

Game Design Documentation



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Focus of the Game

(Farid)

“B.U.G.S. The Invasion, Part I” is a multiplayer FPS and awiimote-based game where gigantic mutated bugs need to be annihilated. The goal is to fight with a group of friends an invasion of gigantic bugs approaching from the distance and protect each other from the nasty creatures. Each player is equipped with a wiimote and must use it to fight the mutated bugs. Up to four players stand on a platform holding weapons (wiimotes) and bugs approach our players from the distance. There are multiple ways to kill a bug. For example, players can do ordinary single-firing at the bugs or firing as a team to destroy tenacious bugs. Levels in this game are time constrained. There are special weapons throughout the game to defeat powerful bugs.

Game Mechanics

(Farid)

Our game will support up to four players:

- The players get to choose between four soldier characters.
- Each character type has special strengths, requiring more teamwork to defeat certain bugs.

Levels:

- Every level has a time limit.
- In some levels, there will be specific weapons to beat a bug.

Teamwork:

- If a team member is being attacked by a bug that made it to the wall, then if other team members shoot the bug off, they can score bonus points.
- For a boss that requires a rocket launcher to kill, if only a single player can use it, then the other team members must protect him.
- If a team member dies, then another team member can "donate" a life to him for revival.

AI

(Sean)

The Artificial Intelligence being employed in our game will consist of two different states. The first state is used when the enemy AI is moving towards its target location. Once the enemy AI has reached this target, the 2nd state is used. This 2nd state then goes into a simple finite state machine in which the enemy AI attacks whichever player it is closest too. The proceeding paragraphs describe each AI state in more detail.

The first state will take advantage of a straightforward flocking algorithm where groups of ‘boids’, in our case cybernetic bugs, have their movement governed by steering forces or behaviors. Each ‘boid’ has the following properties:

- Position
- Velocity
- Acceleration

Each of these vector valued variables is updated via the steering forces or behaviors. These steering behaviors are the following:

- Separation
- Alignment
- Cohesion
- Avoidance

Separation is rather straightforward. It dictates that no 'boid' should veer within a certain radius of its neighbors. Alignment causes each 'boid' to steer in the same general direction, hence behaving like a flock. Cohesion causes each 'boid' to steer in the direction of the averaged center position of its 'local' group of 'boids' in its vicinity. Lastly, the avoidance steering rule is in place to ensure each 'boid' steers clear of any static or world objects that are impenetrable.

The 2nd AI state, as stated before, is used once the enemy AI reaches its target. This state consists of simple conditions in which if the enemy AI is not dead, then it keeps attacking the closest player, thereby inflicting damage. If the enemy AI kills the player, it then moves onto the next closest player. If the enemy AI is killed itself, then this state ceases to run and the AI is recycled.

Game Progression

(Alper)

Since this is a multiplayer game, game progression is for all players. Players start on a base which they are protecting against bugs approach from a valley. On the screen, there will be a timer. Until the timer runs out (zero), a limited number of bugs will continuously be coming from valley. Players will protect their base. Also they have to protect themselves or other teammates. If one of the players dies, he/she can no longer play. When a level is finished, scores will be shown on the screen and then a new level will start. With new levels, the number of bugs and amount of time will increase. Also the bugs will have new attacks: they will be stronger and faster. At the end, the boss bug will attack the base. After this level the game will be over.

Game Elements

(Alper)

Characters: we will have 4 different characters. Each of them has different personalities and shooting styles. Each of them is an expert at a specific type of weapon, so users will select his/her character according to these features.

Weapons: each character has a different type of weapon. Therefore, we will start with 4 weapons. These weapons will be geared towards each character's special weapon skill. If time permits, we will add more weapon options to the game play.

Objects: bonus items will appear when players kill bugs allowing them to upgrade their weapons, health and ammo.

