



Jordan University

Vertigo

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Summary

Introduction

In this brief report, I will summarily describe the concept I am planning to make for the Computer Graphics course. In the first section, I will explain what the game is and its elements, and later on I will talk of the technical aspect.

The Concept

Vertigo is an arcade game, where the player controls a Sphere that has to be shattered before the timer runs out.

Storyline

Princess Nuggets is trapped within a static field maintained by the Sphere. The Sphere is located within a series of tunnels in outer space, its momentum entirely dependent on the stability of its shields, and has to be shattered and the field deactivated before the Princess dies!

Gameplay

The Sphere is equipped with 2 shields, one that protects it from fiery objects, and the other from icy objects. The goal is to break those shields, in order for the sphere to lose its stability and release the charge. The player can switch between the shields, and has to collide with Fire objects by using the Ice shield, and with the Ice objects by using the Fire shield.

The less stable the Sphere is (state of the shields), the higher its momentum, resulting in much faster speed and effectively making the game harder.

Controls

The controls are very basic: 1 button for switching shields, and left and right movement within the tunnel (to avoid obstacles altogether if needed.)

Technically, all the player has to do is to flip the currently used shield to collide with objects, and avoid them when necessary. The speed of the Sphere is what controls the difficulty of the game.

Content

Since I have no artist on the team, I will be resorting to pure graphical primitives to represent my concept. The sphere will be just that, a sphere, with a texture representing its Fire & Ice shields. The obstacles will be a composition of particles that race toward the player. The tunnels are planned to be represented as a series of Torus shapes, or simply pipes.



Regarding the levels, I plan to dynamically generate the tunnels and obstacles, meaning every time you play it's a different level. The parameters will be tunable, enabling various levels of difficulty. More difficult levels will introduce higher sphere momentum, or more obstacles, or "erratic" behaviour of obstacles.

Implementation Details

I plan to deploy several open-source technologies as it's necessary if I'm to meet the deadline. Currently, I am using:

- [Ogre3D](#): rendering framework, can use OpenGL or Direct3D for rendering depending on the platform
- [CEGUI](#): for the interface
- [Bullet](#): for some physics implementations... gravity, inertia, and collision detection
- [OIS](#): input management, allowing for buffered input capturing

It's worthy to note that I am trying to learn OpenGL in this project, and as such, I am attempting to draw the shapes by myself, first on paper to come up with viable formulas, and then implementing them. However, in cases where I lack the mathematical expertise to succeed, I am resorting to solutions provided by the community. I will reference and appropriately credit such work in the last paper.

The game *should* work on the major platforms, Windows, OS X, and Linux, as I'm using C++ and platform-agnostic technologies. However, I do not have a Windows machine to develop or test on personally, and in the first phase of development, I can not guarantee support for the system.

Conclusion

The concept, if implemented correctly, should make for an interesting and fun game. However, as I have relatively little experience with game development, this will prove to be a challenge. Primarily, I am weak in the field of mathematics and 3D programming, which is exactly why I opted for this project. Most of the logic is purely mathematical, and by completing it, I hope I will get past some barriers.

I plan to hand in my work by **April 17th, 2011**.