

## Game AI (GADV8003)

### Programming Assignment 1 – Super Mario Bros AI

Download the Java implementation of this game from the Git repository MarioAI (<https://github.com/medovina/MarioAI>).

When you visit that page on GitHub, be sure to read the entire page - it has lots of useful information about the game, including a link to the API documentation.

Once the project has built you should be able to open a terminal in the project root folder and run it using, on Linux:

```
$ ./mario
```

Or, on Windows:

```
> .\mario
```

The game will launch, and you will be able to play it from the keyboard.

In the Project Explorer, navigate to `src/MyAgent.java` file and open it. This is the source file where you will write your agent code.

The game generates each level randomly, so your agent might succeed on some randomly generated levels and fail on others. Your agent will be evaluated on a series of levels generated in several configurations:

LEVEL\_1\_JUMPING: terrain with hills, but no enemies

LEVEL\_2\_GOOMBAS: like LEVEL\_1, but also with Goombas

LEVEL\_3\_TUBES: like LEVEL\_2, but also with pipes with dangerous plants

Your agent succeeds if it makes it to the end of each level, and fails otherwise. Its success rate is the fraction of randomly generated levels on which it succeeds.

To see your agent run once on any of the above levels, specify it on the command line:

```
$ ./mario MyAgent -level 2
```

To evaluate your agent's success rate, use the `-sim` option, which will run your agent automatically (without a graphical interface) in many random games in succession. For example:

```
$ ./mario MyAgent -level 2 -sim 30
```

See the documentation on GitHub for more information about available command-line parameters.

**Submission:**

Submit your MyAgent source file along with a brief (1 page) write up describing how your agent works.

This assignment is worth a total of 100 points.

15 points: 95% success rate on LEVEL\_1\_JUMPING

30 points: 75% success rate on LEVEL\_2\_GOOMBAS

35 points: 75% success rate on LEVEL\_3\_TUBES

20 points: Writeup

Do not forget that Mario can both jump and shoot! :)