Game Design Document

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Name of the Game: Astroventure

Name of the Student: Saugata Biswas

Tutorial: 1

Link to game repository: https://github.com/saugata-biswas/Astroventure.git

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Overview

Astroventure is a role playing game(RPG) where the main objective is to complete a rescue mission. There will be two main Non-Player Characters(NPC) in the game. The roles of these NPCs are not predefined. Their behavior to the player will be determined by the game state. These NPCs have their own objective: to gain most control of the resources compared to the other one. The player has to outwit the NPCs to make his way. This is the main feature of the game. Currently, Astroventure is intended for PC, e.g., Windows or Linux.

Game abstract

Astroventure takes place in a huge spaceship. The player character is an astronaut who lands at this spaceship. His main objective is to capture a mystery item from the ship's cargo. The spaceship is a self-sustaining one. It has two artificially intelligent agents. These AI NPCs are controlling the spaceship. Each of the NPCs control some sentinels/bots. These bots will help/hinder the player depending on the NPCs controlling them. The player is an unwanted guest, hence, he has to outwit or subjugate the NPCs to reach his goal. The game will have multiple levels(at least 3/4). When the player will enter these levels, he will have limited resources with him. He will need to fight/convince the NPCs to let him through the level.

Objectives to be achieved by the game

In Astroventure, the player has to defeat, negociate, subjugate or convince the AI NPCs to gain resources, which the player will use access to the mystery box. Basically, it will try to mimic a balance in the three main characters: the player and the two NPCs. Most of the time, when the player becomes friend to one NPC, the other will become his enemy. This is the core dynamic that the game would approach.

Core gameplay

In each level, the NPCs controls some sentinels/bots. These bots only listen or respond to its master NPC. The NPCs also hold control of other game resources, e.g. weapons, oxygen, food etc. The player needs to gain access to these resources to finish the level. The sentinels/bots usually will oppose the player. The player has to utilize on the fact that the NPCs also oppose each other. The player has to fight or negotiate to make friend with atleast one of the NPCs which will make the other NPC his enemy. A friendly NPC will grant access to the resources. On the contrary, an unfriendly NPC will hinder the player. This will lead to conflict in the game.

Game features

The game would not have a clear distinction between friendly and enemy NPCs. The player has to find out how he/she will develop the relationship with the NPCs to progress through the game.

Genre

Astroventure is a RPG with rescue as its main objective. However, it is also an action game as the player has to fight with the sentinels/bots to make his way.

Number of players

Currently, Astroventure is intended to be a single player game.

Game theme

The game will take place in a futuristic spaceship. The spaceship has a lot of chambers. Each level will happen in a chamber. Currently, only three to four levels will be developed.

Story summary

A strange big shaceship as a mysterious cargo. This item needs to be inspected. The player character is assigned to inspect and collect the item. However, the spaceship environment is unknown to the player. The player character docks his space vehicle to the spaceship to gain entry. The game starts here.

Mechanics

The spaceship is rotated on its own axis, hence, it has a artificial gravitational pull. Hence, every object which has a mass will affected by gravity. The NPC will have cannot be shot/destroyed by the weapons found on the spaceship. They are immnue to weapons since they are merely holographic representatons.

Game elements categories

Category name	Description
Player character	This will be a single player charater.
Krittim(NPC0)	This NPC controls some sentinels/bots
Mittha(NPC1)	This NPC will have similar characteristics as the NPC0
sentinels/bots	These sentinels/bots control will be specific to a game level

Rules

When the player enters the level, the NPCs are suspicious of the player and regard him as emeny. The player fights the sentinels/bots sent by the NPCs.

Interaction rules

Interaction rule	results
Dialogue using emojis	This will be to used to either accept or reject a proposal. Emojis will also be used to show mental states of NPCs

Interaction rule	results
Guns	Upon firing guns on the sentinels/bots thosse would be destroyed. NPCs cannot be destroyed
Axe	Upon using some doors can be broken
Balls	Can be rolled to disperse sentinels/bots

Artificial intelligence

A probabilistic graphical model or decision tree will be used to determine which of the NPCs behaves how, e.g. as friend or foe.

