Genetic Galaxy Defender

Gameplayer’s Guide

Genetic Galaxy Defender is a game that helps demonstrate how Evolutionary Algorithms (EAs) can provide adaptation and exporation of a problem space.

This document will help guide players, for a more enjoyable experience.

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| What it looks like | What it is | What to do | Notes |
|  | Your Ship | Move up and down and shoot Aliens. Prevent the aliens from getting to the left side of the screen. | - You only live once!  - Your ammo is limited  - A higher score gives a speed bonus  - Your speed an ammo increase each Level |
| Macintosh:Users:Snake:Documents:NPS Space Certificate:SE4900 Biologically Inspired Design:Project:Space Shooter Mod:assets:png:Alien.png | Alien | Shoot it! | - Kill Alien: 3 points  - Aliens have health and speed that depends on their equipment/sensor loadout  - Each Alien has a “brain” that tells them what to do upon different sensor data  - Alien loadouts and brains are adapted after each Level  - Alien base health is 2 points, armor gives bonus to this |
|  | Ship Bullet | Make these hit the Aliens | - worth 1 point of damage  - after Level 1 there are secondary weapons that look different. Same principle applies. |

Key Mapping

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| Key | Function |
| ⇧ (up arrow) | Moves your Ship up |
| ⇩ (down arrow) | Moves your Ship down |
| ⮠ (enter/return) | Start a new game (when you have died) |
| [spacebar] | Fire your Ship’s cannon |
| “T” | Toggle the equipment details text for each alien |
| “R” | Resets the current Level (preserving your old score, etc) in case you get hung up or in an impossible situation |
| “P” | Pauses the game (useful for observing!) |
| “F” | Toggles between primary and secondary weapons (available after Level 1) |

Things to try:

* Really and truly try to kill all Aliens and keep them from crossing to the left side
* Kill only the weak Aliens. You should find that the enemy gets stronger.
* Allow a weak but successful Alien pass through. Then the enemy gets easier.
* Do nothing for a few levels (hide and don’t die).
* Keep a record from the Evolution screen to see which equipment is successful.
* Make it to levels 5 and 9, where the weapons get much better.
* Play to level 10 at least twice.

Tips and Advice for playing the game:

* Play multiple times
* Read the equipment loadout at the Evolution screen each time and try to see where crossover and mutation has occurred.
* There are a large number of tips in the game itself. A random tip is displayed after every successful Level.
* Killing weak enemies makes the enemy stronger…
* Annihilating the enemy makes them start over from random bugs!
* If you are overwhelmed, just hide (try the very bottom of the screen).
* Conserve ammo for the weak Aliens if you must.
* If you get hung up on an Alien that has a lot of battery left and you have no ammo, restart the Level.