SPACESHIP BATTLES

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Introduction

Spaceship Battles is a unity powered multiplayer game implemented on top of Unity's transport level API. The game is a simple space sim implemented as a client server infrastructure and allows players on different computers to play together over a local area network. The gameplay mechanics are intuitive and the game also supports a VR display option, where a player uses a VR headset for a more immersive experience.

Implementation details

The game world is simulated in the server instance of the application and communicated to the clients. Clients hold a "mirror world" that is updated using messages from the server.

Clients send requests to the server when shooting projectiles and missiles and also send position and rotation data to the server.
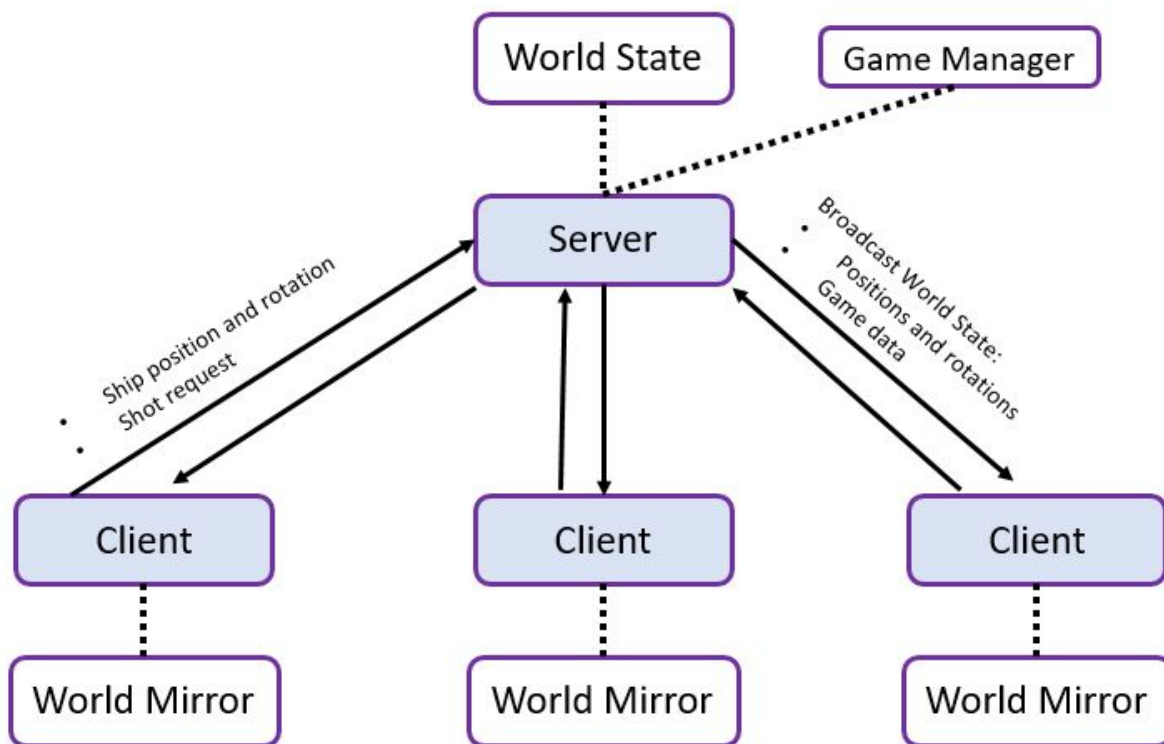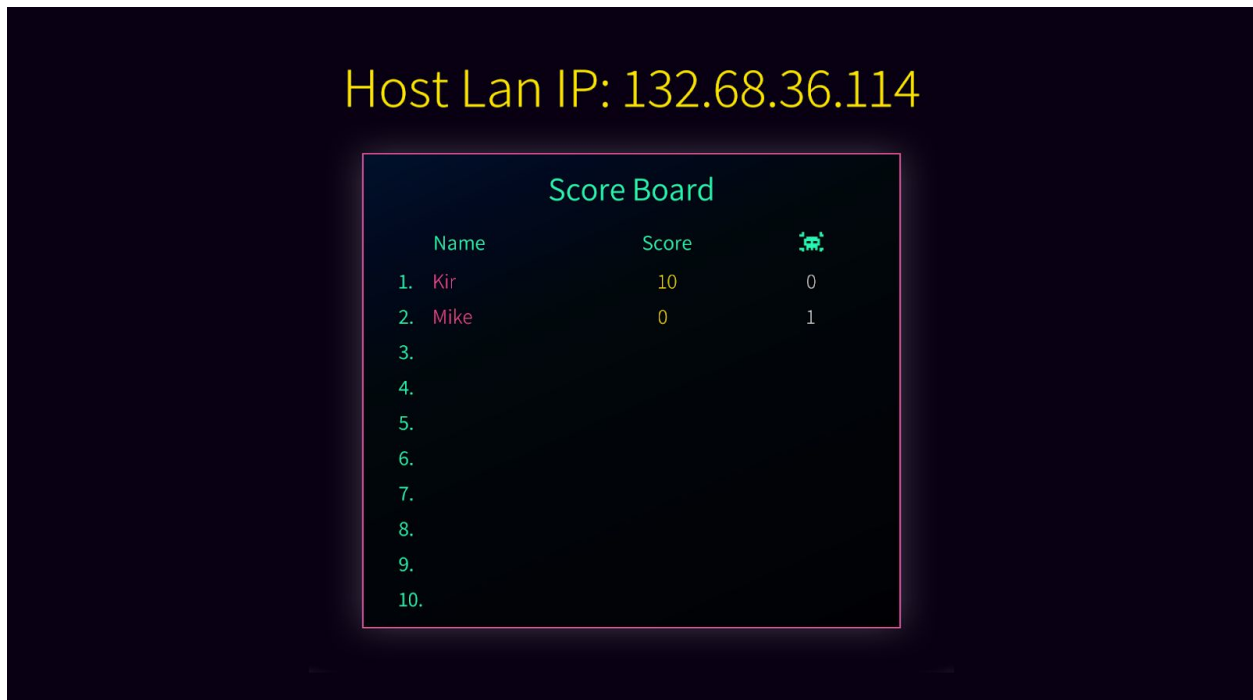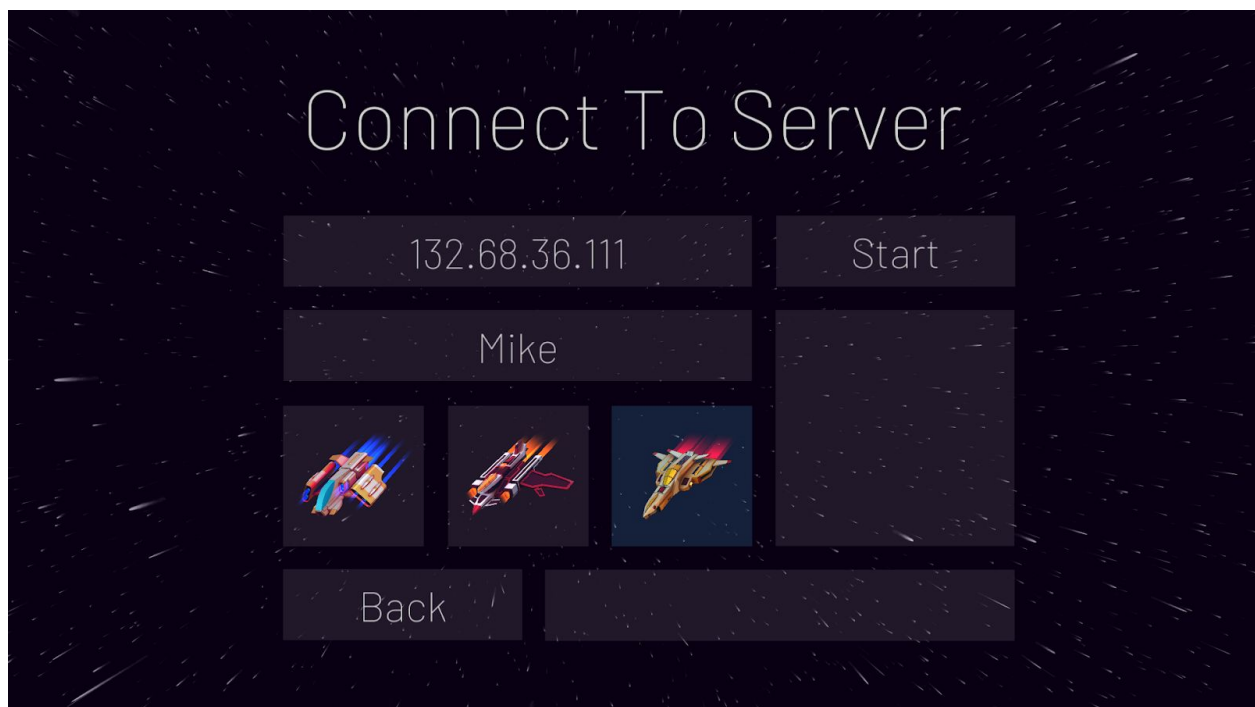
Application User Guide

Starting a match

A user starts an instance of the app and chooses the "Host Game" option. An IP and scoreboard will appear

All the players connect by launching the application and choosing "Play".
A second screen will appear that lets the player choose his name and ship.
All the players also need to insert the IP that appears on the hosts screen.

