Race Against the Machine

Previously, The Walkout

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Revision: 1.2.1
1. Game Overview

1.1 Game Concept

The Walk Out (WT) is an improvisational theater production directed by Prof. Sylke Rene Meyer (Television, Film, and Media Studies). It takes the reality-based, biographical spaces of the Lincoln Heights High School, and the Church of the Epiphany in Lincoln Heights as a starting point to investigate and reveal power structures inherent in space, social structure, its actors, and objects. This project will adapt and situate the East L.A., 1968: 'Walkout!' in the context of current academic institutions. The project will improvise all story segments based on the real events and translate this specific spatial and linguistic framework, that employs projection technology, into improve theater, and game play. The computer sciences team would contribute to the theater play by adding a digital component to the production concerning artificial intelligence as a co-creating actor. This AI actor is capable of interacting with human actors, and that makes independent decisions and learns while in use.

1.2 Game Genre

Action-Adventure and Survival

1.3 Target Audience

Teens 13 and older (T). Contains cartoon, fantasy, mild violence, mild language and/or minimal suggestive themes

1.4 Game Flow Summary

The game will have a sense of urgency due to the main enemy constantly chasing the player. The player will be forced to go through a door to temporarily escape the enemy. Upon opening a door, a random room will spawn. Within each room, the player will have to complete an objective in a limited amount of time. Each room will also generate a random condition that will either work against the player or assist them. The condition applied to the room will be applied at random, which will make the gameplay unpredictable.

1.5 Look and Feel

This requirement will be implemented during the spring 2020 semester.

2. Gameplay and Mechanics

2.1 Gameplay
2.1.1 Game Progression

The game shall begin in a long hallway. The player will have to explore rooms in order to make progress in the game. Within each room, the player shall complete an objective and meet the NPC that resides in that room. Once the objective is complete, the player shall interact with the NPC. The NPC shall award the player with an object or an ability that will be required for the final encounter against the Machine.

2.1.2 Room / Challenge Structure

Each room shall contain the following mechanics:

- A single objective
- A random condition
- Minimum of 1 NPC

An objective shall be assigned to each room. The player will have to complete the objective by a certain amount of time. If they player fails the objective, they are sent back to the hallway and their progress will be reset.

A random condition shall be generated and applied when the player enters the room. Each condition is designed to either hinder the player’s movement or facilitate the player’s objective. These conditions shall not create scenarios where progression is impossible.

An NPC shall be present in each room. The NPC shall award the player with either an object or an ability once the objective is completed. The NPC shall disappear from the room once the objective is completed.

2.1.3 Objectives – Tentative Requirement

Each room shall contain an objective. The objective shall be unique to each room. The objectives shall take the room’s layout into consideration. (This requirement is still tentative, there will be a full list of objectives once the levels/rooms are designed)

2.2 Mechanics

2.2.1 Physics

The player, NPCs, and machine shall use Unity’s (Game Engine) default physics. Gravity can only be adjusted by a condition or level. The player, NPCs, and the Machine shall not be able to go through objects that are defined as solid. The player, NPCs, and the Machine shall also slide on a surface that has no friction, such as ice.

2.2.2 Movement

The game will take place in a 3-Dimensional space and shall be in a first-person perspective.
I. Player

The player shall have the ability to walk, run, crouch, and jump on various 3D generated environments and objects. The player’s abilities shall be implemented with the following mechanics:

- **Walk** – The player shall have the ability to move at a standard rate of speed
- **Sprint** – The player shall have the ability to move at a faster rate of speed
- **Crouch** – The player shall have the ability to become smaller
- **Jump** – The player shall have the ability to jump and drift towards a direction while in the air. The jump mechanic will have a standard rate of gravity applied to it.

Aside from the previously mentioned mechanics, the player will also have a **life bar**. This life bar will begin with a count of 100. When the player takes damage, the life bar will be reduced by a certain amount of points. The player will also have access to recovery items that will enable the player’s life bar to recover by a certain amount. The recovery items will have no effect if the player’s life bar is full. The amount of recovery/damage a player receives will vary by object.

