Disk Wars VR

Conceptual Design Document

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Design History

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Finalized document for Pre-production Milestone

Game Overview

Core Concept:

Disk Wars VR is a 3D virtual reality game developed in Unity for Windows PCs. It is loosely based on the Disk Wars games seen in the “Tron” franchise, and involves two players competing in duels by throwing disks at one another.

Common Questions:

What is the gameplay like?

The gameplay of Disk Wars involves two players facing each other in arena combat. The game of Disk Wars is played by tossing disks at one another. To win the round and gain a point, one player must hit the other with their disk. The game is over once one player accumulates enough points through winning rounds.

What is the basis of the game?

The premise of the game comes from the movie franchise “Tron”. In the movies, there is a recurring sport seen in the virtual world called “Disk Wars”, which is played as mortal combat between programs. In particular, we are drawing most heavily from the Disk Wars seen in the movies “Tron”, “Tron: Legacy”, and in the video game “Disc” released on the Commodore Amiga.

What system is the game playable on?

Disk Wars is developed for Windows PC computers. It is also VR compatible using the HTC Vive virtual reality headset.

Who is the target audience?

The target audience of Disk Wars is threefold: fans of the Tron franchise, fans of virtual reality gaming, and fans of competitive gaming. Fans of the Tron franchise will enjoy the aesthetics and adaptation of a familiar aspect of the movies. Fans of virtual reality gaming will enjoy having another fun game to play in the somewhat-sparse VR gaming environment. Lastly, fans of competitive gaming will enjoy the fast paced action of Disk Wars.

What does the player control?

The player controls their avatar, a combatant in the Disk Wars arena. The other combatant is also controlled by a human player, and the two face off using their disks.

How does the multiplayer work?

Disk Wars is a two-player game. Since the current VR headsets on the market do not allow for recognition of multiple headsets, the game will utilize online multiplayer.

Does the game have a single player component?

Though primarily designed as a multiplayer game, we do plan for some single player modes in Disk Wars. For one, we intend to have a Practice Mode that will allow a lone player to hone their disk-tossing skills. Later down the line, we would like to add additional modes like an Arcade Mode to allow players to hone and test their skills without having to compete against other players.

What is the focus of the game?

The focus of the game is to create a fun, engaging virtual reality game that emulates Disk Wars from the Tron franchise. We also want the game to be “easy to learn, hard to master” in that one can jump in a game and intuitively understand how to play, but be able to continually improve through repeated playing.

What sets this game apart from other games?

As far as we have researched, there are not any other Tron-esque Disk Wars games on the Steam store (the main distributor of video games on the PC platform), virtual reality based or otherwise. It seems like our game will be fairly original in this regard. Even beyond that, the VR game market is rather limited right now in terms of quality games to play, so we hope to help rectify that issue in a small way with our release of Disk Wars.

Feature Set

Core Features:

● Two Player competitive multiplayer mode based on Tron’s Disk Wars

● Single-player practice mode

● Accurate and fun disk physics allowing for skillful gameplay

● Compatible with HTC Vive virtual reality headset

● Synth-based soundtrack and sound effects

● Levels and character models fitting the Tron aesthetic

Non-Core Features:

● Multiple playable environments

● Multiple player character models to choose from

● Loadout system with different disks

● Stage hazards

● Power-ups

● Non-VR mode

Design

Aesthetics:

As mentioned previously, the main aesthetic inspiration for our game Disk Wars VR stems from the Tron franchise. The team watched both the 1982 film Tron and the 2010 sequel Tron: Legacy so that we all fully understood the visual and audio aesthetics and theme of the franchise. In particular, this involves taking inspiration from the art deco and German expressionism movements. In addition to this, we plan to take inspiration from the Outrun aesthetic style, which has a retro-futuristic look. This should allow us to be unique and inventive with the look of Disk Wars without too blatantly aping Tron’s distinct visuals.

Environments:

The environment of Disk Wars is contained in a stadium (think similar to modern sports stadiums). We plan to incorporate crowds inside of the stadium with reactions and movement to hopefully make it livelier. Within the stadium, there is a large box-like arena in which the actual game of Disk Wars is played.

The other models used in the environment are the two players and the disk. There are also particle effects for interactions of the players and disk to make the gameplay more lively visually.

Audio:

Disk Wars features a fully-fledged soundtrack. The main style of the music is based around a general upbeat electronic tone. As stated previously, it also draws inspiration from the Outrun style, which also has a distinction sound aesthetic to it beyond the visual style. This involves copious 80’s synths, pounding drums and basslines, and so on. Incorporating this type of sound into the Disk Wars soundtrack provides an exciting musical style for players to enjoy. In addition, the game contains plenty of sound effects that correspond to the actions happening on-screen.

Game Modes

Overview:

The main gameplay of Disk Wars involves two players battling it out in Duel Mode. Because most VR headsets do not offer local multiplayer between two headsets due to space and safety issues, Duel Mode is exclusively playable over Internet multiplayer. The only additional mode included to supplement this is Practice Mode, which allows one player to hone his skills.

Duel Mode:

The core game mode of Disk Wars is Duel Mode. This mode involves two players facing off against one another in arena combat using throwing disks as weapons. Each game involves multiple rounds. A player wins a round when they manage to hit the enemy player with their disk, thus gaining a point. Once either player has gained the necessary amount of points, the match ends and that player wins.

