Matthew Nielsen
Section H
mqn

15-112 Term Project Proposal

The Idea

In elementary school my classmates and I used to visit a website called "CoolMath.com". It was not for the educational value of the site that we went to it for, it was the awesome games! One of my favorite games was called A220 Mission. It is a simple side-scrolling spaceship game played on a small screen. It is essentially an early 2000s cell phone game. Despite its simplicity, A220 Mission was incredibly fun to play and took a decent amount of skill and practice to beat. During the past semester I have developed the skills necessary to recreate such a game, with my own touch. The original game can be found at http://www.spikesgamezone.com/a220mission/index.html.

Gameplay

A220 Mission starts with a simple splash screen. There is scrolling text explaining your mission and a "Start" button. When "Start" is pressed, the terrain loads and your spaceship appears on the screen.

The screen begins moving, forcing you forward. You can use the arrow keys to move faster. Right moves you as far as the front of the screen, but limits you by the speed at which the screen moves. Left moves you back (essentially freezing your position) until you hit the left side of the screen, at which point you are forced forward. Up moves you up as high as the top of the screen. Down moves you down as low as the bottom of the screen. When an arrow key is pressed, you continue to move in that direction until you hit something (and die) or hit the edge of the screen. The spacebar controls your laser. Your ship will shoot a laser beam of varying intensity based on your power-ups. You will need your weapons along the way because enemy ships will attempt to kill you.

Along your way through the course you will find red, green, and blue spheres. These are power-ups. Red replenishes fuel. Green boosts your shield strength. Blue increases your fire-power. Shields are necessary because your they will become weaker when hit by enemy fire or when you hit something. Without shields, any hit will kill you. Fuel depletes along the way. Without refueling, you will die.

As you progress through the game, the terrain becomes more difficult to navigate and the enemies become more numerous. At the end of the mission is a boss. When the boss is reached, your ship stops. You can maneuver, but the game no longer forces you forward. When the boss spaceship is killed, you win! If you die along the way, not to worry too much. You have three lives. When you die, you re-spawn at the level you left off at.

Implementation

All graphics will be displayed using Tkinter. The canvas size of the game will be 640x480 (VGA quality). Each pixel will be represented by an element in a 2D array. I am concerned that this cause cause the game to be slow, so another way of storing game data may be needed. A text file might be a possibility.

Terrain will be randomly generated before the game starts. My thought on the algorithm is that random points will be selected along the course. Within each pair of random points, more random points will be selected recursively. All points will be chosen such that the spaceship can navigate through it. This will create an interesting, yet challenging game. I will illustrate this more in my storyboard.

There will be a variety of enemies that the player will encounter. Each enemy will be defined as a class. The behavior of laser beams or other weapons will be defined in classes, as well. Basically, if a beam is shot and the object in front of it does not move out of the way, an impact function will be called. If the object was unshielded it will die, otherwise shields will be weakened. An idea proposed by my mentor was to use the concept of electrical charges to enable laser-dodging and anti-crashing by enemy ships.

Competitive Analysis

Similar Games

The game described in my proposal is the classic A220 Mission, so I will not elaborate on the specifics of it any further. A220 Mission is somewhat unique in that most side-scrolling spaceship games do not have physical terrain to avoid.

Space Deadbeef, a popular iOS game, is similar to A220 Mission in that it is a side-scrolling spaceship game in which the player uses weapons to destroy enemies. However, Space Deadbeef differs from A220 Mission in that your ship does not shoot lasers, rather it has homing missiles, and there is no terrain. There is a boss at the end, though. The controls in Space Deadbeef are a bit annoying. You can move up and down, but not left and right.

Armageddon Days 2, another side-scrolling space-shooter, features no terrain and an automatic laser. That is, your weapon shoots constantly without your control. This game is similar to Space Deadbeef and A220 Mission in that your objective is to kill alien enemies. In AD2 you can acquire more points by destroying objects, such as asteroids. Movements in AD2 are similar to those in A220 Mission, accept your ship does not continue to move after a button is released.

Good Features

A220 Mission is a fantastic game because it combines the difficulty of navigating adverse terrain while requiring the user to destroy enemy ships. This is the key concept that I would like to keep in my project. However, there are many things about A220 Mission that could be enhanced to make a better, unique game.

Space Deadbeef has a few great features that I would like to implement into my project. First, homing missiles. I think this could be a great power-up and it would be a lot of fun for the user. Second, enemy health bars. The enemies in the original A220 Mission could be killed in one hit. Enemies that take numerous hits to kill would make the game more difficult and more fun.

Armageddon Days 2 has two features that I like a lot. First, you must continue to press the arrow keys in order for your ship to continue to move. I like this a lot more than a ship that moves on its own in the direction you just pressed. Second, the ability to destroy objects could be really neat. Asteroids and other obstructions to your path could be implemented.

Bad Features

A220 Mission can become boring after a number of plays. To combat this, I have proposed random terrain generation. This should make the game very fun in the long term. The original game has a very small screen. I have proposed a larger screen for better play. There was no music in the original, I would like to add more sound effects and some intense background music.

Space Deadbeef is fun, but many of its features suck. Not being able to move backwards and forwards is a pain. There is no terrain. The enemies are largely the same.

Armageddon Days 2 might be considered very fun by some people. However, I think that an automatically firing weapon and the lack of terrain is very boring.