**Starfighter (Name Pending)**

**Project Proposal**

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**Motivation**

The proposed project, a space-based pilot warfare game, differs from most in the way that it is not “needed” in the sense that it has no real “problem” to solve, instead functioning more as a portfolio centerpiece. In turn, it is a demonstration of the team’s capabilities and a foray into a real world scenario, with real world deadlines and expectations. Our client, Dr. Ricks, an Associate Professor of Computer Science at the University of Nebraska – Omaha, will act as more of a consultant on the project, guiding the team through challenges while also challenging to go above and beyond.

**Functionality**

The most foundational functionality of the proposed project would have the user piloting a spacecraft in a region of space, engaging in combat with other AI-controlled or player-controlled spacecraft in the same region. Beyond that, the possibilities are endless, but have been narrowed down to fit within the scope of the project, split into two groups: advanced and stretch. The advanced goals flesh out the game into a more robust experience in seemingly fundamental ways and are critical to the perceived completion of the project. The stretch goals on the other hand further refine the game into a more unique experience, though they are not critical to the perceived completion of the project. The foundational (red), advanced (blue), and stretch (green) components are displayed in Figure 1.1 below with their relationships shown.

Basic Flying

Basic Combat

“Home” Base System

Financial System

Customizable Ships

AI Pilots

Teams/Allied Squadrons

Factions

War Zone(s)

Modules

Unique Ships

Upgrading

Tuning

Resource Allocation

Engines

Weapons

Hull

Shields

Landing

**Figure 1.1** Features and their relationships with one another. Red indicates foundational features, blue indicates advanced features, and green indicates stretch features.

**Foundational**: The core of the Starfighter game is space-based piloting and combat against AI opponents.

**Advanced**: Beyond simple piloting and combat, the game would be made more robust through several key advanced features. The first of which is a financial system. Users would be rewarded for destroying enemies, which would in turn allow the users to customize their ships. The second advanced feature is ship customization through new parts. At the most basic level, this would be a “numbers only” feature. To customize their ships, users have to go to some sort of hub location. The third advanced feature is a “home” base system, implemented as either some sort of “mothership”/capital ship or space station.

**Stretch**: Should all the advanced features be implemented, the game would be further fleshed out through several stretch features. The user and AI pilots could be split into factions that would then fight one another, potentially in war zones based around their respective “home” bases. Users could also have allied AI pilots directly under their control in a squadron system. Customization of ships could be expanded to a module system, where users invest their financial resources into new modules (e.g. engines, hulls, shields, weapons) and new ships. Existing equipment could also be upgraded or tuned through various means. Lastly, users could land inside of their respective faction home bases.

**Implementation Strategy**

The project will be created using the freely available and widely used Unreal Engine. The main language that is used by Unreal Engine is C++, but there is support for other languages and scripting language support. The team will be primarily using C++ because that is what is natively supported by Unreal Engine.

**Technical Challenges**

The technical challenges faced by the team are many and multifaceted, due to general inexperience with the Unreal platform and the complexity of the project. The Unreal platform is unique and presents an initial learning curve. The features of the game will go beyond the experience of the team as the aspects of AI, customization, and general polish and optimization will have to be explored and implemented. The sheer scale of the project will also be a significant challenge.

**Team**

**David Beavers**

* 5th year Computer Science student of the University of Nebraska - Omaha
* 7+ years of programming and computer science education
* Has completed the Video Game concentration at UNO
* Has a significant interest in video games and their development
* Experienced in Java, C/C++/C#, and XNA
* General knowledge of HTML, CSS, Perl, and 3D modeling with Blender

**Charlie Wagner**

* Programming Languages: C/C++/C#, Java, Perl, HTML, PHP, MySQL.
* Interests: Video games, Modeling, Art, Music.
* Experience: Video game development courses at UNO, worked on independent video game projects.