

Invisible Maze

6.111 Final Project Abstract

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Our project is to create an interactive, virtual-reality maze game. The player starts at a marked edge of an open space, and must navigate through the invisible maze to the center, which is highlighted by a spotlight. Unlike a traditional maze, where the player cannot see the prize at the center, in our maze game, they can see the prize the entire time, but they cannot see the way to get there.

The player navigates through the selected maze by wearing two gloves equipped with piezo buzzers that go off when they “bump into” a wall. If they ignore the signal and walk through the wall, the game is over. A camera above the course tracks the two brightly colored gloves (both different colors to distinguish right and left hands) for the FPGA, which will also display the player’s progress on the monitor, overlaid with the actual maze course for any spectators. The player may select a timed mode where a countdown timer dictates how long they have to reach the center and win the game.

A potential stretch goal would be to automatically calibrate the camera to the available space, similar to how 3D motion capture systems calibrate their location with four calibration squares. This would allow the camera to be placed at varying heights but still allow for the full space to be utilized, or to be used in different sized spaces, so that the maze map can be scaled appropriately.