Introduction

As basketball enthusiasts, we've always been fascinated by the intricacies of the sport, from the physics that govern the trajectory of the ball to the strategic decisions players make on the court. We wanted to create a game that not only captures the excitement and unpredictability of basketball but also allows players to experiment with different variables and see their effects in real time. This game is a way to combine our love for the sport with our interest in game development, creating an engaging and interactive experience for players.

The main goal of our project is to create a basketball game/simulation in which the player shoots a ball in varying conditions and environments (e.g., different wind speeds, and varying times of day). The game would randomly pick a location around the court for the player to shoot at, allowing each experience to be different from its previous one.

Game Mechanics

The player's locations will be changing, and we will need to change and calculate the camera's position and matrix accordingly so the scene can be displayed properly. The trajectory of the basketball will be shown using transformation matrices. Some environments will be darker than others, meaning that levels of diffused light will be different according to the court environment.

Players can adjust the direction and angle of the shot along with how much power to use. Players can adjust this using their mouse by clicking on the screen (direction is where the user clicks, and power is how far away they click from). Furthermore, the user will be given an extensive control panel of buttons and sliders allowing full control of the environment and court. This includes wind speed, time of day, outside/inside, and even more.

Different environments-

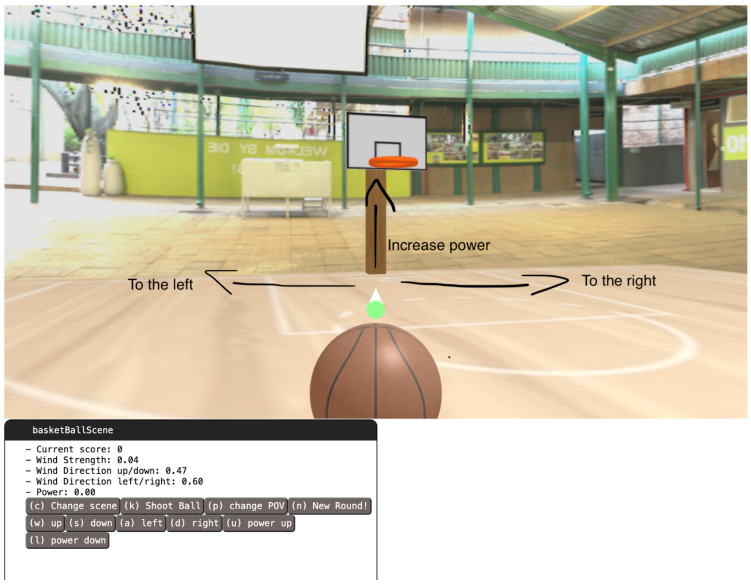


Controls and Interactivity

- The user has two **modes** of interactivity, **buttons and sliding the mouse** along the screen to change the direction of motion.

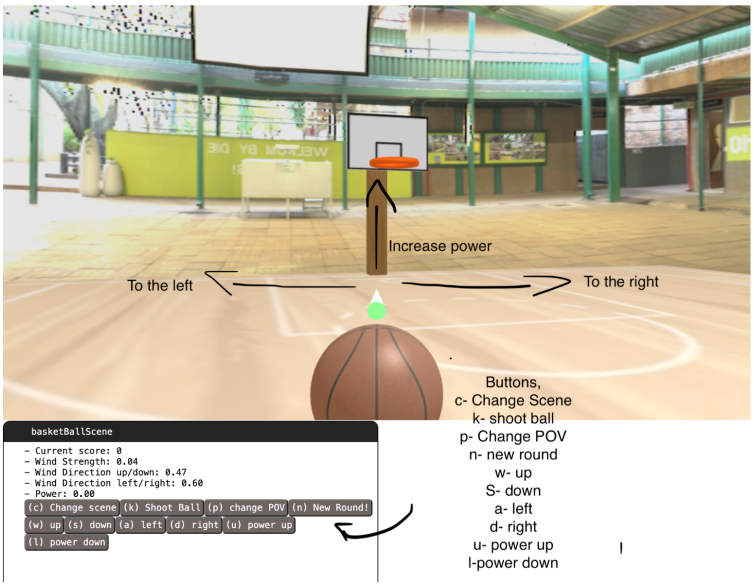
Mouse Interactivity-

-The user can slide the mouse(while clicking) around the screen to control the horizontal angle and power of the ball



Button interactivity

- Use **WASD** to move the arrow to adjust the direction to throw the ball.
- Use the **U** and **L** keys to adjust the power of the shot.
- Press **C** to change the scene which includes outdoor, indoor, or in a lake. Each scene has different lighting to make the experience more realistic.
- Press **P** to change the point of view from ball view or third-person view.
- Press **N** to play a new round.



The game will track all the points you have and it will indicate the direction of the wind and its strength.

Conclusion

We hope that this game will provide a fun and engaging way for players to interact with the sport of basketball, while also providing a platform for learning about the physics and strategy involved in the game. We look forward to seeing how players interact with the different variables and environments, and we are excited to continue developing and improving the game based on player feedback.

Extra Info

Game info is located on the left-hand side, this is where all the information of the current state of the game is. Like wind strength, power, score, etc.