**Proposal for MSE Capstone Project**

**Project Title: A High Mobility, Multiplayer Shooter with Dynamic Camera Movements**

**Student Name: Logan Larson**

**Faculty Advisor: Prof. Kenny Hunt**

**Date of Submission: 3/25/2022**

**A High Mobility, Multiplayer Shooter with Dynamic Camera Movements**

**Objective**

The aim of this project is to develop a multiplayer videogame that produces a competitive and fast-paced environment for players.

**Background**

**Current Project**

The current project focuses on developing a fast-paced shooter by challenging constraints typically put on games of this category.

The first constraint being challenged is the static camera. In most games, the camera is either in first-person view or third-person view. Or if there is a dynamic camera, the only difference between views is quite literally the view. However, in the current project, the change in perspective will also change the orientation of the player and the skills available to the player. The first-person view will cause the player to be bipedal and contain ordinary combat skills seen in first-person shooters such as shooting, aiming, and directional movement. But the third-person view will cause the player to be quadrupedal and contain skills more closely related to a 3D platformer such as sprinting, climbing, and omnidirectional jumping.

The next constraint being challenged is the player’s orientation. Player movement and orientation will not be constrained to a 2D plane. Typically, a player model’s up direction always matches the world up direction. However, the current project will allow players to change their player model’s up direction by aligning their player model to surfaces other than the ground. So, in other words, the player will be allowed to climb walls and ceilings.

**Challenges**

The following are some of the challenges in this project:

* Player orientation when not attached to a surface. Predicting player position and orientation.
* Creating a movement system that enhances the player experience rather than detracts.
* Creating quality animations for a dynamic environment.
* Player synchronization and other multiplayer issues that arise with network programming.

**Project Schedule**

The following schedule is proposed by the student. The project development will be broken down into four phases. The first phase will consist of building the core gameplay mechanics such as movement, combat, and player animations. The second phase will consist of multiplayer aspects such as client to server synchronization and matchmaking. The third phase will contain all aspects of polishing the game such as refined sound and music design, menu design, map design, etc. The fourth phase will consist of real-time testing and fixes and the project report. Design diagrams will be created as and when the phases are being developed.

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| --- | --- | --- | --- | --- |
| **Phase** | **From** | **To** | **Credits** |  |
| Core gameplay and mechanics | Sep 01, 2022 | Dec 31, 2022 | 3 |  |
| Multiplayer aspects | Jan 01, 2023 | May 31, 2023 | 3 |  |
| Polishing aspects | Sep 01, 2023 | Dec 31, 2023 | 3 |  |
| Beta testing and project report | Jan 01, 2024 | May 31, 2024 | 3 |  |
|  |  | Total: | 12 |  |

**Resources**

The student will use his personal computer and free to use development tools to complete the project. The tools include:

* Unity3D – Game engine
* Blender – 3D modeling software
* Git/GitHub – Version control