Analysis	18
---------------	----

**Chapter 5 RESULTS AND DISCUSSIONS**

Requirements Analysis	20
Functional and Non-functional Requirements	21
Description of the Prototype	22
Development and Testing	28

**Chapter 6 SUMMARY, CONCLUSION, AND RECOMMENDATION**

Summary	30
Conclusion	31
Recommendation	31

<b>BIBLIOGRAPHY</b>	32
---------------------	----

**APPENDICES****CURRICULUM VITAE**

*Bachelor of Science in Information Technology*



## Chapter I

### INTRODUCTION

#### Project Context

According to Gartner Inc. (2011), mobile games are broadly defined, computer-based games that can be played "on the move", whether on hand-held or vehicle-mounted devices. Many mobile games are exactly the same as their stationary counterparts however, there is a class of mobile games being developed that incorporates things such as the player's direction, speed, location, or proximity to objects in the physical world into the game play itself. Android provides a rich application framework that allows you to build innovative apps and games for mobile devices.

Gartner Inc. (2011), also noted that mobile devices have changed the software development world by providing a platform for the rapid emergence of a new class of software applications (i.e., mobile apps). Mobile apps, commonly referred to as apps, distinguish themselves from the applications that run on typical desktops or servers by their limited functionality, low memory, touch interfaces, and limited screen sizes and resolutions. Smart phones have opened mobile gaming to a wide audience, beyond the hardcore gamer. It begins with an introduction to building Android applications with Google's SDK and Eclipse. It will also discover the basics of creating layouts and custom views, playing music and sound effects, and getting user input from the touch screen and



accelerometer. Mobile apps have become hugely popular among both consumers and developers.

Anders Liljedal (2010) said that mobile games can be used in almost every environment and the games primary function is to entertain the user, not to be used, like location-aware systems, as a utility to aid in certain tasks.

According to Mar&Lanz (2012), playing games is fun and exciting it helps us relief from stress and unwind from our stressful works. Many of us spend their vacant or most of their time in playing and exploring new games. Today, with the rapid development of technology we have, games are also rising up together with it. Nowadays with the technology we have many games are develop for mobile phones most specifically for android. With the high technology equipped with these mobile phones, mobile games become robust and attract many people to buy or have this phone for them to experience what's inside it which makes it a trend for the new generation of mobile phones.

Pawel (2011) noted that android is one of the applications that is being use nowadays in developing a mobile learning. He defined that Android is an open source project developed by the Open Handset Alliance and held by Google Inc. Fairer to say that Android is a software stack for mobile devices. All phones running the Android system come with a range of pre-installed applications like Maps, Google Search, Gmail or YouTube.



(As cited from wikipedia, (2016)), Android is a mobile operating system developed by Google. It is used by several Smartphone's, such as the Motorola Droid, the Samsung Galaxy, and Google's own Nexus One. Android is open source, meaning developers can modify and customize the OS for each phone. Therefore, different Android-based phones may have different graphical user interfaces GUI's even though they use the same OS. Android phones typically come with several built-in applications and also support third-party programs. Developers can create programs for Android using the free Android SDK. Android programs are written in Java and run through Google's "Davlik" virtual machine, which is optimized for mobile devices. A mobile game is a kind of video game played on mobile phones, smart phones, tablet computer, and other games that can be played in android. Google has also pulled together a large group of companies (called the Open Handset Alliance) that both contribute to and use the Android OS in their hardware devices. This means that there is industry-wide support for Google's OS, promising wide adoption across well-known vendors.

Vervoort (2008) defines Unity 3D that this game development software is capable of developing games in 3D. It caters programming languages such as UnityScript, C#, Boo and JavaScript that most programmers find comfortable and easy to learn and master. Vervoort said "Right out of the box you get a pile of useful assets, plus a Terrain Engine, Physics Engine, Networking, and support for nearly every major



file format imaginable. Unity also supports 3D sound, lets you write your own Shaders (to change the appearance of in game objects), has multiple kinds of lighting (with flares, halos, cookies, etc), and more. Unity definitely does not lack in the features department” Unity 3D Unites Code... (Vervoort, 2008). Unity 3D could also export games in different platforms like Playstation, Xbox, Wii, Flash, Android, iOS and Windows.

According to Ian Strandberg. Though focused on developing 3D games, Unity is proven to also be an effective 2D game engine. With a solid documentation and online support Unity 3D sure is a good game engine for developers to use. Unity 3D may seem to only cater 3D games but according to Ian Strandberg “Unity is not ideally suited to 2D games but it is far from crippled and its flexible nature and modular architecture gives it advantages you might not find in a 2D engine.” Why Choose Unity 3D – Part 2(Strandberg, n.d.) because Unity 3D also has easy to learn sprite management features that 2D game developers may find useful.