Game world elements

Game world is a spaceship. A limited map of it can be accessed by the player. Sometimes the player can use some floating device to go up in a level|

Game log elements

Health, oxygen, enemys killed/neutralized etc. will be logged.

Other elements

There could be some isolated NPCs which aren't controlled by the two main AI NPCs.

Assets list

Asset	Description
Player character	main character that the player can control
Krittim(NPC0) and Mittha(NPC1)	Floating holograms

Asset	Description
sentinels/bots	The gameobjects that fights with the player or assists him
Guns	Used to kill the sentinels/bots
Oxygen cylinder	Used to sustain player character's life
Electro-magnetic pulse(EMP) gun	Special gun that can disrupt the AI NPCs prior belief/attitudes

Dynamics

Yet to be decided.

Game world

The game takes place on a spaceship, named Synaptron, with artificial gravity. Upon using the EMP gun, the ship's electrical equipments can malfunction. The gravitational pull can disappear temporarily.

Game world theme details

Game world is a futuristic spaceship. It would have an industrial interior.

Missions/levels/chapters flow

There will be 3/4 levels in the game. Levels would have increasing difficulty. More choice of weapons will be available as the game progresses. Higher level can have betrayal by the friedly NPCs. Hence, the player has to be more careful in a higer level.

Missions/levels/chapters elements

Core gameplay will be formed mainly by the temporal contract among the player and the AI NPCs.

Objectives

- The player has to reach to the mystery item to be inspected or rescued.
- The player has to finish each levels to reach to the mystery object.
- The player has to make friends with atleast one AI NPC to progress through the level.

Rewards

- When a the player make friend/subjugate an AI NPC, it assists the player by giving up some weapons or fighting the other AI NPC.

Challenges

- Fight through the sentinels/bots
- Manipulate the AI NPCs to gain resources
- Use EMP gun when necessary

Special areas

- There are no special areas planned currently.

Game interface

The player can mainly manipulate the inventory.

Controls interface

The game will be seen from 3rd person perspective. The player needs to control the camera view to see most of the environment. An assisted camera might be available during gameplay.

Game balance

Game difficulty can be adjusted initially. It would increase/decrease the game uncertainty in the AI NPCs' belief system.

Visuals and sounds

Visuals sounds design is yet to be decided.

Game visuals

At first, freely available assets from asset store will be used for the player character, NPCs, sentinels/bots. Some of the visuals can be updated later. Animations has been added from mixamo.com; a humanoid character named Dreyar has been added. Idle, walking, and running animation has been added.

Game sounds

Curretly, only freely available sounds/music will be used.

Document information

Document information will be constantly updated.

Document-acronyms-and-abbreviations

Abbreviation, acronym	Full form
NPC	Non-Player Character
RPG	Role Playing Game
AI	Artificial Intelligence

Document references

Following references are followed to make the game.

Build levels quickly in unity with snaps https://www.youtube.com/watch?v=b4oqOdBCy3c

Time. Unity Learn. https://learn.unity.com/tutorial/time-0fbw?
projectId=5df2611eedbc2a0020d90217&tab=overview&uv=2019.4.

