New Metaverse games based on Artificial intelligence

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Abstract

The virtual world has become a reality because of advances in computer, graphics, and hardware development.

COVID-19's infection grows, and the Metaverse as an industry is gaining traction as a result of this growth.

Blockchain and artificial intelligence are being used in the Metaverse, a virtual world that goes beyond the boundaries of the real world.

My research proposes artificial intelligence-based novel metaverse game
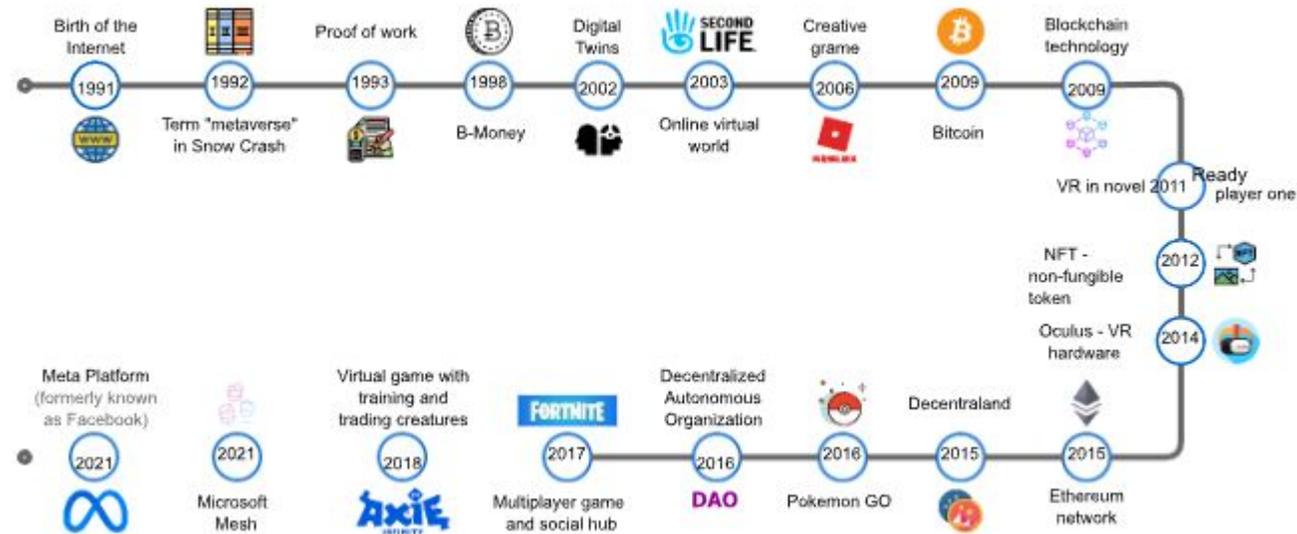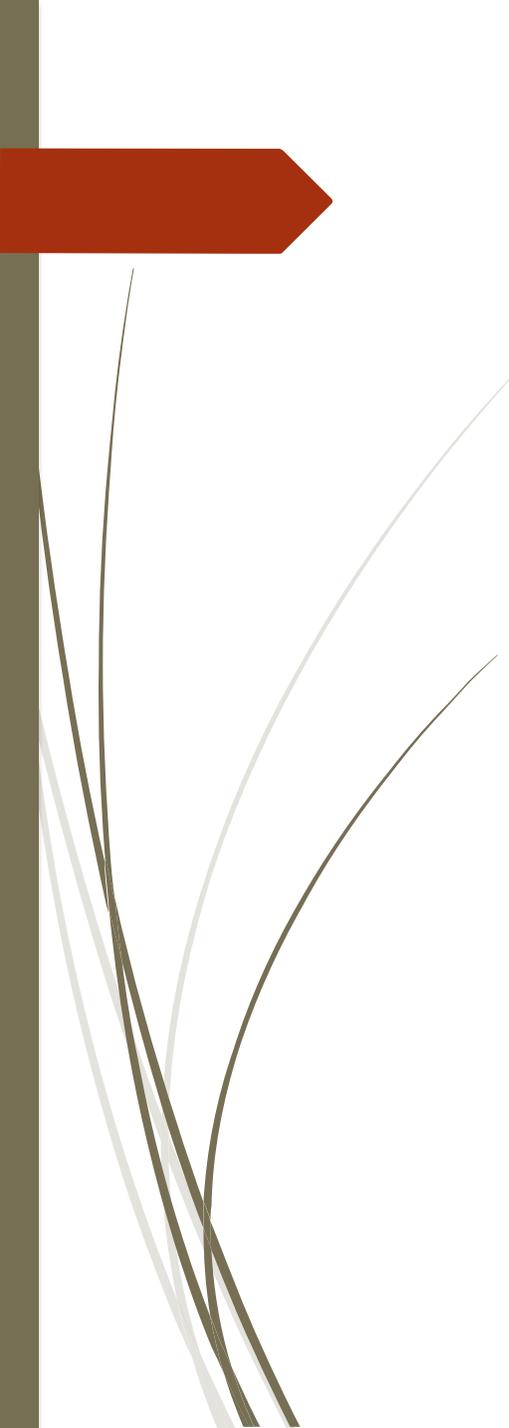
Background

