



THE GREAT ESCAPE VIDEO GAME IN AI FOR NPCs

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Abstract

Video games are a form of entertainment that has capitalized on the advances of technology to deliver stunning visuals and immersive experiences. The proposed video game, Escape, will use the Unreal Engine and C++ to create a fun and challenging experience for the player. The game will feature a variety of elements, including physics-based systems, a virtual world created through the use of the Direct X 11 graphics API, and functional AI for NPCs. The application being developed will involve rendering of high fidelity graphics at real time unlike the film industry which has the luxury of offline rendering to deliver stunning visuals.

Keywords: Game, Escape, entertainment, application, Graphics

Introduction

Video games are a form of entertainment that has capitalized on the advances of technology. It began with simple shapes with a black and white color palette. It has now evolved into a billion dollar industry that incorporates millions of triangles to form almost photorealistic imagery on the higher end and brings about innovations in the delivery of real time graphics. The main aim of the project is providing the user with a fun but yet challenging experience.

The project will use Unreal Engine and C++ to create a visually impressive and optimized virtual world that runs on modest hardware. The game will also implement physics-based systems and create functional AI for NPCs.

Challenging but rewarding obstacles ranging from puzzles to combat will be created to provide the user with an engaging and fun experience.

Here are some specific ways that AI could be used in a video game based on "The Great Escape":

- Creating more realistic and engaging NPCs: AI could be used to create NPCs that are more intelligent and responsive to the player's actions. For example, AI-powered NPCs could be used to create guards that patrol the prison camp and respond to the player's actions in a realistic way.
- Generating new content: AI could be used to generate new content for the game, such as new levels, missions, and challenges. This could help to keep the game fresh and exciting for players.
- Automating tasks: AI could be used to automate many of the tedious tasks involved in game development, such as creating assets and testing the game. This would free up developers to focus on the more creative aspects of game development.
- AI-powered hints and tips: AI could be used to provide players with hints and tips on how to complete objectives and escape from the prison camp. This could be especially helpful for players who are struggling to progress in the game.
- AI-powered adaptive difficulty: AI could be used to adjust the difficulty of the game based on the player's skill level. This would ensure that all players have a challenging but enjoyable experience.
- AI-powered personalized storytelling: AI could be used to create a more personalized storytelling experience for each player. For example, AI could be used to track the player's choices and actions throughout the game, and then use this information to create a unique story ending for the player.

Function of this system

1. Provide a fun and engaging experience. This can be achieved through a combination of thoughtful design, compelling game play mechanics, immersive storytelling, and player interaction.
2. Simulate physics based systems such as fire. This will help to create a more realistic and immersive world for the player to explore.
3. Create a virtual world through the use of Graphics API (Direct X 11). This will allow the game to render high-quality graphics in real time.
4. To create functional AI for NPC which will react to the user's actions accordingly? This will help to make the NPCs feel more alive and believable, and create a more challenging and rewarding gaming experience.

Problem Definition:

To create a fun and engaging video game experience by thrusting the user in a virtual world and having them find a way to escape and/or overcome the challenges they will face. This involves creating a virtual world that is visually impressive and optimized to run on modest hardware, implementing a physics system to allow for an immersive world, creating functional AI for NPCs to react to the user's actions accordingly, and designing challenging but rewarding obstacles ranging from puzzles to combat.

System Objective:

To design a virtual world that is visually impressive and optimized to run on modest hardware, allowing the player to escape from a prisoner of war camp by overcoming challenging but rewarding obstacles.

- ❖ The system will achieve this objective by:
- ❖ Using the Direct X 11 API to interface with the drivers of the graphics card to create high-quality visuals.
- ❖ Implementing the physics system of Unreal Engine to create an immersive world.
- ❖ Creating functional AI for NPCs which will react to the player's actions accordingly.
- ❖ Designing challenging but rewarding obstacles ranging from puzzles to combat.

Software Specifications

- ❖ Operating System: Windows 7 or higher
- ❖ DirectX: 11
- ❖ Graphics Card: DirectX 11 compatible graphics card with at least 2GB of VRAM
- ❖ CPU: Intel Core i5-2500K or AMD FX-8350 equivalent:
- ❖ Microsoft Net Framework 3.5 or higher
- ❖ Blender
- ❖ Autodesk Maya

Modeling

AI can be used to automate tasks in modeling, such as creating UV maps, retopologizing meshes, and generating procedural textures. AI can also be used to develop new tools that make it easier to create and manipulate 3D models.

Primitives

AI can be used to generate new primitive shapes, or to modify existing primitives in new and interesting ways. AI could also be used to develop new ways of interacting with primitives, such as using natural language or gestures.

Modifiers

AI can be used to develop new modifiers that allow users to create complex shapes and effects with a few simple clicks. AI could also be used to develop modifiers that learn from the user's workflow and make suggestions over time.

Sculpting

AI can be used to automate tasks in sculpting, such as remeshing, retopologizing, and generating textures. AI could also be used to develop new sculpting tools that make it easier to create and manipulate 3D models.

Simulation

AI can be used to improve the realism and performance of simulations. For example, AI could be used to develop new algorithms for simulating physics, fluids, and cloth. AI could also be used to develop new ways to interact with simulations, such as using natural language or gestures.

Fluid Simulation

AI can be used to improve the realism and performance of fluid simulations. For example, AI could be used to develop new algorithms for simulating water, smoke, and fire. AI could also be used to develop new ways to interact with fluid simulations, such as using natural language or gestures.

The particle physics fluid simulation creates particles that follow the Smoothed-particle hydrodynamics method. Simulation tools for soft body dynamics including mesh collision detection, LBM fluid dynamics, smoke simulation, Bullet rigid body dynamics, and an ocean generator with waves. A particle system that includes support for particle-based hair. Real-time control during physics simulation and rendering.

Animation

AI can be used to automate tasks in animation, such as lip syncing, motion capture, and crowd simulation. AI could also be used to develop new animation tools that make it easier to create and manipulate animations.

Grease Pencil

AI can be used to automate tasks in Grease Pencil, such as frame interpolation, rotoscoping, and vector cleanup. AI could also be used to develop new Grease Pencil tools that make it easier to create and manipulate 2D animations.

Texture and Shading

AI can be used to automate tasks in texture and shading, such as UV unwrapping, texture painting, and material creation. AI could also be used to develop new texture and shading tools that make it easier to create and manipulate realistic materials.

Post-production

AI can be used to automate tasks in post-production, such as color grading, video editing, and compositing. AI could also be used to develop new post-production tools that make it easier to create and manipulate finished videos.

Plugins/Addons and Scripts

AI can be used to develop new easier plugins, addons, and scripts that automate tasks in Blender. AI could also be used to develop new tools that make it to extend Blender's functionality.

Autodesk Maya

AI can be used to automate tasks in Autodesk Maya, such as rigging, animation, and rendering. AI could also be used to develop new tools that make it easier to create and manipulate 3D assets in Maya.

Industry Usage

AI is already being used in the video game industry to improve the development process and create more immersive and realistic games. For example, AI is being used to generate realistic textures, create realistic NPCs, and automate complex tasks. As AI continues to develop, it is likely to play an even greater role in the video game industry.

Conclusion

AI has the potential to revolutionize the video game industry, including the development of video games like "The Great Escape". AI can be used to improve many aspects of game development, from creating more realistic and engaging NPCs to generating new content and automating tasks. "The Great Escape" video game, I recommend checking official game stores, gaming news websites, and online gaming communities for the most

up-to-date information computer graphics that bring about advancement and innovation of said field. These sources will provide you with details about the game's availability, platforms, game play mechanics, reviews, and more.

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