Practice Mode:

Practice Mode exists as a secondary mode to allow a single player to improve their skills in a stress-free environment. The mode simply involves having the lone player being able to practice throwing their disk against a wall, and then catching it. This allows them to practice the two main skills needed to succeed in the game, which are throwing and catching.

Duel Mode

Overview:

As the de-facto gameplay mode of Disk Wars VR, it is important to exhaustively outline exactly how the mode is expected to work in terms of rules for the players, as well as how to achieve a victory and avoid loss.

As outlined in the Game Modes section, the primary objective of Duel Mode is to strike the enemy player with your own Disk while avoiding being hit by theirs. This involves using the HTC wand controllers to throw the disk by physically simulating the movement of throwing, as well as to catch the disk in the same manner.

The victory condition is as follows: The first player to score five points in a match wins the game. Each match is made up of rounds in which both players compete to strike the other with their disk first while dodging their opponent’s throws. The round ends when a player strikes the other with their disk, and that player earns a point. The game ends once enough rounds have been played for either player to score five points.

Movement

Overview:

The movement of Disk Wars VR is handled through the HTC Vive wand controllers. The player moves according to the position of the wands, like how pretty much any VR game handles movement in a limited range. We do not need to worry about teleportation or “gliding” movement like with some VR games since Disk Wars is largely static other than some left and right movements. This is due to the fact that each player is limited to their side of the field, so the standard play space that the HTC Vive supports is more than enough room for movement without needing additional support for moving over large distances. Moving with the Vive wand controllers allows for intuitive dodging based on realistic movement that translates from the player moving in real life to the game.

User Interface

Heads-Up Display:

Disk Wars VR features a minimalistic Heads-Up Display (HUD) in order to help fully immerse the player into the environment of the game, which was the main reason we wanted to make the game playable in virtual reality in the first place. Since Disk Wars does not have a traditional health system, the only data relevant to the player at any given time during Duel Mode is the number of points scored by both players, as well as the current time left in the match. Rather than giving the player a HUD displaying this information and adding visual clutter, we decided to work this information into the game by emulating the way that most real world sports games handle it, which is to display the score and timer on a large display somewhere within the arena. For Disk Wars, this involves a display easily within sight of both players, allowing for a quick glance to see the score and timer during gameplay if necessary without adding constant visual clutter to the player’s HUD.

Stretch Goals

Overview:

In the course of outlining our minimum viable product for Disk Wars VR, the team came up with numerous additional features that would be nice to implement for the game, but are ultimately not necessary for the final product at demonstration time. To this end, we decided to note a number of additional features that we would like to implement after the core game is finished, time permitting. These features are outlined below. All of these features are subject to change of how they are outlined in this section, or whether they even make it into the game at all. Though it would be nice to implement every feature we want into the game, at the end of the day we decided that it is better to err on the side of being realistic and ensuring our core, essential features make it into the game first, rather than working on every part at once regardless of importance and ending up with an uneven product as a result.

Loadouts:

The concept of loadouts would be an interesting addition to the game that allows for multiple different play styles in Duel Mode, which would make the gameplay deeper and more varied. This would most likely involve allowing the player to choose different kinds of disks to use in battle with varying stats and functions that set them apart from one another. The main concern with this feature is that it would require additional testing to ensure that each loadout feels fair, balanced, and viable to use, as well as new models to differentiate the various disks.

Player Skins:

In multiplayer games of the last few years, customization can be seen as an important component of giving players a sense of uniqueness and progress. Having unlockable player skins would go a long way to providing this in our game. This would most likely involve skins that the player can choose to use for their character to change their look and style to make their disk warrior more unique. The system for obtaining skins would most likely involve completing goals to unlock them, such as winning a certain number of games, playing for a specific amount of time, and so on. The main concern with this feature is that we do not have a dedicated artist for the game, so making more art assets for this feature will take time.

Power-Ups:

Like the loadouts feature, adding power-ups to our game would be fantastic for adding depth and strategy to the gameplay. This would most likely involve a power-up icon appearing somewhere in the battle arena during gameplay, which must be struck with either players’ disks in order to use it. This adds another strategic layer beyond just the usefulness of the power-up itself; the player must now decide on whether they want to risk using their disk on trying to hit the power-up or not. As for the power-ups themselves, we would likely implement functions such as very fast moving disks, disks that automatically return / are caught by the player, a multi-disk power-up, and more. The main concern with this feature would be that it would necessitate additional play testing for balance, much like with the loadouts feature.

Skill-based Matchmaking:

Another popular feature of multiplayer games in the last few years has been the addition of skill-based matchmaking. For most games, this involves the game keeping a running count of the games a player has won and lost, while assigning some kind of point value to their account based on that. We would like to implement this at some point, as it would be relatively straightforward and allow for matchmaking based on putting players close in skill together. This could also be used to create a ranking system that could provide more unlockables in the game as well.

Non-VR Mode:

Though the main focus of the game is in the VR capability, we would also like to have it be playable without a VR headset. While obviously using a VR headset would allow for more immersive gameplay, we want players of all times to be able to enjoy our game. A Non-VR mode would likely involve the use of a mouse, since having two hands isn’t necessarily essential for being able to throw and catch a disk. The main concern with this feature is balance (we would need to test if having a VR and non-VR player face off against each other is fair or if it would have to be limited so only two of a kind can play together), as well as creating a HUD from non-VR players since it would not be as simple to look at the score and timer as in VR mode.