VR Escape the Prison Cell

CM3025 Virtual Reality

By: Garrison Jabs

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Introduction:

Escape the prison cell is a VR escape room where the user explores a dungeon cell inorder to escape. The project will be developed using unity in conjunction with a VR HMD system. The two most important interaction techniques required to be a functional application are:

- The users ability to explore the environment
- The users ability to manipulate objects

Furthermore, to determine if the project was successful in its goal as a piece of narrative entertainment, a quantitative analysis will be carried out.

Narrative:

The setting for this VR project is a medieval world with castles and dungeons. The user finds themselves imprisoned in a forgotten dungeon meant for people to perish in as if they never existed. There appears to be nothing in the room except a couple of moldering skeletons, a bed, some rats, and a piece of yellowing parchment with what appears to be a shaky hand written note. Upon reading the note the user discovers there may be something to find, possibly a way to escape. By solving the puzzles the user moves closer to escape, while also discovering the story of their companion, the happles skeleton and his unfortunate imprisonment. Will the user escape? Or will the user's bones become one more grisly decoration in this awful prison.

Key Technologies:

Escape the Prison VR will use the Unity real-time development platform, to create a 3D Virtual Reality project. The project will be built around the Valve Index Head Mounted Display "HMD", and Index controllers. This hardware will be the main way of interacting with the world. The environment will be populated with standard 3D assets, retrieved from the unity assets store. As well as, creative commons licensed sounds, and music effects. A stretch goal is to include online multiplayer.

Interaction Technique Teleportation:

The user will indicate where they would like to teleport, by pressing the joystick forward and pointing the controller in the direction of travel. The software will respond by drawing a line with a marker indicating to the user where they will land and their orientation. Collision physics and colliders will be used to prevent the user from teleporting into objects and walls. If a user is trying to teleport to an area they cannot reach; whether it is obstructed or outside the play area; the software will change the colour of the marker to red, to communicate that they can not travel there.

Interaction Technique Object Manipulation:

Object manipulation will utilize colliders to detect when the user is interacting with a movable object. The user will only be able to interact with objects they can reach nearby. Also a selectable object will indicate to the user it can be grabbed, as long as the object is in reach. Hand models will indicate where the user's hands are and their orientation. Object puzzles will also utilise colliders to detect correct objects and puzzle solutions.

Assets:

The majority of assets used will be retrieved from the unity asset store.
- Hand models
- Environment textures
- Pre built environment models

The dungeon environment will be created with freely available textures. Music and ambient sound effects will be sourced, from websites offering a creative commons licence access. An artist's rendering of the first environment, can be seen in the appendix below.

Evaluation Plan:

A combination of peer reviews, and user testing will be carried out to determine functionality of the application. The application will be evaluated based off several metrics:
- Place illusion
- Plausibility illusion
- Simulator sickness
- How hard it was for the user to understand what to do
- How long it took for the user to complete the tasks
- Did the user complete the task or did they give up early
- How frustrating the experience was
- Did the user enjoy the experience

The majority of these questions will be valued on a scale of 1 to 10, the outcomes will be graphed in order to visually model the overall experience. A sample question sheet can be seen in the appendix below.

Appendices:

Evaluation Document

Tester:

How long did it take to complete the locked room?

How much did the user appear to struggle with each puzzle?

Too Hard **Too Easy**

1	2	3	4	5	6	7	8	9	10

Did the user complete all tasks?

Yes / No

Did the user give up early?

Yes / No

User:

How hard was it to understand how to interact with the environment?

Too Hard **Too Easy**

1	2	3	4	5	6	7	8	9	10

Did the tutorial correctly explain how to move in the environment?

Yes / No

Did the tutorial correctly explain how to interact with the environment?

Yes / No

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How immersed in the environment did you feel?

Not At All   **Fully Immersed**

1	2	3	4	5	6	7	8	9	10

How believable was the environment?

Not At All   **Fully Believable**

1	2	3	4	5	6	7	8	9	10

Did you experience any motion/simulator sickness?

Not At All   **Had to Stop Early**

1	2	3	4	5	6	7	8	9	10

How frustrated did the experience make you feel?

Not At All   **Completely**

1	2	3	4	5	6	7	8	9	10

Did you enjoy the environment?

Not At All   **Completely**

1	2	3	4	5	6	7	8	9	10

Did you enjoy the experience?

Not At All   **Completely**

1	2	3	4	5	6	7	8	9	10

User Comments:

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First Environment Scene: