

Game Name: Super Pong-Tag 3D

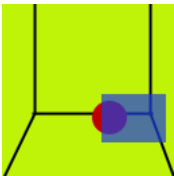
Team Members: Chris Ranney, Drew Lund, Rob Scout

The development of pong-tag, has two major obstacles to overcome: collision detection and networking. The design of the game is as a multi-player game, and in theory should have at least 2 but preferably 3-5 players able to play it simultaneously. This requires some networking, which at least for the initial setup will take some doing. The game also must have a good collision detection and reaction system (i.e. physics) to allow balls to bounce predictably.

Due to these concerns, the development of the game will proceed in stages:

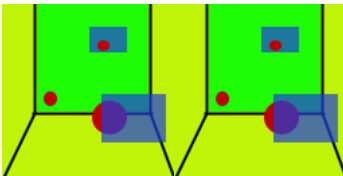
Stage 1:

- 1 player (paddle player with correct view and input)
- empty room
- ball bouncing around
- basic scoring



Stage 2: 3D Pong - First Deadline

- 2 players (both paddles, split-screen)
- multi-ball (basic power up system)



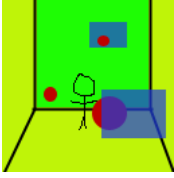
Stage 3: Online 3D Pong –

- 2 players (both paddles, two computers or two computers and a hub)



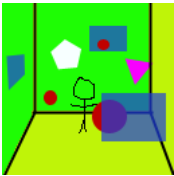
Stage 4: Online Pong-Tag 3D

- 3 players (2 paddles, central player, each on own computer)



Stage 5: Super PONG-Tag 3D – Final Deadline

- 3-5 players (2-4 paddles, 1 central player, each on own computer)
- additional power-ups
- role-swapping on the fly



Game Mechanics:

Paddles are controlled via the mouse. The central player is controlled either by keyboard, mouse, or a combination of the two. Points are accumulated by the player in the middle, a point is awarded each time a wall player lets a ball through their wall. When a ball hits the player in the middle (i.e. tags him/her), the central player swaps places with whoever hit him and the next round starts. Also, each time a ball bounces, it speeds up. Power ups scattered around the middle can affect many of the above mechanics, and will be gained by either the central player touching them, or a wall player hitting a ball into them. Note that for the purposes of tagging and power ups, the most recent player to hit the ball is the one that swaps in / gets the power up.

Game Physics:

- the ball speeds up each time it bounces off a players paddle by a set percent (~10%?)
- more balls can be added via a multi-ball power up, and will be added with a semi-random velocity and position
- bouncing off a wall- use wall normal and reverse direction along it
- bouncing off a player – add a portion of players velocity when bouncing (also paddles may be faceted so that distance from center effects angle
- central player will have some sort of gravity so that they can jump (and maybe duck?)
- central player might have ability to bat/kick balls around

Possible Power Ups/Downs (not an exhaustive list):

- multi-ball – adds a new ball
- shrink – causes player to shrink, good for player in middle, bad for paddles
- grow – causes player to grow, bad for player in middle, good for paddles
- erratic/spin-ball – ball spins around erratically and is hard to predict
- reverse controls – reverses left/right up/down controls, bad for everyone

- sticky paddle – ball sticks to paddle until player clicks (? For middle player)
- heat seeker – ball seeks towards central player / away from paddles (depending on who controls)
- baseball bat – when a ball bounces off paddle, it gains much more speed than normal.
For central player, might be an extra life (ball bounces off + knocked around a bit)

Tools:

A tool that can assist in networking will probably be used, but we did not have a chance as of yet to search for suitable tools. Similarly, a tool that will assist with collision detection that supports 3D bouncing (most 3D game engines will do this) might be applicable, though the physics in our game should be simple enough to do without if need be.

Jobs:

Specific jobs have not been discussed as of yet, as they will depend on how much of the networking and collision will need to be done from scratch. We will not have a good idea of this until about a week or two into development.