The Quandering

Created by Michael Paquette, Jake Luedtke, Tyler Wians

Abstract

This Virtual Reality project implements a maze generation algorithm to create random mazes. A player will start in one corner of the maze, face multiple obstacles and attempt to find the exit.
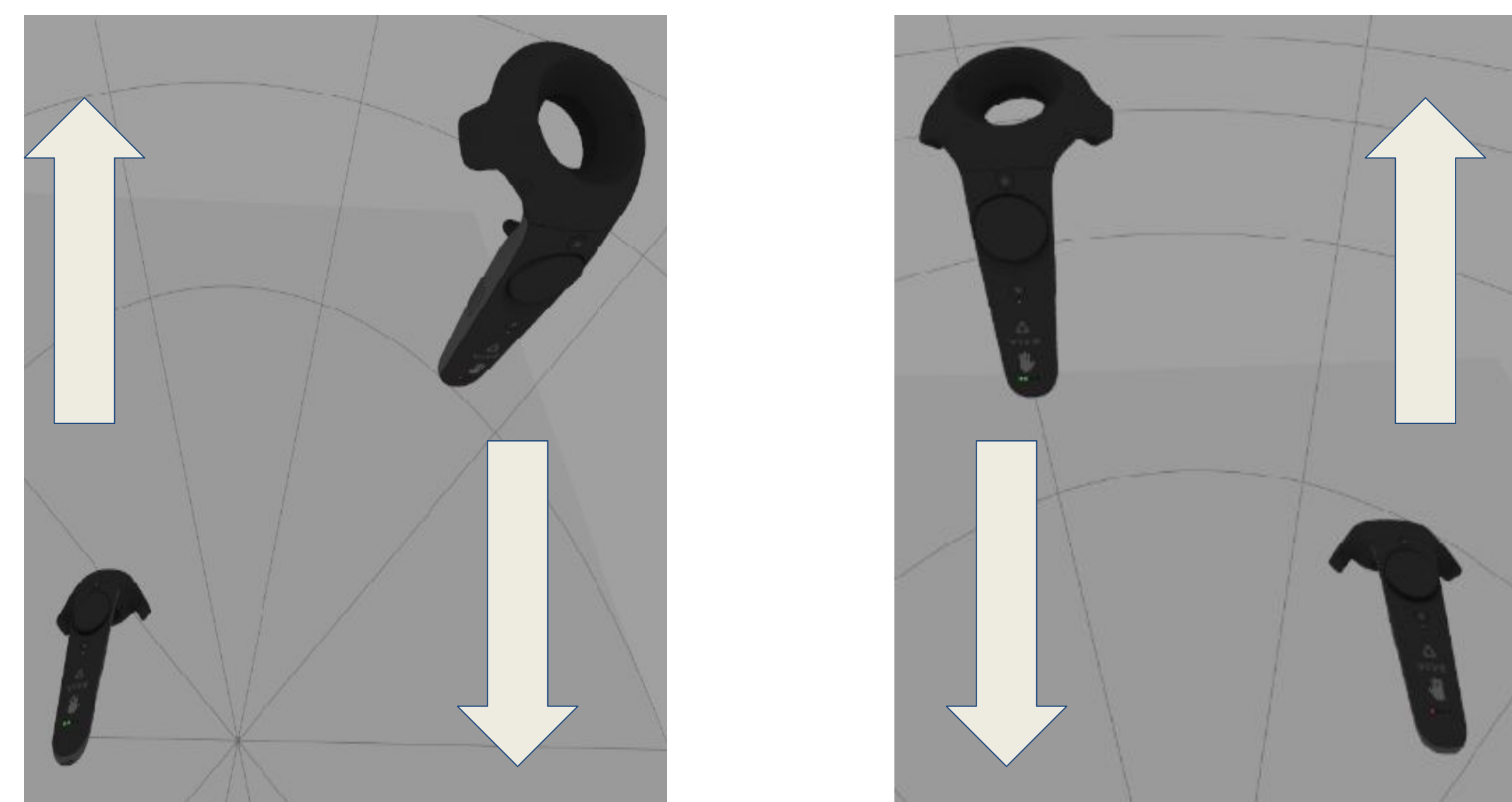
Maze Generation

We are using the Recursive Backtracking Algorithm. The steps are as follows:

1. Choose a starting point in the field.

2. Randomly choose a wall at that point and carve a passage through to the adjacent cell, but only if the adjacent cell has not been visited yet. This becomes the new current cell.

