What is melee

In video games, melee explains all forms of close combat between a player and an opponent. This includes hitting an enemy with a weapon at a close range like a sword or bat.

What is gun/range combat

Range combat is the opposite of a melee combat, this means attacking and striking the opponent or an enemy from a distance. This includes using a gun, bow or any other ranged weapon.

What are health points in a game

In game, the points the player or the opponent/enemy has at their disposal before their character ‘dies’, are called the health points, usually abbreviated to HP.

What is a computer controlled opponent

Computer controlled opponent is, usually abbreviated to CPU, is an opponent or an enemy that is programmed to use in game mechanics to response to the player.

Introduction

This project

Video games are a huge part of a modern life and grew to be the biggest entertainment industry, worth almost 90 billion U.S. dollars. The games come in a number of genres so it is very easy to find something that one may enjoy. Being a part of this industry can be a very enjoyable and fulfilling experience because the main of each game project is to create something that others will be able to enjoy and have fun with.

<https://www.wepc.com/news/video-game-statistics/>

Therefore the aim of this project is to create an enjoyable game experience that anyone will be able to pick up and enjoy, either alone or with friends. The aim of this project is create a game that will be complex enough that it will challenge the player and each game will be exciting and distinct. The main objectives of the game are to create a working game prototype, create a stable gameplay, create intuitive Graphical User Interface and research and design dynamic Artificial Intelligence.

The project is worth tackling because creating games can be a very complex process and can teach how to code effectively and to learn how to plan and design a complex project that can be scaled up or down easily. It will give me an opportunity to try out some of the topics that I have studied during the year and give me experience of working on a real project that has no clear end.

Artificial Intelligence is also a very big and important aspect in, not only just gaming, but computer industry overall. Making this project will allow me to dig deeper and understand its workings and develop a better appreciation for video games. I am also planning to work on AI in future and this project will give me the experience and opportunity to learn about it in more detail and maybe even help me with my first job.

The project will not focus so much on refining and polishing the game mechanics because these can take a full team to develop – in an interview with The Guardian, Dave HageWood, CEO of video game company Psyonix, said that the process of refinement of Rocket League took over seven years with a team of 15 people. The project will instead focus on creating a basic video game, and designing and creating Artificial Intelligence that will behave and challenge the players. One part of the project will focus on the game mechanics and the other part on the Artificial Intelligence. This will allow creating a satisfying overall experience without getting hanged up on small details. The game will be kept very basic – inspired by games like Rocket League, Grand Theft Auto 2 and FIFA that provide interesting, challenging and arcade-like experience to users.

There will be two teams on a play field, one ball and two goals just like in a classic football. Each team will have to work together to score a goal by using various weapons like melee, guns etc. to hit the ball into the opponents’ goal. Each player will have their own health points and the game will be timed, the team with the highest score by the end of the game or the teams that reaches the maximum score first, wins.

This type of game has been chosen because it is very basic, easy to implement and it is open ended so there is a lot of room to scale the game up or down if needed. For example to make the game mechanics more basic, fewer weapons can be implemented to save time, or to make the game AI more complex, more game modes can be added where the opponents have to work in teams.

What is unity

Unity is a free game engine developed by Unity Technologies initially released in 2005. It provides tools and frameworks for users to develop games in 2D and 3D graphics, virtual reality games and augmented reality games. It offers a scripting API in C# programming language and supports a wide range of platforms like Microsoft Windows, Nintendo Switch, PlayStation, Xbox and many more.

<https://en.wikipedia.org/wiki/Unity_(game_engine)>

Unity.com

Unity has been chosen for this project because it provides all of the necessary tools that will be needed to create games like Physics Engine, Graphics User Interface frameworks, Audio Engine, and has support for Artificial Intelligence development. Unity also provides free, in depth tutorials that explain every part of the game engine, and has a big community that create their own tutorials about creating games from ground up, fixing bugs and other related topics. This makes it very easy to get into Unity and start creating games without much experience in game development.

Fig. shows the basic Unity window, at the top of the window is a play button which allows running the game very easily inside the game engine without first building it. Hierarchy window, on the left, shows all game objects inside the current scene. Inspector on the right shows currently selected object and its components and at the bottom left there is projects’ folder which includes every component in the game. The Scene window shows the game objects in a game scene, and the Game window shows how the game looks like.