Korolov (2011) noted as for the level of difficulty in learning the software Maria Korolov claims in her article 5 Reasons to... that “It’s simple to use. There are no confusing menus or keyboard commands or other distractions.” and added that “Everything is mesh-based right from the start. Objects and animations are more realistic — and there is a wealth of material available, both free and commercial, in the form of mesh”. With the mentioned statements above it may be as well



conclusive that Unity 3D is one versatile software and with the right knowledge and concept game developers and designers can now easily jump to game development in no time.

Alan Thorn (2011) stated that in 2D game players typically cannot rotate or move the camera freely in 3D space to view objects from other angles and perspectives. The game objects themselves typically move in only two dimensions as well, such as along the X and Y axes (left/right and up/down) but not along the Z axis (forward/backward); like the characters in a side-scrolling platform game. There are, of course, some exceptions to these rules. But generally, 2D games are defined by the restrictions they put on the developer – they negate or remove the third dimensions as a principle element in the game.

### **Purpose and Description**

The android game Ants Kart would be beneficial to the following:

**Game Users.** This will be another example of 2D games and it caters fun and enjoyment for the users who are fond of games; use it as leisure.

**The Proponents.** Develop the proponents' ability in making a system that would benefit others.



**Future Researchers.** This could serve as the reference of other upcoming program developer of the android game implemented software.

### **Statement of the Objectives**

To develop a mobile game application that can be installed on android phone. Specifically, it sought to answer the following:

1. To identify the different tools needed in formulating and constructing the study.
2. To create Android Ant's Kart Application.
3. To test the functionality of the application through test cases.
4. To test the usability of the system/application using SUMI.

### **Scope and Limitations**

The developed Ant's Kart Game is an Android based system for mobile devices. The game can run on android devices with resolution of 480x800 pixel per inch (ppi) equivalent to 4.7 inches of screen size though it can be used by 3.0 inches of screen size and above. The developed application is set to auto rotation for portrait and landscape position. The developed application is designed for children ages 6 years old and above.



Although the development tool allows compilation into different platforms, the Ants Kart was compiled for Android OS. Since it is the more popular OS installed in smart phones.



## Chapter II

### REVIEW OF LITERATURE

The gaming industry of today has reached new heights and successes over the past years. It truly had become a powerhouse industry and it sure would be for the coming years. With so much to choose from gamers of all sorts enjoy games through different platforms and kinds from 2D games that now dominate the market and the concept of 2.5D games, across between 2D which are also being adopted now by many games.

Racing Games can be divided into two sub-genres: racing simulation, in which the physics and real-world aspects of the vehicles are emphasized; and arcade racing, in which an accurate representation is not important. Kart racing falls in the arcade racing sub-genre, and tends to focus on humorous obstacles.

Kart racers, popularized by the Mario Kart series (though predicated by Power Drift), are a style of racing game that introduces the ability to pick up items during the race, and use them to boost one's performance in a race, or to attack other players and hamper their progress. Like arcade racers, kart racers feature simple racing physics and imaginative environments to race in. The terminology itself was taken from go-kart racing.

2D games may seem dated and obsolete but according to one of IGN.com's bloggers in his blog post *2D Gaming Isn't* (IGN, 2011). 2D



games never really disappeared; as a matter of fact it allows game developers to preserve such game concept and apply modifications and features that would satisfy gamers of nowadays and also improve the quality 2D games itself.

According to Amir Sharar (2010) also cited in his blog article Flashback: Why 2D... ten reasons why 2D game development should still be considered in the future and what 2D games would be when developers would consider developing so. The reasons are as follows:

The graphical processing power will favour 2D games and will give it a more dynamic look and would allow artists to create more movements for characters. Using of shaders to add depth and realism to 2D images. Widescreen High Definition are great for 2D games because it would allow players to see whole game environment further since it can allow 16:9 resolution. Next generation processing power benefits 2D physics and AI allowing objects to move as freely as possible and AI characters to be more unpredictable and capable as well. Return to real time audio synthesis.

Benefits of being online, which may add a 2D game's longevity and interest gamers. 2D games might mean less bandwidth if implemented online. Current controllers may improve 2D game play. 2D games may be an acceptable risk in the industry because they can appeal to players who want easier game play and less mature graphics compared to 3D.



With the aforementioned statements to consider, 2D gaming still seems to be fit when it comes to market value and quality.

Android application which we based on the development of ant's kart android game

Mobile OS Requirements & Tech Requirements							
NAME OF THE GAME	Game or App	Current Version	Android OS	Min RAM	Phone or Tablet	Free Version	Paid Version
Car Racing		1.05	2.2 and up	5.2 MB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Street Racing Games		2	2.3.3 and up	19 MB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Driving in Traffic		1.0	2.3 and up	21 MB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ghostdriver 2D		1.0.1	3.0 and up	11 MB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Car Racer: Drive Safe		1.2	2.3 and up	6 MB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Table 1. Mobile OS Requirements & Tech Requirements

Table 1 shows the specification/OS requirements of the games which this requirements shows what OS will be used and the technical requirements of the game which Minimum RAM (shows the size) and phone or tablet only specified.

