Artificial intelligence in the entertainment industry

Academic Year: (2020 / 2021) **Review date: 29/04/2019 12:15:31**

Department assigned to the subject:

Coordinating teacher: FERNANDEZ ARREGUI, SUSANA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Artificial Intelligence

OBJECTIVES

- Ability to solve problems, both individually and in a team (PO a,b,c,d,e,k)
- Work in teams to analyze and design computer solutions (PO a,b,c,d)
- Ability to analyze and synthesize (PO a,b,c)
- Ability of organization and planning (PO b,c,d)
- Ability of information management (information acquisition and analysis) (PO a,b,k)
- Ability to make decisions (PO a,b,c,d,e)
- Motivation for quality and continuous improvement (PO b)
- Oral and written communication (PO g)
- Critical reasoning (PO a,b,d)
- Ability to learn the basics, paradigms and techniques of intelligent systems and analyze, design and build systems, services and applications that use these techniques in any scope (CECC4). Basic knowledge on artificial intelligence applied to entertainment industry (PO a)
- Ability to interpret functional specifications towards the development of applications for entertainment industry (PO a,b,c,e)
- Ability to acquire, obtain, formalize and represent human knowledge in a computable form for problem solving by a computer system at any scope, particularly those related to aspects of computing, perception and action in smart environments (CECC5). Ability to perform detailed analysis and design of computer applications for entertainment industry (PO a,b,c,e,k)

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction: IA in the entertainment industry
2. Non Playing Characters (NPCs) programming
2.2 Path finding
  2.2.1. path finding: basic techniques
  2.2.2. path finding: advanced techniques
2.3 Board games
2.3 Decision Making
  2.3.1. Introduction to programming techniques
  2.3.2. Finite state machines
  2.3.3. Decision trees and rule-based systems
  2.3.4. Goal-oriented behaviour
2.4. Tactic and strategy
2.5. Machine Learning
2.6. Collective movement

3. Interfaces and design

LEARNING ACTIVITIES AND METHODOLOGY

Lectures (1 ECTS)
Oriented, among others, towards the competences related to knowledge of concepts, relations among them, techniques to be used, or ways to analyze and synthesize knowledge (PO a, CECC4)
Practice (3 ECTS)
Oriented, among others, towards the competences related to work in teams, problem solving, work organization, or oral (presentation in public of projects or homeworks) and written communication (written reports on their homeworks and projects) (PO b,c,d,e,g,k, CECC5)
Individual work (2 ECTS)
Oriented, among others, towards the competences related to planning, analysis, synthesis, critic reasoning, or concept acquisition (PO a,c,e,g, CECC4)

ASSESSMENT SYSTEM

% end-of-term-examination/test:	40
% of continuous assessment (assigments, laboratory, practicals…):	60

Combined assessment of diverse activities performed by the students either individually or in groups. The individual work of each student is also analyzed when working in groups.
- Formative assessment will be done through continuous feedback that would allow the student to assess what s/he knows and is expected from her/him
- Final grade will be composed of 50% of individual work (PO a,c,e,g) and 50% of team work (PO b,c,d,e,g,k, CECC4, CECC5). Among the individual activities, assessment of activities performed during the course will be a 10% of the final student grade (CECC5), and a final exam will be a 40% of the final grade (CECC4).

BASIC BIBLIOGRAPHY

- David M. Bourg, Glenn Seemann AI for game developers, O'Reilly, 2004

- Ian Millington, John Funge Artificial Intelligence for Games, Morgan Kaufmann, 2009

- Steve Rabin AI game programming wisdom (1,2,3,4), