Chapter 2 - VGDL and the GVGAI Framework

Exercises

The GVGAI Framework is available in a Github repository[1]. Use the release 2.3[2] in order to run the same version presented in this chapter[3].

1 Running GVGAI

One of the first activities that can be done with the GVGAI engine is to play the games. You can use the keyboard to play them or run one of the sample agents.

1.1 Playing as human

Run `tracks.singlePlayer.Test`. It will automatically start the game Aliens giving the controls to a human player. You can control the ship with the arrow keys for movement and use SPACE to shoot.

1.2 Switching Games

You can try any other single-player game from running this file. To do so, simply open the file `examples/all_games_sp.csv` and take a look at the different games and annotate their index (number on the right of each row). Then, in the Test.java file, change the value of the variable `gameIdx` (line 37) to reflect this index, and run the program.

1.3 Playing as a bot

To run any game within the collection using one of the sample planning agents, comment line 49 (which runs the game for human players) and uncomment line 52. The fourth parameter of the function called in this line is a string that represents the full path to the agent to run (by default is the Rolling Horizon Evolutionary Algorithm agent). Lines 18 to 26 define the strings for the sample agents included in the framework. Examples are the Monte Carlo Tree Search agent and OLETS, winner of several editions of the GVGAI competition.

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[1] `https://github.com/GAIGResearch/GVGAI`
[2] `https://github.com/GAIGResearch/GVGAI/releases/tag/2.3`
[3] These exercises are also available at this book's website: `https://gaigresearch.github.io/gvgaibook/`

2   VGDL

VGDL games are in the `examples` folder. There is a sub-folder for each game category: `gridphysics` and `contphysics` contain single-player games with traditional and real-world physics, `2player` has 2-player games and `gameDesign` contain games parameterized (see Chapter 7).

2.1   Editing a Game

Take one of the games in `examples/gridphysics` and open the VGDL description (file with the game name followed by ".txt"). Study the different parts of the VGDL description and try changing several values to see the effect they have when playing the game. Try also adding new rules (in the `InteractionSet`) or new sprites to modify the game to your liking. Maybe you can create a new game, variant of one of the games in the collection.

2.2   Editing a Level

You can also take one of the level description files (for instance, *aliens_lvl0.txt*) and change the layout of the level, or the initial position of the sprites. You can try taking one of the existing games and creating new levels for it of different difficulty levels.

3   Submit to the GVGAI competition server

In order to submit a bot to the GVGAI competition, you need to follow these steps.

- Create an account at the site, `http://www.gvgai.net/`.[4]
- Log in and go to *Submit → Submit to Single Player Planning*.
- Your controller should have file called Agent.java and included in a package with the same name as your username, in a .zip file. Full instructions can be found on the submission website[5].
- Fill the submission form with the requested information. Then, select a game set to submit to. Your code will be compiled and executed on the server in the selected set(s) and you can follow the status of your submission on your profile homepage.
- Once your controller has finished playing (if there were no compilation or execution errors) you can check the rankings page to compare your entry to others.
- If you wish to take part in one of the competitions, you can test this procedure first using one of the sample controllers distributed with the framework.

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[4] There is absolutely no spamming associated with it.
[5] `http://www.gvgai.net/submit_gvg.php`