3. If all adjacent cells have been visited, back up to the last cell that has uncarved walls and repeat.

4. The algorithm ends when the process has backed all the way up to the starting point.
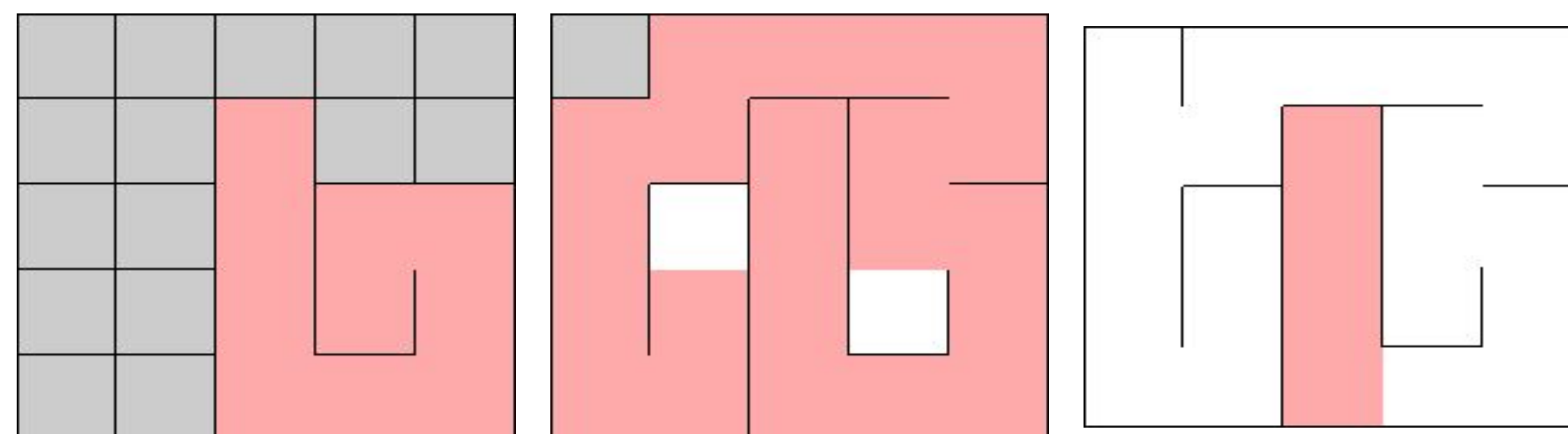
Locomotion

To move in this game, bring your arms up and down to simulate a running motion.

You can also grab objects with the grip button.