Metaverse is a combination of Meta and Universe that was first used in a novel titled Snow Crash in 1992.

The metaverse is a shared virtual 3D environment or many cross-platform worlds that offer immersive, interactive, and collaborative activities. Many more elements, like as items, user identities, and digital goods, can be exchanged between virtual worlds and reflected in reality.

Background

Figure 1 shows the timeline of the metaverse development involving primary events from 1991 to 2021.

Background

Artificial intelligence (AI) in computers and video games is the technology that makes non-player characters seem smart (NPCs).

AI is used in video games to make opponents for players to play against.

The goal of artificial intelligence in video games is not to beat the player, but to provide entertainment and a mental challenge.

Artificial intelligence in video games and artificial intelligence in academic research are very different.

AI in the real world is more concerned with machine learning and making decisions.

Current situation

AI in Games is currently made with methods like neural networks, the Bayesian method, genetic algorithms, finite state machines, and Pathfinding. All of these ideas are possible, but they won't work in every situation.

Research is still going on in the field of artificial intelligence in games, and developers are still getting better at using all of these methods in any situation.
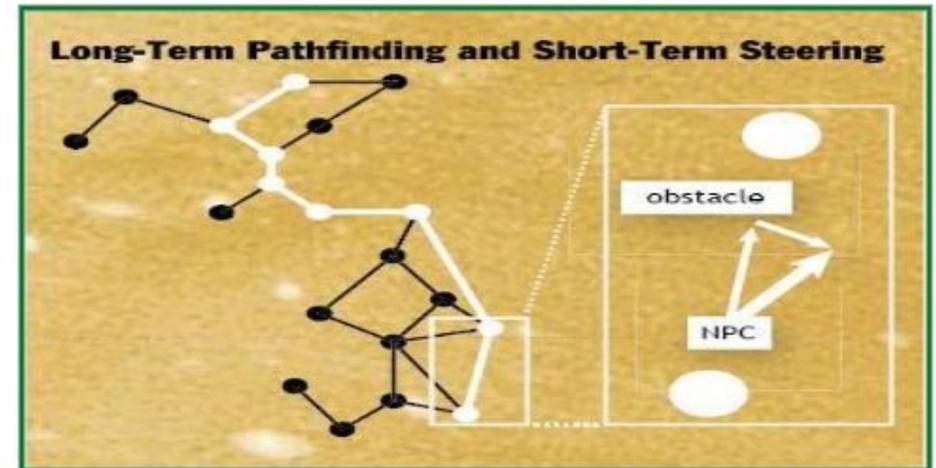
Current situation

Developers have discovered that the best results come from using both pathfinding and movement algorithms, because:

1-Pathfinding solves the problem for AI in finding a good way from the starting point to the goal while avoiding obstacles and enemies.

