

# Final Project Abstract: Tactile Feedback Maze Game

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We will produce a video game in which the player must escape an invisible maze by 'touching' its walls. Walls that the player has discovered will be displayed on screen. A force feedback system will provide tactile feedback while a camera tracks the position of the player's hand in the real world and maps it to the virtual. Much of the system will rely on the use of a glove by the (real-world) player. This glove will contain a small servomotor to enable force feedback and be brightly colored to allow for easy position tracking. The FPGA will use a camera input and previous video frames to calculate the position and velocity of the colored glove. A signal controlling the glove actuator will be produced if the player's hand position is found to overlap with a wall of the maze, thus allowing for force feedback. Stretch goals include the use of hand motions to control player motion through the virtual world, a fully three-dimensional display of the maze, and increasingly complex wall and object geometries. We imagine modeling not only rough walls, but also ropes, and potentially steps and ledges that would add to the realism of the tactile feedback and engagement of the user.