

# Not-Minigolf (working title)

## Design Document

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### 1. Game Concept

The story begins at the main character's home planet (located at the edge of the Federation). On his planet, space pirates continually raid towns and plague the inhabitants. One day, the pirates raid and plunder his hometown, taking along with them his girlfriend/fianc. He hurries to the police, but due to corruption and laziness, they cannot do anything for him. Furious, the main character vows to get his girl back and decides to take matters in his own hands. He visits the local ship dealer, but sadly all the ships are much more than what he can afford. He also visits the local hangout of mercenaries and bounty hunters, but he doesn't even have enough money to hire someone to clean his house. Desperate, he and his closest friend devise a plan to steal a ship from the local dealer. During the theft, the stupidly set of the alarm and panic to escape. His friend sacrifices himself and distracts the police while the main character escapes in a ship (which the play can choose at the beginning). Although his only experience on space ships was when he rode along with his father who was a trader, the main character is able to control the ship rather intuitively. Luckily, by unknowingly stealing from a secret chop shop, the main character acquired an untraceable ship, allowing him to travel undetected throughout the Federation. (the best friend being such a great guy didn't squeal while to the pigs).

And thus begins the game. The main character is neither a friend of the Federation nor of the pirates. He must save his girlfriend and free his best friend. There are no clear-cut good guys or bad guys. The Federation is a strong body that promises safety and justice but suffers from deep-rooted corruption and hypocrisy. The pirates promise nothing but live as they please. Over the course of the game, the player must choose what missions to take part in and who to help (with the final goal of saving his girl and freeing his friend, who can be released by paying an insane amount of money). Depending on what missions are completed, the main character will develop and change accordingly. He begins as a regular guy with no substantial experience in space flight but over time ends up being the only person to successfully destroy the pirate cartel that has been plaguing his area. Because the Federation is anything but supportive, his journey will not be as simple as battling all space pirates. At times, he may have to befriend them only to later become their worst enemy. Over the course of the journey, he will meet many people who will help him, offer jobs, block his way, or try to take advantage of him.

So that's the plot for the game. We hope to make it as non-linear as possible but still provide a plot in the background to nudge the player to finish the game.

As for the actual environment of the game, we envision a universe of loosely connected star systems between which the player can travel. He will not be able to travel to the other end of the universe because it would take too long and by then his girl would end up as a \_\_\_\_\_ (enter random bad thing here, like being forced to marry and serve the head of the pirate mod) and his best friend would be punished for stealing by \_\_\_\_\_ (enter another bad thing, like getting hands chopped off). He will however be able to visit a large number of planets and space stations.

To add another level to the game play, the ships that he pilots will have room to transport goods. Therefore because the space ports charge a parking fee, he can (for example) purchase food products from a planet for very cheap, go to a space station, pay the fee, but compensate it by selling the food for a high price. In the other direction, he can take minerals mined from

an asteroid and sell it to a planet for a decent profit. Different planets/stations will lack in different areas. However, he doesn't have time to waste, and so he conducts all interaction with the outside universe by radio and computer interface. (no knuckle sandwiches, but photon cannons are ok too).

The game play itself will be first-person dog fighting along with completing other mission objects such as protecting a transport ship, delivering certain goods to deep-space (and sometimes treacherous) destinations, or recovering lost goods from destroyed ships. Ships will be equipped with all the usual goodies: photon canons, heat-seeking missiles, etc. At times you might have a wingman to help you out on the mission, or if you're defending a space station from a raid, then maybe you'll be joined by quite a few ships. Also, ships have energy shields for protection, but if the shield has been destroyed, then weapons will have certain effects on the ship (aside from eventually blowing it up). For example, a hit from a laser may destroy part of the ship (a gun, the missiles, you, etc.). A hit from an ion cannon however, may cause your radar to malfunction, etc.

We hope to include multiplayer support, in both cooperative and competitive modes, however single player mode will be emphasized. The inclusion or exclusion of the multiplayer component really depends on time constraints.

We have a lot of ideas for the game, and maybe we won't get around to implementing everything, but the more ideas the better. We'll pick and choose which are necessary and which we can leave out for this first build of the game.

## 2. Project Roles

So far we have divided the project (both the finished product and the process of completing it) into several categories, and have assigned someone to be in charge of making sure this gets accomplished. This does not specifically mean that one person does this all on their own, but rather that they ensure that it does, in fact, get completed. Note that

- i. **Project coordinator.** (Tim) This will be the person responsible for handling overall management of group, trying to keep people on track and on schedule (and ignoring their other classes), and generally oversee a sort of quality assurance for the project.
- ii. **Creative lead.** (Jeff) This person is in charge of coming up with a somewhat-coherent storyline and making sure the game is actually fun and not just pretty eye candy (not that it won't be that too..). If any of us had any artistic talent whatsoever, concept art would also fall under this category.
- iii. **Graphics design.** (Tim/Ted) This person will actually make the 3D models and other graphics for the game and work to incorporate it into the 3D engine. So far only Tim has much exposure to 3D graphics packages, but we're hoping to get a larger portion of our group involved here.
- iv. **Graphics engine.** (Tim) We have the very ambitious goal of writing our game directly on top of OpenGL. So far this seems to be feasible, and if we can pull it off it would be an amazing learning experience for everyone involved.
- v. **Physics engine.** (Jeff) This will be no small task either, as collision detection and spaceship movement are much more complex than Minigolf would have been. Again, great learning experience as none of us have ever written a physics engine before.
- vi. **Networking code.** (Sergey) We hope to make our game playable over the internet for at least 8 people (actually, just enough so that our whole group can play one another). This job will involve not only interfacing with TCP/IP but also coming up with decent

prediction algorithms and a workable client/server setup. I said above that we have little experience writing graphics or physics engines, but compared to networking code we are graphics- and physics-engine gurus. Good luck on this, Sergey.

- vii. **Other media.** (Sanders) This person is responsibly primarily for incorporating sound and music, and for designing generalized input classes so that we can let the player choose between keyboard, mouse, or joystick input.
- viii. **AI.** (Ted) Assuming we will not always have 300 people who want to sit around and play our game all day long, the vastness of space will seem very empty and lonely with no other ships flying around. Therefore we will need at least *some* form of AI for the computer-controlled ships. We're not sure yet how deep we want to take this but hopefully those ships will do something more intelligent than flying around in circles and shooting incessantly at absolutely nothing. Depending on how ambitious we get, we are looking into maybe incorporating scriptable AI, but that might be asking too much.

### 3. **Timeline:**

Since we only very recently changed our game idea from miniature golf to an RPG-themed space shooter, our schedule is more or less up in the air right now until things settle down and get finalized a bit more. For now, here are a few basic milestones and the dates by which we hope to reach them:

(already met) - Basic OpenGL interface, ability to import models, believable starfield, joystick/keyboard

10/1 - Physics engine prototype

10/4 - Games internals design (modules, interface between graphics/game/physics/network laid out)

10/8 - Physics engine beta

10/15 - Simple models for ships completed

11/1 - Game alpha

After this point we will need to reevaluate where we stand. Based on this we will decide whether to go forward with networking code or stick with single player for now and really push the storyline and RPG aspects to get a solid single-player experience.