2-A smart pathfinder combined with a simple movement algorithm would find a path as soon as the object/player started moving.

3-This AI would take one step at a time, taking into account the local environment at each movement.

Long-Term Pathfinding and Short-Term Steering
obstacle
NPC

Current situation

Finite State Machines show what events or conditions must happen for one state to change into another. The below figure show the different states, which have their own scripts, animation schemes...etc
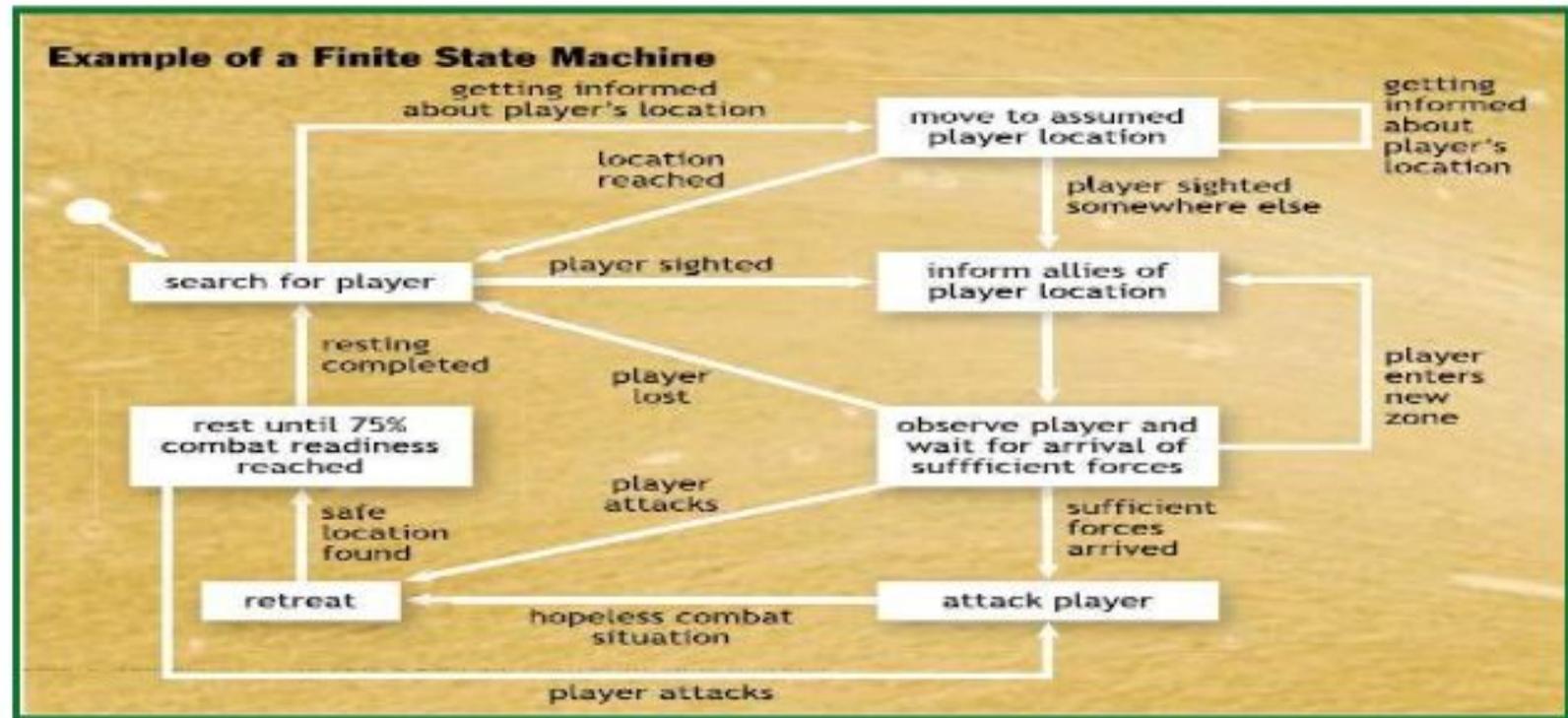
Problem and Solution

Problem: AI is often made using finite state machines or layers of it, which are hard for game designers to change.

proposed solution: When I look at typical AI finite state machine, I can see that there are certain design patterns that keep coming up. Using these repeated patterns, I suggest creating a custom scripting language that is both powerful and easy to use.

AI need for a learning ability

Many game companies are thinking about how to make games that match the player's skill level by changing tactics and strategy instead of making opponents stronger with high health.

Even difficult games like "Dark Souls" become less interesting by time, because most players tend to repeat a certain pattern to remember the AI movements and reaction. by doing so they beat the AI easily.

I think it would be interesting if the AI could figure out where the player likes to hide or even find out how they win and adapt to that.

This is an important feature that would make the game last a lot longer.

Why the Metaverse?

My original research was to propose a learning AI in a video game to develop a new type of game experience/genre.

Sadly I reached a dead-end and the idea was refused by the gaming community (game developers, game creators…etc)

The main reason for the refusal is that if AI started self-learning in a video game, the game will be either unplayable due to the unpredicted actions of the AI, or the game will be very difficult and there will be no chance to tell a story or establish a feedback system that satisfy the players.
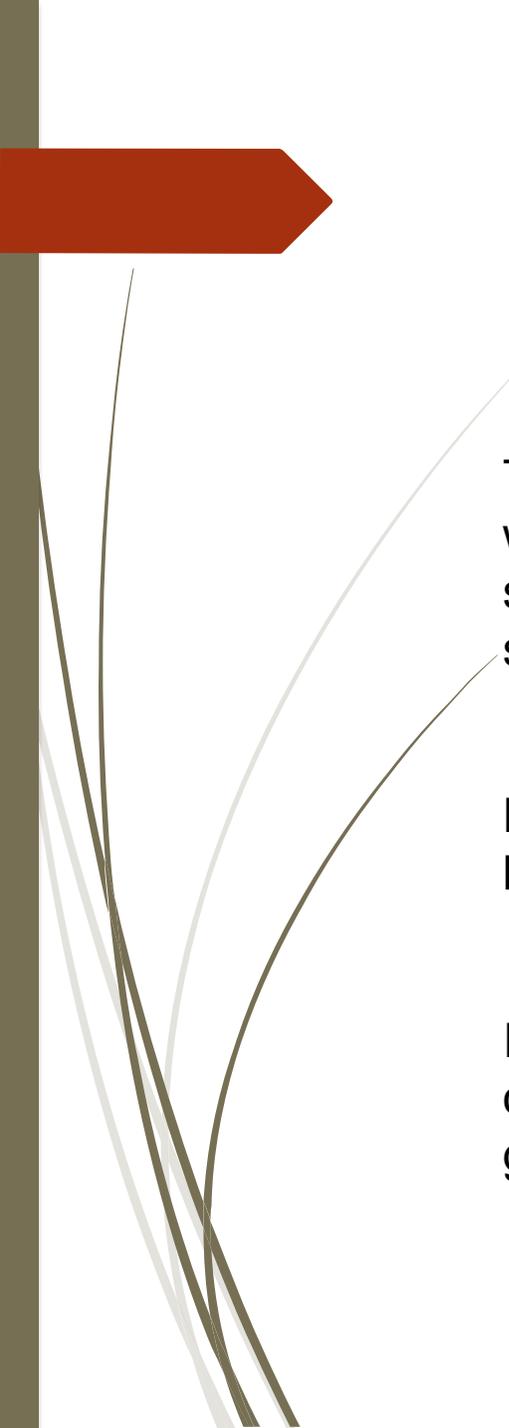
Why the Metaverse?