The Player’s movement will use the following controls:

<table>
<thead>
<tr>
<th>Key</th>
<th>Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Left</td>
</tr>
<tr>
<td>D</td>
<td>Right</td>
</tr>
<tr>
<td>W</td>
<td>Forward</td>
</tr>
<tr>
<td>S</td>
<td>Backward</td>
</tr>
<tr>
<td>Spacebar</td>
<td>Jump</td>
</tr>
<tr>
<td>Shift + (A, D, or W)</td>
<td>Sprint</td>
</tr>
<tr>
<td>CTRL</td>
<td>Crouch</td>
</tr>
<tr>
<td>Left-Click</td>
<td>Use Weapon</td>
</tr>
</tbody>
</table>

II. Machine (Enemy)

The enemy will be able to walk, run, imitate, swing, and shoot. The enemy’s abilities shall be implemented with the following mechanics:

- **Walk** – The machine shall have the ability to move at a standard rate of speed
- **Run** – The machine shall have the ability to move at a faster rate of speed
- **Jump** – The player shall have the ability to jump and drift towards a direction while in the air. The jump mechanic will have a standard rate of gravity applied to it.
- **Swing** – The machine shall have the ability to use an appendage to damage the player.
- **Shoot** – The machine shall have the ability to shoot projectiles
The machine will also have a health bar. The machine will not be able to recover any of its health, it will only be able to take damage. When the machine receives damage, its health bar shall be reduced. The amount of points that will reduce the Machine’s health shall depend on the object that is being used against it.
III. Non-Playble Character (NPC)

There will be 10 NPCs scattered throughout the rooms. Each room shall contain at least one NPC. Each NPC will have the ability to walk, run, and jump. Each NPC’s abilities shall be implemented with the following mechanics:

- **Walk** – The NPC shall have the ability to move at a standard rate of speed
- **Run** – The NPC shall have the ability to move at a faster rate of speed
- **Jump** – The NPC shall have the ability to jump and drift towards a direction while in the air. The jump mechanic will have a standard rate of gravity applied to it.

Each NPC will also have a **Friendship Meter**. The Friendship Meter shall be filled once the player fulfills the objective in the level.

2.2.3 Objects

The player shall be able to pick up various objects throughout the game. The player’s heads up display will notify the player if an object is interactable by displaying an icon. The alert icon shall appear once a player is near an interactable object. The icon will disappear when the player moves away from the object.

Doors shall be objects that the player can interact with. The player shall be able to open and close doors. The player will be able to go through a door only if the door is open.

Recovery Items

*This requirement will be implemented during the spring 2020 semester.*

Weapons

*This requirement will be implemented during the spring 2020 semester.*
2.2.4 Actions

Player & NPC Interaction – The player shall have the ability to interact with the NPC once the objective is cleared in the room. The player must approach the NPC and use the right-clicker on the mouse to interact with them. The NPC will award the player with an item or ability once they are finished interacting.

Player & Machine Interaction – The player will be able to interact with the machine once they are able to gain access to the boss room. The player will use the right-clicker to interact with the Machine.

2.2.5 Combat

Player vs Machine

*This requirement will be implemented during the spring 2020 semester.*

2.2.6 Screen Flow

The game will be in a first-person perspective. The camera will only allow the player to see what is in front. The player will have to rotate to view what is around them.

2.2.6 Conditions

Each room shall have a condition applied to it when the player initially walks into the room and the door closes. The conditions shall only be applied to rooms and will not be applied to the hallway.

List of Conditions

<table>
<thead>
<tr>
<th>Name</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Floor is Lava</td>
<td>The room’s floor asset shall change to a lava asset and shall deal damage to the player. The game shall spawn rocks on the floor such that the player may traverse through the room and still be able to complete their objective.</td>
</tr>
<tr>
<td>Camera Flip</td>
<td>The player’s camera will become inverted every 5-10 seconds. The player will still retain their normal controls.</td>
</tr>
<tr>
<td>Shrink</td>
<td>The player will become smaller, but the level and objects will remain the same.</td>
</tr>
<tr>
<td>Super Speed</td>
<td>The player’s movement speed will be increased significantly.</td>
</tr>
<tr>
<td>Super Strength</td>
<td>The player shall be able to pick up heavier objects</td>
</tr>
<tr>
<td>Foggy</td>
<td>Fog will appear throughout the entire room which will hinder the player’s visibility.</td>
</tr>
</tbody>
</table>

*More conditions will be added during the Spring 2020 Semester*
Example of *floor is lava* condition in testing room

2.3 Game Options

The game shall contain a pause, resume, and quit options. The options will be available using the following controls:

<table>
<thead>
<tr>
<th>Event</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause (Freezes game state)</td>
<td>P</td>
</tr>
<tr>
<td>Resume (In pause interface)</td>
<td>P</td>
</tr>
<tr>
<td>Quit (Prompt quit menu)</td>
<td>ESC</td>
</tr>
<tr>
<td>Quit Game (In quick menu)</td>
<td>ESC</td>
</tr>
</tbody>
</table>

2.4 Replaying and Saving

Replaying – Once the game is beaten, the player will have the option to continue. If the player chooses to continue, the game will reset, but the player will be able to keep all items and abilities. Everything in the game will be same, except that the number of conditions applied to each room will increase by 1. Meaning, that if the game is beat once successfully, then 2 conditions will be applied to each room. If the game is beaten twice, then 3 conditions will be applied to each room and so on until the player quits, fails an objective, or dies.

2.5 Easter Eggs

*This is a tentative requirement. It still needs to be discussed, but will be delayed until levels, character, NPCs, and the Machine are polished.*
3. Story, Setting and Character

This requirement will be implemented during the spring 2020 semester.

3.1 Story and Narrative

This requirement will be implemented during the spring 2020 semester.

3.2 Game World

This requirement will be implemented during the spring 2020 semester.

3.2.1 General look and Feel of World

This requirement will be implemented during the spring 2020 semester.

3.2.2 Areas

This requirement will be implemented during the spring 2020 semester.

3.3 Characters

4. Levels

4.1 Hallway

The hallway will be the main area of the game. The player will have to explore the contents of the hallway in order to make progress in the game. The machine shall chase the player through the hallways and force them to go through a door. The hallway shall include the following mechanics:

<table>
<thead>
<tr>
<th>Mechanic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate random obstacles</td>
<td>Random objects will spawn as the player progresses further in the hallway. These obstacles will slow down the player.</td>
</tr>
<tr>
<td>Randomly spawn doors</td>
<td>Doors will randomly appear in the hallway as the player progresses. The player will be able to go through the doors that are generated.</td>
</tr>
<tr>
<td>Change direction</td>
<td>The path of the hallway shall change randomly. The hallway may generate a path to their the left of right direction.</td>
</tr>
</tbody>
</table>
Concept art for **Hallway** design

The following images show an early implementation of **Hallway** design

Current implementation of **Hallway** design
Example on the randomly generated path

### 4.2 Rooms

Rooms will be areas in which the player will be able to explore. Rooms shall have a single point of entry from the hallway. Rooms shall keep the player enclosed within its area until the player successfully completes the objective.

The following is a list of rooms:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Room</td>
<td>Indoor</td>
<td>An indoor facility room where the player will start in. There shall be an Athletic Area where the player learns the basic movements, Marksman Area where the player learns how to throw objects, and the Sparring Area where the player can freely play in.</td>
</tr>
<tr>
<td>Cat Room</td>
<td>Indoor</td>
<td>A room that is heavily focused on cats. Various cats litter the room for the player to interact with.</td>
</tr>
<tr>
<td>Kitchen Room</td>
<td>Indoor</td>
<td>A classroom that is outfitted to teach students basic cooking skills. This room is fitted with counters, ovens, fridges, food produce, and lots of cheese. In the back corner is the freezer room where there is more fridges and food in storage.</td>
</tr>
<tr>
<td>Water Zoo</td>
<td>Outdoor</td>
<td>An outdoor world surrounding a murky pond featuring a cat wearing a Brown Beret and a shark in the water.</td>
</tr>
<tr>
<td>Room Name</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Illusion Room</td>
<td>Indoor</td>
<td>An enclosed room with an obstacle course in the center. The obstacle course in the center of the will be composed of various school related objects such as chairs, tables, beakers, pencils, etc. It also uses disorienting patterns that are applied to the floor and ceiling.</td>
</tr>
<tr>
<td>Home Sweet Home</td>
<td>Indoor</td>
<td>This room simulates a regular household with a killer chasing the player. The player’s objective is to find a way to stop the kill and escape safely. This shows us how our privacy can be invaded and how individuals that took part in the protest felt after arriving home.</td>
</tr>
</tbody>
</table>

*More rooms shall be implemented during the 2020 Spring semester*

Tentative implementation of **Training Room** design

![Training Room Design](image1.png)

Tentative implementation of **Cat Room** design

![Cat Room Design](image2.png)
Tentative implementation of **Kitchen Room** design

Tentative implementation of **Water Zoo** design

Tentative implementation of **Illusion room** design
Concept art for **Home Sweet Home** and top down view of current implementation

![Concept art and top down view of current implementation](image)

Tentative implementation of **Home Sweet Home** room design

![Tentative implementation of Home Sweet Home room design](image)

*Example of future room designs to be implemented during the 2020 Spring semester*

![Example of future room designs](image)
5. Interface

This requirement will be implemented during the spring 2020 semester.

5.1 Visual System

This requirement will be implemented during the spring 2020 semester.

5.2 Control System

This requirement will be implemented during the spring 2020 semester.

5.3 Audio, Music, Sound Effects

This requirement will be implemented during the spring 2020 semester.
6. Technical

6.1 Game Architecture

*Tentative Game Architecture model*

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Program Start

- **Continue**: Load File
- **Title Menu**: Start, Continue, Settings
- **Settings**: Volume, Mouse Sensitivity

Start Game
- <Spawn Player in hallway>
- <Movement Tutorial>
- <Spawn Door>

Lose Screen
- <Load Title Screen>

You Die
- Cop Begins Attacking
- Display message to run <Spawn Cop> <Cop Chase>

Cop Begins Attacking
- Run to door
- Take more than 3 minutes
- Load into training room

Complete the tutorial room
- <Door Opens>

Change cop position to end of hallway
- Open door to hallway
- Run down hallway <Spawn hallway> <Spawn Doors>

Take more than 3 minutes
- Enter a door <Load new room> <Load random conditions>

Complete 7-19 Rooms
- Spawn Boss Door at end of hallway
- <Despawn Cop>

You Die
- Lose Screen <Load Title Screen>

You Die
- Lose Screen <Load Title Screen>

Enter Boss Door

Final Boss Cutscene

Right Boss
- <Spawn Saved NPCs>
- <Spawn Boss>

Victory
- <Victory scene following credits>
6.2 Target Hardware

This requirement will be implemented during the spring 2020 semester.

6.3 Development Hardware and Software and Game Engine

The game is being developed using the Unity game engine. The version that is being used is 2019.2.2f1

7. Game Art and Assets

All game art and assets are from the Unity Asset Store and Maximo. The game uses the following asset packs:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Scene</td>
<td>Includes various prefabs related to a school setting such as classrooms, chairs, benches, trees, desks, etc.</td>
<td><a href="https://assetstore.unity.com/packages/3d/environments/urban/school-scene-66006">https://assetstore.unity.com/packages/3d/environments/urban/school-scene-66006</a></td>
</tr>
<tr>
<td>Standard Assets (for Unity 2017.3)</td>
<td>This collection of assets, scripts, and example scenes can be used to kickstart your Unity learning or be used as the basis for your own projects.</td>
<td><a href="https://assetstore.unity.com/packages/essentials/asset-packs/standard-assets-for-unity-2017-3-32351">https://assetstore.unity.com/packages/essentials/asset-packs/standard-assets-for-unity-2017-3-32351</a></td>
</tr>
<tr>
<td>Title</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Swat guy 3D model</td>
<td>A swat officer 3D model</td>
<td><a href="https://www.mixamo.com/#/?page=1&amp;query=swat&amp;type=Character">https://www.mixamo.com/#/?page=1&amp;query=swat&amp;type=Character</a></td>
</tr>
</tbody>
</table>

*More asset packs and models will be included in the upcoming 2020 Spring Semester.*