Important Scripts

- Maze Generator- Instantiates the cells and recursively goes through them to create the maze.
- Cell- Contains the walls of the cell, if the cell has been visited, and if it is an obstacle.
- Movement Manager - Updates the position of the Rigidbody model. Used in the locomotion and on the jungle gyms.
- Controller Hand - Communicates with the Movement Manager to tell it how much the body should move based on what the controllers are doing
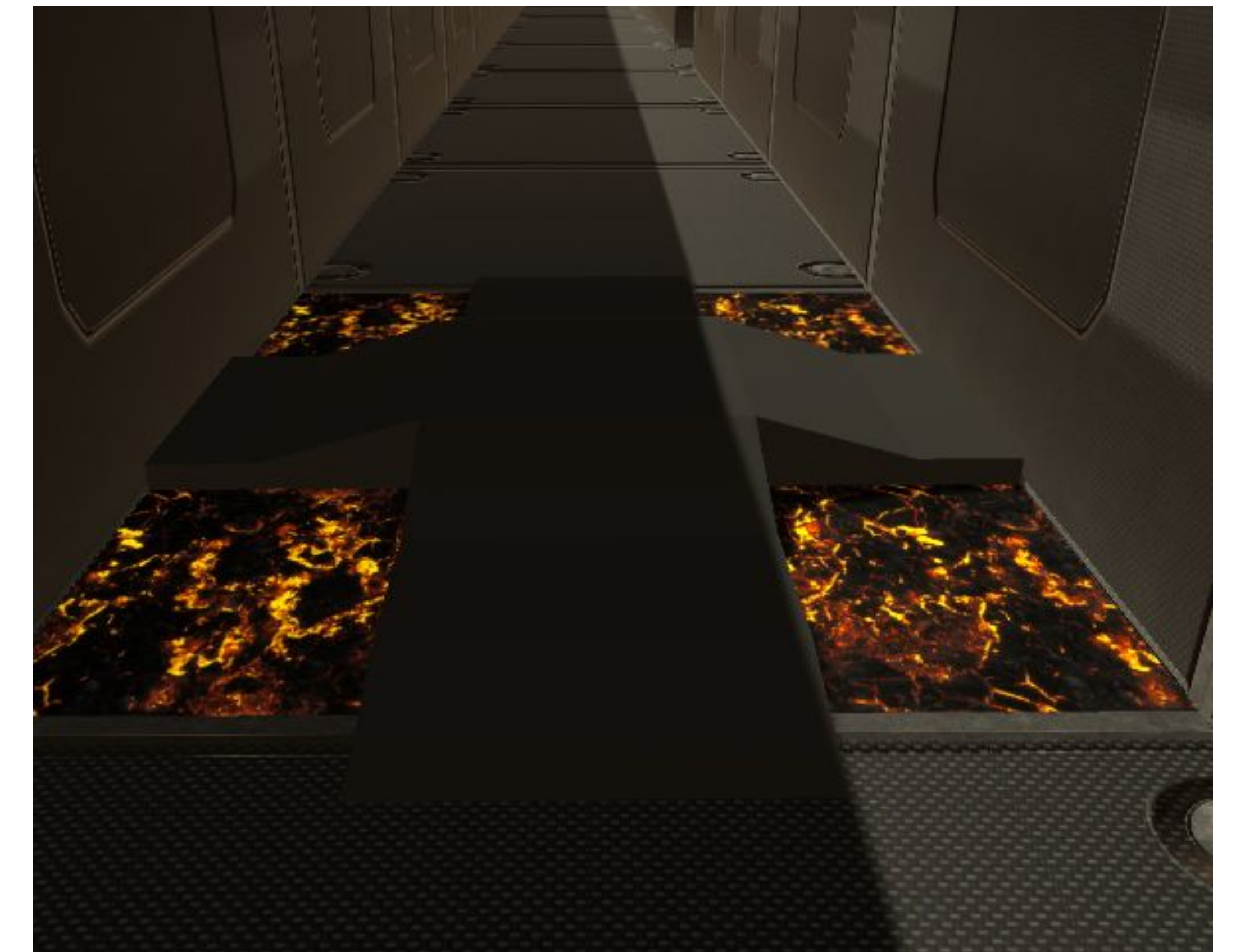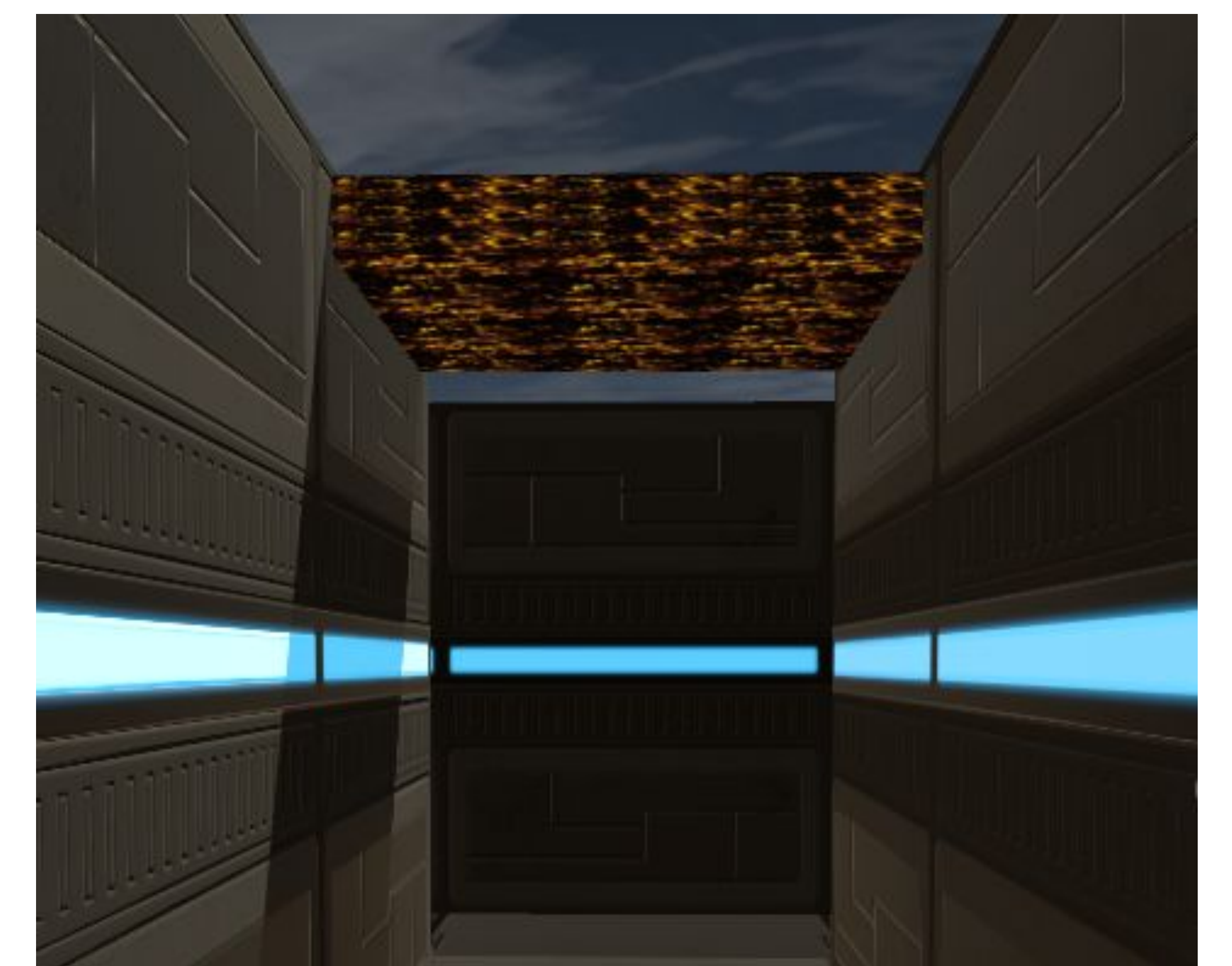
Obstacles
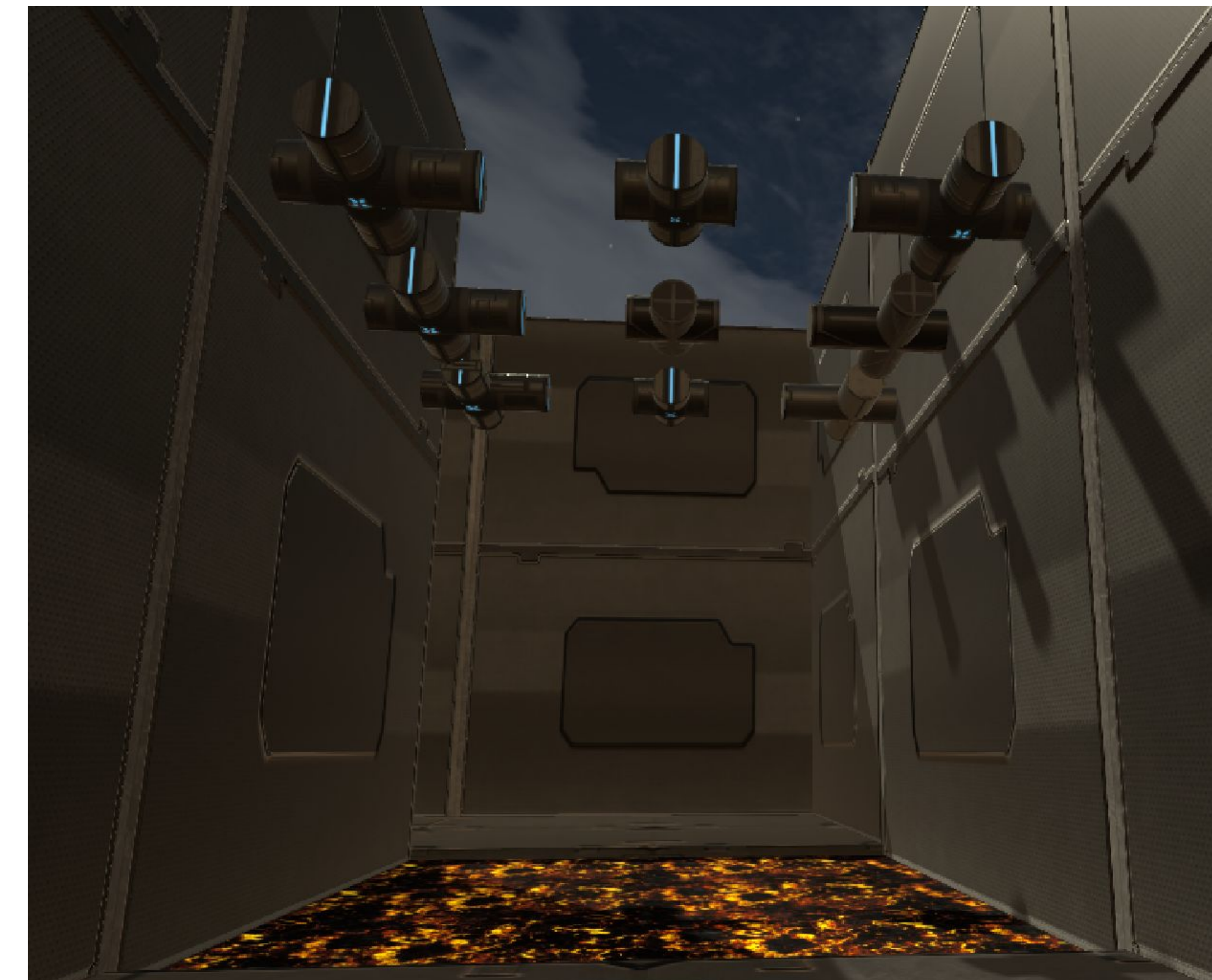
- Grab onto the bars to pull yourself across.

- Cross over the lava using the rotating platforms.

- Run through the spinning walls.

- Avoid being crushed by the falling ceiling.

Character Model

Resources

- Unity Game Development Platform
- Blender Modeling Tool
- Final IK - Root motion
- Maze Tutorial - xblackeagle13
- Sybox Series Free 4 - Avionx
- Sci-Fi Texture Pack - Firebolt Studios
- Xbot - Mixamo
- Free Ground Materials- Yughues

Cornell College