The metaverse has the potential to facilitate the building of more varied virtual worlds as well as a more engaging educational setting. The metaverse, however, is still in its infancy, and there are still fundamental problems regarding the technology, such as whether it is feasible and safe for users to utilize and their privacy.

Due to COVID-19, the Metaverse is being used as a platform for game-based learning, which allowed for the construction of new educational environments.

I believe in this vast endless universe of Metaverse, a game-based AI with the ability of learning would allow the players to experience new type of games and maybe full games made from scratch by an AI

The Metaverse and AI

The Metaverse has amassed an enormous amount of secondary and tertiary data.

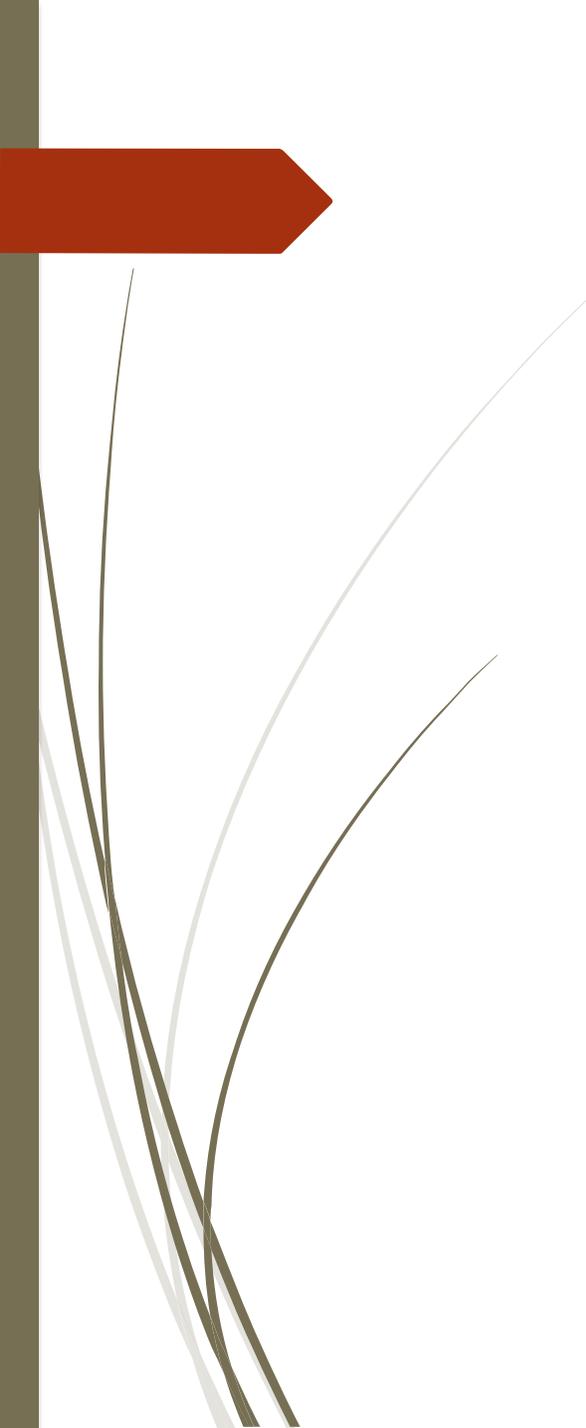This data has a unique identifier and is utilized as traceable data in the game-based Metaverse.

In the Metaverse, this type of data is increasingly useful for building artificial intelligence

Future work

- Research about AI in the Metaverse foundation and find the potential the AI has to enhance the virtual world's immersive experience for users.

- Attending a workshop held by Mr. Chris pruett the director of content of Metaverse in tokyo next month to better understand the inside world of Meta.

- Survey on learning AI for games and game developers in the Metaverse.

THANK YOU SO MUCH FOR YOUR TIME