



Goalie Wars

Juliet Curtin, Anda Liang, Kevin Pan, and Luka Buskivadze
CS 4249 Virtual Reality Design



CONCEPT OVERVIEW

Problem

- Traditional VR soccer games miss the dynamic aspect of goalie penalty shootouts.
- Physical and financial barriers in soccer: high costs of live games and equipment, challenges for individuals with disabilities.

Proposed Solution: "Goalie Wars"

- Inspired by Major League Soccer (MLS).
- Focuses on goalie penalty shootouts in VR.

Features:

- Realistic soccer physics and gameplay.
- Immersive multiplayer experience.

Accessibility:

- Suitable for all, regardless of physical ability or soccer knowledge.
- Makes MLS experiences accessible to a broader audience.
- Welcoming virtual environment for global players.



DESIGNERS



Luka

Gameplay Dynamics
Gameplay Design



Juliet

Concept Design
Stadium Design
SFX & Graphics Design



Anda

Networking
Gameplay Scripting
Scene Design & Transition



Kevin

Networking
Gameplay Scripting
Scene Design & Transition

CAN WE CREATE AN ACCESSIBLE VIRTUAL REALITY VERSION OF THE LEGENDARY MLS GAME?

GAME DESIGN

Goalie Wars opens with a home screen that allows players to learn how to interact with the ball, get a sense of the stadium, and learn gameplay instructions while being greeted by a lively sounding stadium. By selecting "join game," players are transported into the multi-player interactable scene. One player will begin with the ball, which they will pick up and attempt to score in the opponent's net. The opposing goalie is then able to block the ball by grabbing it. The first player to reach five points will win the game and will have the option to either return to the home page or continue gameplay.



Interactions

Join Scene

By pressing the trigger button with the index finger on your controller, select the 'Join Game' button to jump into the action.

Tracking Score

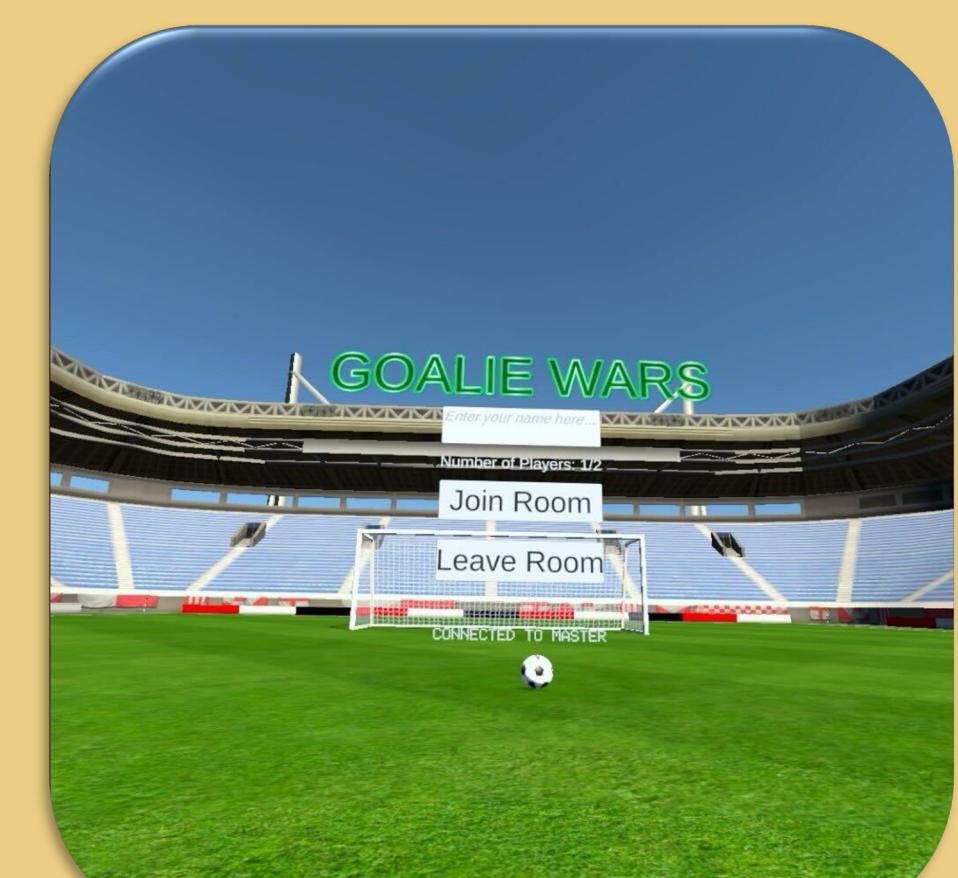
Players can look to the side of the field in the multi-player scene to see what the current score is, which is automatically recorded.