### Car Racing

Top Down Car Racing Game is developed by using physic engine. Collect as much as possible coins without crashing other cars. There are 18 different levels.



### **Street Racing Games**

Street Racers is a new top view racing game with more features than any other. Race against opponents to win money to buy new and faster cars. Sell your cars, Race opponents for their cars in this old school top down 2D racing game with a difference. Online open feint leader boards for Best Lap Times and Total Race Times.

### **Driving in Traffic**

An ideal game for those looking for real car driving game. It is a game with the best control and car physics Driving games. You will enjoy the pleasure of a unique game with a perfect car physics. Your goal is to collect coins without hitting the car and make the highest score. You can play 3 different levels of 2D Racing game. You can tilt the phone left and right to steer the vehicle light. To increase the vehicle speed during the race, you need to touch the screen.

### **Ghostdriver 2D**

Stay on the road as long as you can! Avoid collisions with police, fire service, trucks busses, car or with the frog! Beat your own best time or challenge other Players in the TOP 50! With nice Retro graphics and music!



### **Car Racer: Drive Safe**

Car Racer: Drivesafe is a speed car racer game on Indian roads. Speedy trucks and cars are racing on the highway with different velocities. Dodge the cars, buses, and other vehicles of the traffic on the road. Avoid crashing into traffic on the highway.



## BIBLIOGRAPHY

The following reference list contains the address of World Wide Web pages.

### UNPUBLISHED THESIS

Chan et.al 2014, Android Brain Booster Application

### ONLINE SOURCES

Liljedal, A. (2010). Mobile games.Design Implications for Context Aware Mobile Games.

<http://www.enactive.com/publications/liljedal-thesis.pdf>

Thorn, A. (2013). 2D game players. Learn Unity for 2D Game Development.

<https://books.google.com.ph/books?id=ycROAQAAQBAJ&pg=PR19&lpg=PR19&dq=2D+game+history&source=bl&ots=Z4wRJbkhfa&sig=9Ee6wKMCq2EpT-NRDe0RpUVkZ1I&hl=en&sa=X&ved=0ahUKEwiBlNub7PjKAhXiJqYKHY7MDk8Q6AEIVDAL#v=onepage&q=2D%20game%20history&f=false>

Mar & Lanz (2012). 'Where in the Philippines is Elisa?'

<http://mayanneb.blogspot.com/> (Mar&Lanz, 2012)

Syer, M. D. (2013). Empirical Studies of Mobile Apps and their Dependence on mobile platforms.

[http://sail.cs.queensu.ca/Downloads/2013\\_EmpiricalStudiesOfMobileAppsAndTheirDependenceOnMobilePlatforms.pdf](http://sail.cs.queensu.ca/Downloads/2013_EmpiricalStudiesOfMobileAppsAndTheirDependenceOnMobilePlatforms.pdf) (Mark D. Syer, 2013)



Sharar,A. (2010). 2D, 3D and 2.5D Games. Related Literatures.

<http://team13boom.blogspot.com/2013/01/review-of-related-literature.html> (Amir Sharar,2010)

Rouse, M. (2012). Agile Programming. Iterative Development.

<http://searchsoftwarequality.techtarget.com/definition/iterative-development> (Margaret Rouse, 2012)

Crisostomo, L. B. L. (2011). Types of Computer Games. Racing.

<https://sites.google.com/a/ocsbstudent.ca/pihs308976/types-of-computer-games/racing> (Lyke Brandon L. Crisostomo, 2011)

Zechner, M. (2011). Beginning Android 4 Games Development.

<https://www.safaribooksonline.com/library/view/beginning-android-4/9781430239871/s001-001.html> (Mario Zechner, 2011)

[https://en.wikipedia.org/wiki/Unity\\_\(game\\_engine\)](https://en.wikipedia.org/wiki/Unity_(game_engine)) (VentureBeat, 2012)

<http://sail.cs.queensu.ca/publications/pubs/Syer-Mark-D-201301-MSc.pdf> (Mark D. Syer, 2013)

### **Video tutorial**

Biswas, R. (2011). Unity Racing Game Development Tutorial For Beginners. Create A Complete 2D Game With Unity (PC/Mac/linux & Android)

<https://www.youtube.com/playlist?list=PLytjVIyAOStpcOGg6HIHhnOZAdxkAr1U> (1-25 tutorials) (Raja Biswas, 2011)



Carlos\_B. (2015). Unity. 2D Space Shooter Tutorial Part 6 – Explosion Animation and Collision Detection.  
<https://www.youtube.com/watch?v=iTHEXMF0hpc> (Carlos\_B, 2015)