The game is a simple deathmatch situated in an arena, mostly suited for 4-6 players.

Players earn game points by killing other players and each player also has a death counter that keeps track of the number of times he died.

Each player has 100 health points (bottom left bar) and 100 energy points (bottom right bar), shots and homing missiles drain energy.

A missile launch requires 75 energy points.

Players can also boost their speed (right bar) with available boost points (left bar).

The game supports 2 control schemes:

1) Classic mouse and keyboard setup:
   The player controls the orientation of the ship using the mouse for yaw and pitch. And uses the keyboard for throttle and roll.
   The player can also shoot other players with simple projectiles using left mouse button and lock on target and launch a missile using the right mouse button. There is also a locking mechanism that allows the player to see the health of a target and shooting a missile on a locked target will make the missile home in on the target.

   Keyboard Controls:
   W - Throttle
   A-D - Roll
   S - Slow Reverse
   Left Shift - Lock on target
   R - Launch homing missile
   Space - Boost speed

2) Xbox Controller:

The player can use an Xbox-360 controller to play the game.

X - Throttle

Right Trigger (RT) - Shoot projectiles

Left Shoulder Button (LB) - Lock on target
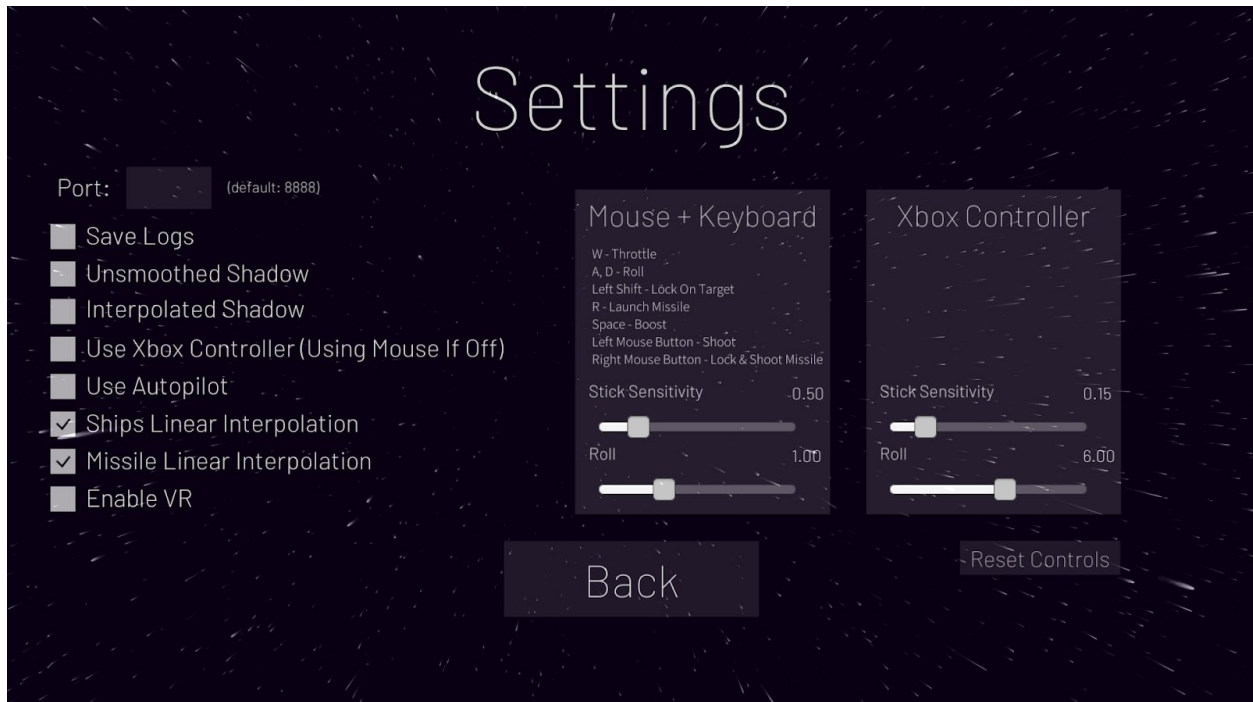
Y - Launch homing missile

A - Boost

Left Stick - Pitch & Yaw

Left Trigger + Left Stick - Roll

Right Shoulder Button (RB) - Lock & launch missile

Settings

Controls

The settings screen allows you to enable an Xbox controller instead of playing with a mouse, and also allows you to change the controls sensitivity.

Enable VR

It is possible to play using a VR headset such as the HTC Vive.
Enter the settings screen and click on the "Enable VR" option. It's recommended to use an Xbox controller when using a VR headset.

Reading Material

- [Snapshot Interpolation - Interpolating between snapshots of visual state](#)
- [Latency Compensating Methods in Client/Server In-game Protocol Design and Optimization](#)