Interacting with the Ball

Using the pinch gesture (middle finger) on the right controller, players can grab the ball and then release and aim to throw it. For the best results, players should imitate a real-life overhand throw. To block an incoming shot, players simply grab the ball as it is coming towards them.

Locomotion

To move around, players can use the left joystick to explore the field. In order to turn, players use the right controller's joystick to turn and orient themselves in the game.



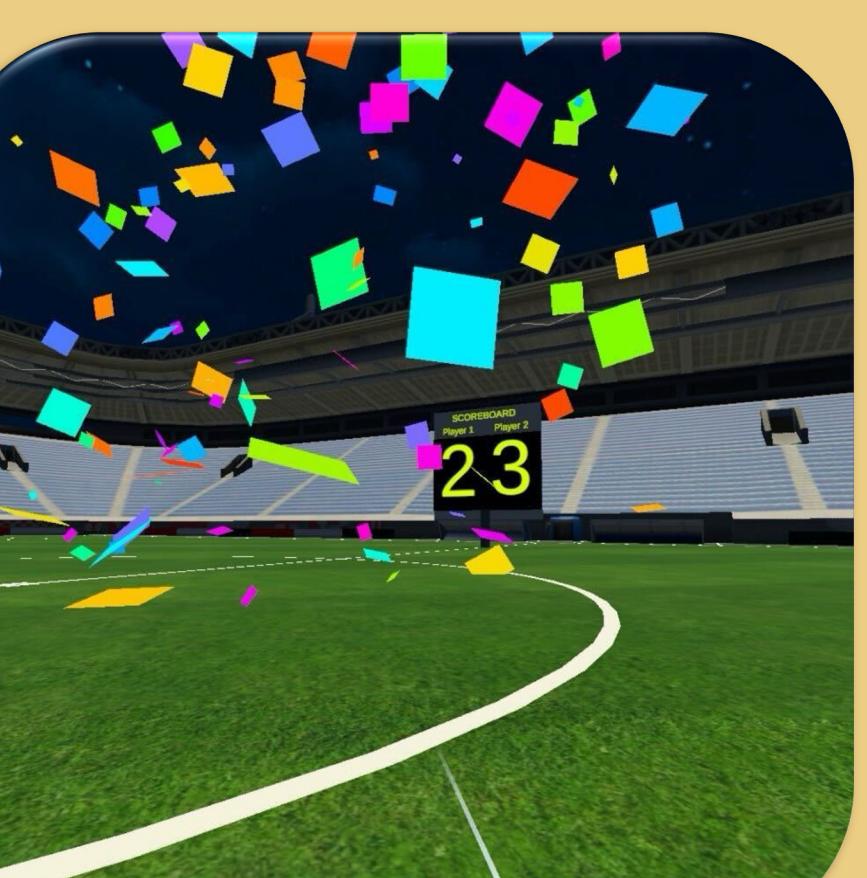
Lobby Scene



Instructions



Opponent's Goal



Winning Confetti

Design Choices:

- Classic style stadium
- Vibrant color palette
- Scoreboard
- Realistic soccer sound effects
- Crowd cheering and booring
- Confetti for the winner

Design Challenges:

- Creating an engaging and functional soccer arena that balances spatial constraints with the need for freedom of movement for goalkeeping actions.
- Balancing realistic player movements with game mechanics in VR.



TECHNICAL CHALLENGES

Networking: We encountered significant issues with score updates in our game. When a goal was scored, the game would sometimes incorrectly increase the score by 1, 2, or even 3 points. After careful analysis, we discovered an issue with our networking script for event handling. To fix this, we used the PhotonNetwork.IsMasterClient method. This solution centralized the scoring process to the master client, ensuring consistent and accurate score updates for all players in the game.

GitHub: Managing a Unity project on GitHub poses challenges, such as handling large binary files and frequent merge conflicts due to the dynamic nature of scenes and asset files, requiring careful team coordination. During the process, we learned many interesting aspects of the YAML format which .unity files use.

Game Dynamics: Prioritized the authenticity of the soccer match experience, from the tactical play down to the reaction of the ball, ensuring that the virtual game reflects the complexity and excitement of the sport. We especially focused on refining the speed of the ball and the players' motions and reach.

METHODS

- **Interviews** with our MLS and Soccer fans to seen what they would love to experience
- **Recreated** game in real life to better understand the experience



FUTURE ITERATIONS

- **Stadium Expansion:** Integrating iconic MLS stadiums as selectable arenas
- **Avatar Customization:** Enabling players to create and personalize MLS player avatars
- **Audience Dynamics:** Infusing the virtual stands with animated fans
- **Physical Interaction:** Implementing full-body defensive maneuvers and an advanced kicking system