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GAT261: Section A — Spring 2017

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Sensation/Kinesthetic Research & Project Proposal

Research

Elite: Dangerous

Summary

Elite: Dangerous is a space adventure, trading, and combat simulation game that has the player piloting a spaceship in a 1:1 scale open world galaxy. *Elite: Dangerous* is renowned for being a highly immersive and gripping “flying a spaceship” experience, whether you are playing the game traditionally with a mouse and keyboard or in virtual reality with a flight joystick. While *Elite: Dangerous* is only played in first person, a lot of the things the game does to provide the sensation of flying a ship through space should apply to *Super Space Race*. Here are some of the things that Elite Dangerous does to immerse the player with the sensation of flying fast in space:

Camera Effects

- Camera shake as you fly faster
- The camera pulls back a little as you accelerate
- Very slight camera blue at light speed

Audio Effects

- Low audio rumbling of the ship engine as you’re flying
- Engine whines as you accelerate faster
- Doppler effect when other ships fly by

Visual Feedback

- Space dust/particles fly by at a faster rate as the ship speeds up
- Gauges adjust in the cockpit to show acceleration and other status effects
- The environment has planets and space clouds that you can fly by to give you a sense of speed and placement
- Targeted objects create a HUD object that shows a number decreasing/increasing as you fly towards/away from it
- Space fog is a thing and is amazing to see off in the distance. Almost used a like a horizon line to help with orientation

Redout

Summary

Redout is a futuristic high-speed racing game that have the player piloting incredibly fast anti-gravity ships on race courses across various planets. In addition to being a third-person camera based game, *Redout* is focused on racing, which makes it a great game to research for helping me convey a sense of speed when flying a ship in space. The following bullets below are some of the sensation/kinesthetic feedback I observed in the game (I have not actually played this game before):

Camera Effects

- Motion blur to the extreme as you go fast and turn
- The camera pulls back quite far as you accelerate to top speed
- Very little camera shake (if any at all)
- The camera has a black vignette effect at high speeds to simulate tunnel vision

Audio Effects

- High energy sound track, might help give the impression that the game is about going fast (this may conflict with the “space immersion” part of my game, though)
- Engine noises get more high pitched as you go faster. Boosting is a separate noise layered on top of that
- Doppler effect when coming into close contact with the railing or when other ships pass by very close to your ship

Visual Feedback

- Starting game countdown helps set the mood that the game is about racing and going fast
- HUD is very minimal to keep the player focusing on the track in front of them
- The engine trail grows larger with speed and changes color when boosting

No Man's Sky

Summary

While *No Man's Sky* is infamous for falling short of all the developer made, the space flight aspect of the game really does feel good. Since this project is all about creating a great sensation of space ship flight and speed, there's no reason not to rule out this beautiful game. The following bullets below are some of the sensation/kinesthetic feedback I observed while playing the game:

Camera Effects

- The camera pulls back quite far as you accelerate to top speed
- Tons of camera shake (random) when you are flying at fast speed

Audio Effects

- Low audio rumbling of the engine in addition to an ambient music track
- Engine noises get more high pitched as you go faster. Achieving the fastest speed changes the engine noise entirely.

Visual Feedback

- Lots of star particles fly outwards and to the sides of the camera like a cone when you are flying very fast
- Normal speed the particles are a lot fewer and there's a more rounded shape to them as opposed to lines
- Space fog in abundance that is colored depending on the area you are in.
- Really large planets to help give that sense of scale. Destructible asteroids give the player something to shoot at and run into
- A sun in the world gives light direction and a big point of reference

Project Proposal

Super Space Race is a space flight/combat racing simulation and will need the following features implemented to give the feeling of flying fast in space:

Camera Effects

I plan to utilize camera blur in order to show an increasing sense of speed, especially when speed boosting. The effect I'm going for is similar to that mentioned in the class lecture, as well as in the game *Redout*. I also plan to use increasing camera shake to visible show an increase of speed and use a slow lerp on the camera that falls back when the ship is going fast and appears closer to the ship as the ship is breaking. I am considering putting in a little vignette as you boost to simulate the tunnel vision effect at high speeds.

Audio Effects

I want to utilize the Doppler effect when passing by asteroids or other objects in the environment. By playing a “wooshing” sound when passing by objects at a high speed, I can help sell the sense of speed for the space ship. I'm also planning on using a low engine rumble when traveling a cruise speed that increases in pitch as you go faster. I am considering cutting the current music of the game in place of something more ambient, but I will wait to discuss this with the teacher in class, if he feels a faster paced music track will help create a “need for speed”. Boost as a separate noise will help give the feeling that the player is punching it into high gear.

Visual Feedback

Visual feedback will be absolutely crucial to selling the feeling of flying fast in space. Creating a “world” with asteroids, large planets, and objects that you can fly by quickly will help the player feel like they are not only flying in a believable space ship, but will give them objects of reference to fly around, providing a way of showing speed. hyperspace particles and engine trail rendering will help show the differences in speed and will be a priority on my list of things to do. Adjusting the color of the engine trails during boosting will help sell the idea that you are doing something to go even faster.

Physical Feedback

Super Space Race is currently being made with the Xbox controller in mind, so I plan to utilize the rumble feedback to help sell the feeling of flying in a space ship. Firing a laser should give a jolt of instant heavy rumble, while increasing in acceleration will provide a slow rise in rumble. Speed boosting can provide the most intense of rumble, to help sell the idea of going faster. Running into asteroids can work like the laser and provide a sharp, heavy rumble to give the player a physical feeling of running into an object.

Completed HUD

A completed HUD that feels sci-fi like you are in a space ship. I can utilize the existing HUD from the previous project and provide more animation and sound effects in order to make it feel like you are flying in a space ship. Specifically, I want to add the following to help create that feeling of immersion:

- State changes for the laser, shield, and throttle HUD: Disabled, Broken, Empty, Full, Draining, Charging, and Speed Boosting.
- Animations for the aforementioned states for the lasers, shield, and throttle HUD.
- Sound Effects for all laser, shield, and throttle HUD states.

Theme & Consistency

The theme of the *Super Space Race* will have a minimal and sci-fi look to help the player feel like they are in a believable space ship. Consistency is key in establishing patterns for ease of use and to aid in immersion.