



CPSC 314 Project 4 Proposal

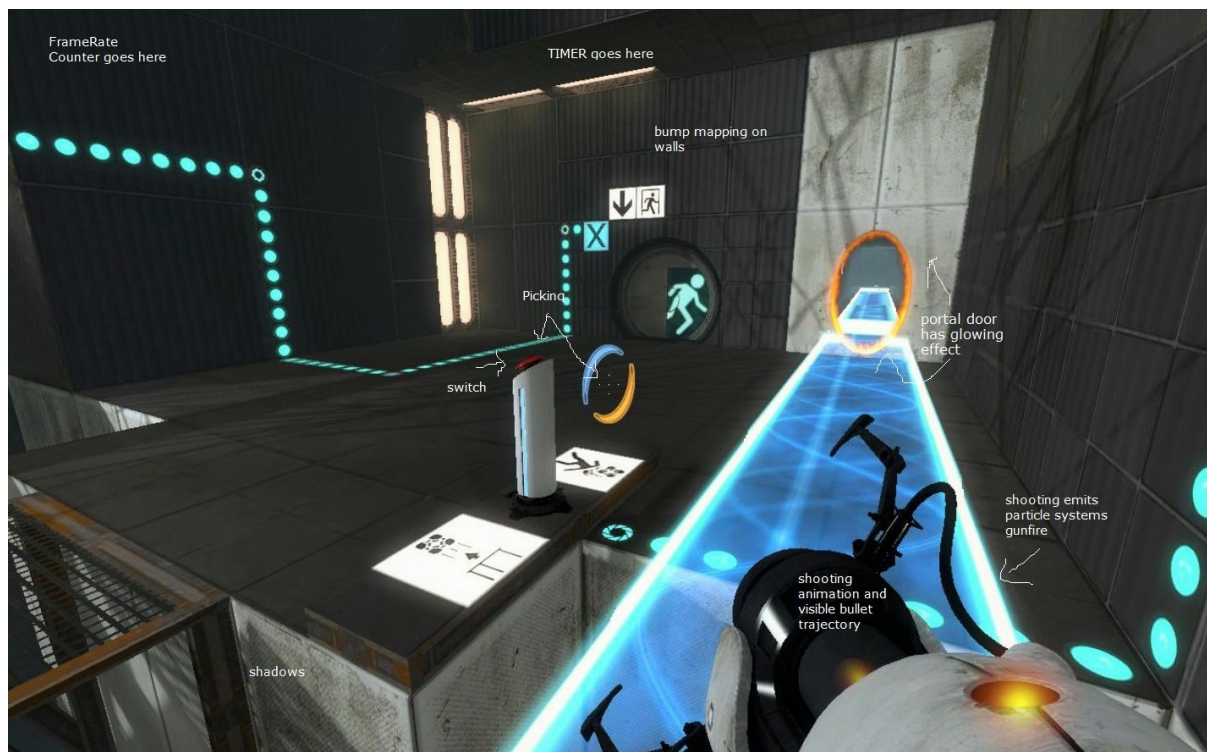
Guanzheng Wang, 15596125, p8d9

Caiyi Ku, 48449136, d1b9

Zhixuan Xu, 53854121, f3v9a

Group E-mail: imkcy@qq.com

We are planning to build a combination of maze and First-Person Shooting (FPS) game, which would look similar to Portal. The player can shoot on the walls and make a tunnel through it, but the number of bullets is limited. The player will win after reaching the exit.



Required FrameWork

- 3D Object :
 - Turrets: one of the main testing obstacles that will attempt to kill objects on sight.
 - Cubes: one of the testing elements that will help players to reach the exit.
- 3D Camera :
 - First-person view camera
- Interactivity
 - WASD: forward, left, backward and right movement
 - SPACE: jump
 - Left and Right click: shoot blue and orange portal
 - E: grab/drop cubes/ use switch
- Lighting and shading

Tentative lighting model: Phong's lighting model
Tentative shading model: Blinn-Phong' shading model
GGX shading model

- Picking
Picking is used when a player places the crosshair/cursor at some interactive objects (e.g. cubes, switches).
- Texturing
We might use some textures from Portal 2
- On-screen control panel
Framerate Counter
Death Counter
Timer
- Gameplay
The goal of the game is to solve puzzles and reach the exit of the test chamber using a portal gun. The portal gun can generate an entry portal and an exit portal on portal-conducting surfaces (usually white). Through two portals, players can go to some unreachable places and remotely get objects, such as cubes and turrets (FATAL!!!). The speed is preserved after going through portals.
There will be multiple test chambers for players to solve. The only major camera is attached to the player and provides a first person view, so player can look around to collect information.

Feature Options

- Advanced rendering effects
 - We will add shadows in the game.
 - Bump mapping on cubes
 - Alpha mapping
- Shaders
 - We plan to use GGX Shading Model which more closely mimics the look of real reflections on rough surfaces.
- Particle System
 - The glowing effect of the portal on walls as shown in the picture can be done using particle system, just like fire.
 - Particle system can also be used for bullets shot from the portal gun.
- Collision detection
 - Player cannot pass through walls unless there is a tunnel through it
- Animation
 - There is animation when the bullet is shot from the gun to the wall and make a tunnel.