Story

(Tarik & Farid)

Armament all over the world has increased. All the countries strive to have the most advanced weapons to become the strongest and rule the world. Due to nuclear and chemical weapons proliferation, countries have fought each other and the world has been destroyed. Too much blood has been spilled; too many people have lost their lives dead because of these wars.

Amidst the chaos, a new fanatic federation called "Green World" has emerged. Its sole purpose is to rule the world. They want to mass produce new types of bio weapons that are radically different from what has been used up to now. This is a biological weapon. With this weapon all the war strategy and mentality is supposed to change, any country confronting X country is supposed to be demolished. Scientists of the *Green World* have created mutated bugs with unusually strong organs and a tough exoskeleton.

(Old stuff: not edited yet-----This bug is simply a demolisher and bloodsucker. But things don't go on that well for X country...

Bugs get out of control during the experiment. They start to propagate from the laboratory, harm everything they face. Then bugs are seem to head for a radioactive plant.

Army of the X country is then alarmed but it would take some time for army to send enough power to keep the radioactive plant. In this time, the magnificent quartet are called out to defend the plant until the army comes...)

Sound Effects

(Tarik)

- Each hero and each weapon will have its own sound effect.
- We will change the frequency of the sound during the game (to eliminate monotony).
- Sound (for bugs especially) will change by distance. As a bug comes closer, sound will increase.
- Background ambient noise will change as level changes.
- There will be finite state machines for different states to reflect the mood or phases of the game.

Foley and mix the sound:

- Level 1: slow, not very effective, helps players to concentrate on shooting.
- Level 2: accelerated background sound, more rhythm. When antidote comes, change the music.
- Level 3: dramatic music, mixture of classical and war music.
- Level 4: complete war music with full effects.

As a concrete elaboration of what has been listed above, the example below show:

Under review:

1. Biological Experiment
2. Bugs Invade The World
3. Bugs Are Fed By Radiation
4. Bugs Go Toward Nuclear Plants

Level 1: Defend Nuclear Plant Until Army Comes

Level 2: A Plant Is Exploded By Bugs Somewhere

- Stronger Bugs
- Antidote For Poisoning By Scientist In Somewhere Level 2 (More Protected Heroes)

Level 3: Another Nuclear Plant Is Exploded

- Stronger Bugs
- "The Bug Killer" By Scientist As Step 3 Begins
- Bugs Are Now Easily Killed
- But There Are A Few Different Creatures Coming As The End Of The Level Approaches
- These Creatures Can Not Be Killed Easily By "The Bug Killer"

Level 4: The Giant

- Super Bugs And Creatures
- The Hardest And The Last Part Of The Game

Menu and Interface Design

(Sean)

The Menu and Interface Design for our game is meant to be extremely easy to pick up and learn within just a few minutes of game play. The main menu visible to users when the game first starts displays the following standard game menu items: Play Game, Settings, Credits, and Quit Game. We intend to keep these and their sub menu item screens very simplistic as there is no need for adding complicated settings and/or additional items.

When players are shown the Loading screens throughout the game, depictions of how to use the Wii remotes will be displayed, with each button and/or trigger highlighted and its intended function described. This allows for smooth transitions throughout the game without players having to pause or go to special setup screens to understand game play mechanics. Furthermore, it alleviates any need for in game tutorials or initial 'beginner' tutorials as are seen in many of today's games.

During game play, each player will have their own HUD displayed on the bottom of the screen. Each will contain the following information:

- Player avatar
- Player Health
- Player Equipment
- Player Score

Again, as stated before, this HUD design is meant to alleviate the need for players having to learn the interface or game play mechanics. The items within the HUD are straightforward and obvious, but also setup in a way so that important items such as health and ammo stand out.

Art Bible

Andrew / website

sketches and mockups of objects, characters, items.

Storyboards

Website

– useful in illustrating aspects of the gameplay- e.g. camera angles or layout of game screens; storyboards are absolutely necessary for cutscenes.