# Adding a deep learning component to a PC game implementation

## 1 Description

Computer games are one of the most promising applications for ML algorithms [1] (`http://gameaibook.org/book.pdf`). ML can be used as part of a computer game in different ways. Classifiers can be used to add intelligent features to the game enviroment, to extract and exploit information about the user behavior, etc. This project will be developed using a previous implementation. It can be a previous course project implemented by the student, an open source game implementation, or a Final Degree Project (PFG) from another student that did not include a machine learning component. The sophistication of the environment, graphics, etc., are not relevant, what counts is to what extent the goal of the project is accomplished (see below for details).

## 2 Objectives

The goal of the project is to insert a deep learning component as part of a computer game and show that this added component improves or enhances the game experience in anyway. As in other projects, a report should describe the characteristics of the design, implementation, and results. Exceptionally, the game implementation can be implemented in another programming language, but the ML component should be coded in Python. Also exceptionally, if it is not possible to run the game from the Jupyter notebook, the students can include in the report the description of the different ways to demonstrate the effectiveness of the introduced ML component by running the game implementation.

## 3 Suggestions

- Check the excellent book by Yannanakis and Togelius freely available from `http://gameaibook.org/book.pdf`.
- Implementations can use any Python library.
- We encourage to use games implemented in Python to ease the project evaluation.

## References

[1] G. Yannakakis and J. Togelius. *Artificial Intelligence and Games*. 2017.