

Project Backlog

Agents and Arcane

Team 11

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Problem Statement

One of the most enjoyable parts of video gaming is the immersive relationships players develop with the game's non player characters. However, players may begin to notice that the NPCs' behavior and dialogue become repetitive due to their limited number of deterministic options. We will seek to create a game with highly personable minions that make proactive choices based on their assigned personality traits, orders, and resources utilizing generative AI. Players will manage and interact with their independently acting agents from a top down perspective, and force feedback glove support will be implemented in VR to maximize player immersion.

Background Information

The strategy genre in video games is filled with a plethora of experiences that bring the vision of their developers to life. Franchises like Fire Emblem and Starcraft all craft unique original stories built around units and characters created by the designers. However, these characters and their interactions are limited by what the game designers and writers created for them, limiting the replay value of these games and forcing players to connect with characters created by someone else. Our game will remedy these issues using the power of AI. The game will be designed for players who would like to craft their own strategy game experience. Players will create each of their agents with their own backstory and personality. This will allow players to express their own creativity when designing units and experience new interactions with each playthrough of the game by creating new agents.

Requirements

Functional

Agents

1. As a user, I would like to be able to create a unit by giving it a name and class.
2. As a user, I would like to assign my unit a unique personality, and unique background information.
3. As a user, I would like my units to have traits selected for them based on their personalities.
4. If time allows, as a user, I would like to have a character creator to design the visual look of my units.
5. As a user, I would like to spend resources to change information about my units later (class, name, etc.).

Agents Decision Making

6. As a user, I would like my units to respond to commands that I issue them according to their personality traits.
7. As a user, I would like nearby units to interact with each other based on their personality traits.
8. As a user, I would like my units to utilize local and allocated resources to accomplish commands.
9. As a user, I would like to give my units a command in spoken language and have those units respond according to their personality and traits.
10. As a user, I would like to type a command using a keyboard, as an alternative to spoken language, and have the applicable units respond according to their personality and traits.
11. As a user, I would like my units to select their target according to their personality and traits.
12. As a user, I would like my units to decide whether to retreat according to their personality and traits.
13. As a user, I would like my units to decide where to position themselves relative to friends and enemies according to their personality and traits.
14. As a user, I would like my units to decide when to activate their class abilities based on their personality and traits.

Classes

15. As a user, I would like thief units to sneak and avoid enemy detection.
16. As a user, I would like mage units to be able to cast versions of the spells that the player can cast.
17. As a user, I would like dragon rider and gargoyle units to fly above the arena and be immune to melee attacks.

18. As a user, I would like dragon rider units to have an area of effect fire attack.
19. As a user, I would like gargoyles to have swooping attacks where they lower to the ground and strike before rising back into the air.
20. As a user, I would like my cavalry units to ride atop horses giving them a faster movement speed.
21. As a user, I would like my archers to have ranged attacks that also deal critical damage to flying units.

Traits

22. As a user, I would like battle-oriented traits to impact the stats my units have during battle.
23. As a user, I would like socially-oriented traits to impact my unit's interactions with other units.
24. As a user, I would like production-oriented traits to impact my unit's stats when managing resources.
25. As a user, I would like to have elementally-oriented traits that impact my unit's behavior around certain elements (for example, a trait that makes units scared of fire).

Map Mode

26. As a user, I would like to be able to view the map along with all of my resources and my enemy's positions.
27. As a user, I would like to be able to take a 'turn' and manage my resources across the map, causing it to update based on my actions.
28. As a user, I would like to have spaces on the map where different resources can be gathered.
29. As a user with LucidGloves, I would like to experience force feedback based on the currently held object/resource while moving it around the map.
30. As a user, I would like to be able to use gathered resources to create powerful equipment and infrastructure.
31. As a user, I would like to assign equipment to my units that they will utilize during actions.
32. As a user, I want hostile enemy units to be present on the map that engage my units in combat.
33. As a user, I want enemy units to be given logically coherent commands by a central enemy AI.
34. As a user, I want to transition to a micro battler mode when an enemy unit and one or more of my agents have engaged in combat.
35. As a user, I would like to progress through multiple different maps at different levels with different layouts and obstacles.

Micro Battle Mode

36. As a user, I would like to have a bird's eye view of the smaller micro battle map with my unit, my unit's battalions, the enemy unit, and the enemy unit's battalions all present on the map.
37. As a user, I would like to have the micro map's terrain have an impact on how every active participant performs in the battle.
38. As a user, I would like to be able to gather and store resources during this mode.
39. As a user with LucidGloves, I would like to be able to physically pick up and feel the resources I am collecting as I am transporting them.
40. As a user, I would like to have special spells to support my unit during the micro battle mode.
41. As a user with LucidGloves, I would like to cast spells with different hand motions based on what the spell is doing.

Spells

42. As a user, I would like to have an area of effect damaging spells like fireball or lightning bolt.
43. As a user, I would like to have an ice storm spell that creates an area where enemies will take continuous damage and have a slowed action speed.
44. As a user, I would like to have a spell that creates a large area of thorny vines that damage enemy units.
45. As a user, I would like to have a spell to spawn a golem unit that will be powerful but temporary.
46. As a user, I would like to have a spell that slows time for enemy units causing their actions speeds to decrease.
47. As a user, I would like to have a telekinesis spell that performs a powerful slam attack on a group of enemy units.
48. As a user, I would like to have another telekinesis spell that allows me to reposition allied and enemy units.
49. As a user, I would like to have enemy units attempt to struggle out of my grip when I am repositioning them.
50. If time allows, as a user, I would like to have a spell that lets me take temporary control of an enemy unit to assist my own units.

Miscellaneous

51. As a user, I would like to hear sound effects that correspond to what is going on in the game.
52. As a user of LucidGloves, I would like to be able to use the gloves to control the game without needing additional input devices (besides a microphone).
53. If time allows as a user with VR, I would like to be able to use a virtual keyboard for text based inputs.

Save/Load Game

- 54. As a user, I would like to manually save my progress in the game.
- 55. As a user, I would like my progress to automatically save over the course of gameplay.
- 56. As a user starting up the game, I would like my last save to be loaded instead of starting from the beginning of the game.
- 57. As a user, I would like to have multiple save files for multiple different playthroughs.

If time allows, multiplayer

- 58. As a user, I would like to be able to exchange and borrow other players' units and use their AI in my own game.
- 59. As a user, I would like to be able to spectate my friends' battles and see how their units behave with their chosen personalities.
- 60. As a user, I would like to have my agents and their battalion battle other player's agents and battalions.

Non-Functional

Usability

The number of potential users that own and use VR headsets and/or LucidGloves are limited. To allow the maximum possible number of users to play our game, we will allow PC users to play with or without VR and LucidGloves.

Security

We are saving game data in a local file which players may easily be able to change. To prevent this, the save file will be encrypted when saved and decrypted when loaded. This will also protect sensitive information like the OpenAI api key used for AI interactions.

Scalability

The cost for OpenAI assistants and Text to Speech is based on sessions, chosen model, and number of tokens. We aim to minimize the cost of using OpenAI as our game grows by limiting the number of queries sent out by our API.

Response Time

When communicating with AI, response time can be long leading to a poor user experience, especially when multiple assistant interactions occur every turn. Thus, we would like to reduce the time it takes between finishing a sentence and the AI assistant's response to be less than 5 seconds.