Pluggable AI. Unity Learn https://learn.unity.com/tutorial/pluggable-ai-with-scriptable-
objects#5c7f8528edbc2a002053b487

Code Monkey - Scnene Manager in Unity https://unitycodemonkey.com/video.php?v=3I5d2rUJ0pE

Mixamo https://www.mixamo.com/

Unity's animation system https://www.youtube.com/playlist?list=PLwyUzJb_FNeTQwyGujWRLqnfKpV-
cj-eO

Holistic3d, Programming NPC Behavior https://www.youtube.com/watch?v=NEvdyefORBo

Navigation Mesh Basics https://www.youtube.com/watch?v=NGGoOa4BpmY

Crosshair Pack https://www.kenney.nl/assets/crosshair-pack

3rd Person Shooter Controller with Cinemachine & Input System - Unity Tutorial
https://www.youtube.com/watch?v=SeBEvM2zMpY

Sci-Fi Gun Heavy https://assetstore.unity.com/packages/3d/props/guns/sci-fi-gun-heavy-87878

Bullet hole https://opengameart.org/content/bullet-decal

Bowling: Kegel & Ball https://assetstore.unity.com/packages/3d/props/bowling-kegel-ball-67371

Attachments

Currently, there are no attachments.

Study

The game build was distributed online. A questionnaire was also given to the participants. After playing the game the participants filled up the survey form. The study was conducted online using Google docs. The were given a questionnaire. Here are some of descriptive statics.

There were 12 participants, 11 were male, 1 person preferred not to disclose this information.

41.7% of the participants played video games once or twice in a month, 41.7% of the participants played video games weekly once or twice, 16.7% of the participants played video games daily.

1: Completely disagree, 5: Completely agree

Question: I had fun playing this game. count: 12, mean: 3.75000, std: 1.13818, median: 4.0

Question: I found the game controls intuitive. count: 12, mean: 3.250000, std: 1.13818, median: 3.5

Question: The gameplay was easy to learn. count: 12, mean: 3.666667, std: 0.984732, median: 3.5

Question: I found the gameplay challenging. count: 12, mean: 3.583333, std: 1.311372, median: 3.5

Question: I found the gameplay was gradually introducing difficulty. count: 12, mean: 3.25000, std: 1.05529, median: 3.0

Question: I found the background story intriguing. count: 12, mean: 3.500000, std: 1.087115, median: 4.0

Question: I found the gameplay engaging. count: 12, mean: 3.750000, std: 1.215431, median: 4.0

Question: I liked the GUI (Graphical User Interface) of the game. count: 12, mean: 4.250000, std: 0.753778, median: 4.0

Question: I found the gameplay immersive. count: 12, mean: 3.750000, std: 1.215431, median: 4.0

Question: I enjoyed the sound design in the game. count: 12, mean: 4.000000, std: 0.738549, median: 4.0

Question: I found the shooting game mechanic easy. count: 12, mean: 3.083333, std: 1.564279, median: 4.0

Question: I felt curious while playing the game. count: 12, mean: 3.833333, std: 1.267304, median: 4.0

Question: I felt the game was too long. count: 12, mean: 2.250000, std: 1.215431, median: 2.0

Question: Did you need to check the hints while playing? count: 12, yes: 75%, no: 25%

Question: Did you finish the game? count: 12, yes: 41.7%, no: 58.3%

Question: Would you play an updated version of the game? count: 12, yes: 83.3%, no: 16.7%

Some more results were derived by investigating the histogram of data found from the Google docs results. Here are some of those:

Grouped the results for: I found the game controls intuitive. by: How often do you play video games?

Daily: mean 3.0, median: 3

Weekly once or twice: mean 3.0, median 2

Monthly once or twice: mean 3.6, median 4

Grouped the results for: I found the gameplay challenging. by: How often do you play video games?

Daily: mean 3.0, median: 3

Weekly once or twice: mean 3.6, median 3

Monthly once or twice: mean 3.8, median 5

Grouped the results for: I found the shooting game mechanic easy. by: How often do you play video games?

Daily: mean 3.0, median: 3

Weekly once or twice: mean 2.6, median 2

Monthly once or twice: mean 3.6, median 4

Grouped the results for: I found the shooting game mechanic easy. by: How often do you play video games?

Daily: mean 3.0, median: 3

Weekly once or twice: mean 3.8, median 4

Monthly once or twice: mean 4.0, median 4

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