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MINI PROJECT (102040601)

A.Y. 2022-23 EVEN TERM

Outline

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1. Introduction

- **Problem Statement**
  - A racing car game for PC using Unity.

- **Project Summary and Introduction**
  - Summary
    - A car game created in Unity-a cross platform game engine developed by Unity Technologies best for the beginners.
  - Introduction
    - Introducing a new Racing Game where we will use Unity input system and create controls to the car by using player inputs with keyboard controls.

- **Aim And Objective of Project**
  - Aim:
    - To make a car game.
  - Objective:
    - To show a small glimpse of basics of Unity Game.

2. <u>System Analyses</u>

- o **<u>Motivation</u>**
  - The idea that gave us a high boost to jump in the world of AI came while watching advanced sci-fi movies, that shows the future of the whole world in the field of AI.

- o **<u>Brief Literature Survey</u>**
  - There has been substantial research work that focuses on developing AI-controlled components of game systems, which can approximate or emulate human game playing styles. These components are often referred to as "bots." The motivation for developing the "bots" is that a human player's enjoyment in the gaming experience will be higher if he or she can be led to believe that the opponents in the game are other human players. An example of this type of game is the popular multiplayer rest person shooter game Counterstrike, in which the objective is to eliminate all players on the enemy or opponent team. Similar AI-controlled components or "bots" also appear in the early video game of Pac Man; the computer-controlled ghosts in the maze can move towards the player-controlled characters because the former incorporated some path ending algorithms. Other AI algorithms that were adopted by games include finite state machines, fuzzy state machines, and decision trees. Decision trees are used to represent the decision-making process involved in games like Checkers or Chess. A decision tree can specify several possible game states given a current state and support a search process for a goal state, where the human player is defeated provided the AI-controlled game can identify the path to the goal state more efficiently than the human player.

Table 1. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Involve AI as primary component	No clear data collection method
Involve game play in the design	Only introduction without evaluation
For educational purposes	For target groups with special needs

3. Design: Analysis, Design Methodology, and Implementation Strategy

- o **H/W requirement**
  - Requirements for developing AR applications with Unity boils down to 3 Things:
    - Your laptop or Desktop Computer
    - An SSD Hard Drive (with lots of Free Memory)
- o **S/W requirement**
  - Unity
  - VS code

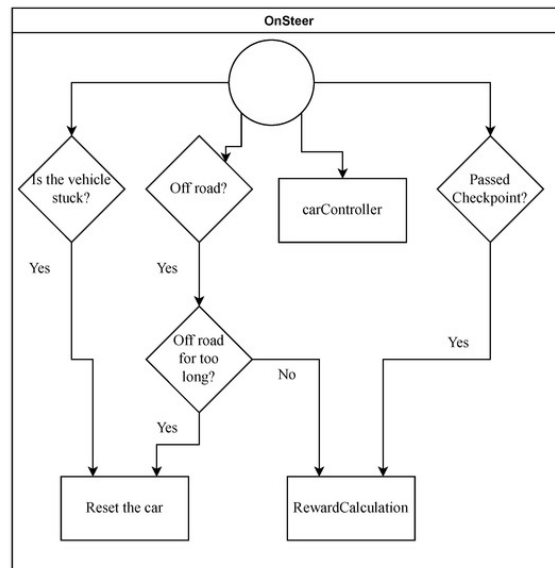# 4. Implementation

o System flow

Fig.1(a) Car Racing System flow
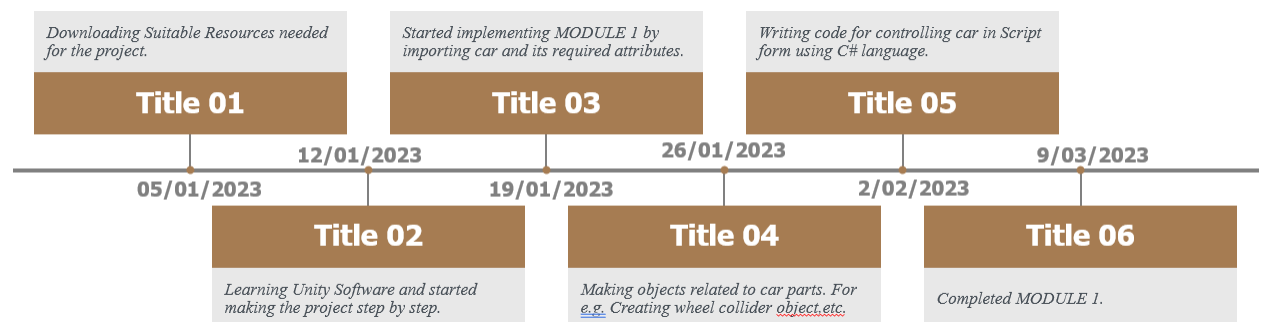
o Timeline chart

Fig.2(a) Timeline chart

5. Conclusion

Racer was tested by over twenty users, who all reported that they thoroughly enjoyed the game. It was observed that there was approximately equal number of players who were able to win the race against the game-controlled cars. This suggests that not only did the game provide an entertaining gaming experience, it also provided a reasonably engaging and challenging gameplay. In general, it can be concluded that the Unity platform supported efficient development of the race car game. The Unity platform supports implementing the race car's search for a path on the racetrack with its components of the way-point system, the physics engine, and vector calculation functions, all of which are not available if the implementation was done using traditional AI search techniques. With these Unity components, the developer was able to implement the race car's search for a path on the track with less effort and more efficiently, and the developed race car can successfully mimic human driving behavior.

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