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CS5150 Game AI

Final Project Proposal

Title
Garden of Loom

Concept
Garden of Loom is a story-driven puzzle and exploration game set in a mysterious, magical garden where weaving and gardening intertwine. Players assume the role of a young apprentice weaver named Lyra, who discovers a hidden garden where the plants and creatures are made of delicate, living threads. Lyra solves weaving-based puzzles using the plants and natural materials found in the magical garden. When Lyra solves each puzzle, she creates a new garment, and a unique creature in the garden will reveal the stories and histories behind it. With each new garment she makes, Lyra explores intricate environments and unravels the secrets of the Garden of Loom.
Existing games as reference: Loom, Mystery House, What Remains of Edith Finch

Gameplay
Players will have to master the art of weaving, utilizing different types of threads and patterns to create a variety of textile-based structures and objects. The main objective is to solve all of the puzzles in the garden in order to learn how to produce various garments and unlock the lore behind each garment. The game features a linear storyline with a single main quest, guiding the player through a simple game world.

AI Features
- Narrative Generation: Use AI models like GPT-4 to generate dynamic storylines and quests based on player choices and game world conditions. This can be done by training the AI model on existing game narrative data and fine-tuning it to fit the game's context.
- Conversation Generation: Integrate AI-generated dialogues to create realistic and engaging conversations between the player and NPCs. Train the AI on datasets containing dialogues in similar settings and genres, and ensure the generated dialogues are contextually relevant and meaningful.
- Dynamic Environments: The world of Garden of Loom is an ever-changing landscape that reacts to the player's actions. As players progress through the game, they will notice their influence on the environment, with plants growing, areas transforming, and the overall atmosphere evolving. This dynamic environment provides a sense of progression and accomplishment as players witness the impact of their actions on the world.

Basic Features
- Weaving Mechanics: Players create various textile-based objects and structures using simplified weaving patterns to solve puzzles and progress through the game.

- Linear Storyline: The game features a streamlined story, focusing on a single main quest or objective.

Advanced Features and Polish

- Gardening and Resource Management: Players will need to cultivate plants and harvest resources throughout their journey. Different plants yield various threads and materials that are essential for solving puzzles and crafting new items. Players must learn how to properly care for and maintain their garden, ensuring they have the necessary resources to continue their quest.
- Character Progression and Abilities: As Lyra grows as a weaver, she will gain new abilities and enhance her existing skills. These abilities will allow her to reach previously inaccessible areas, solve more complex puzzles, and better interact with the world around her. Players will also have the option to customize Lyra's abilities, allowing them to tailor their gameplay experience to their preferred style.
- Dynamic Music and Sound Effects: Based on the player's actions, location, and story progression. The AI adapts the audio to reflect the player's success in battling the AI-controlled obstacles.
- Behavior Trees: Develop AI-driven behavior trees for NPCs to create believable, dynamic characters with unique personalities, behaviors, and decision-making abilities. This can be achieved by using machine learning techniques like reinforcement learning or evolutionary algorithms to optimize NPC behaviors based on different situations.

Development

- Tools: Unity or Unreal Engine, TensorFlow, PyTorch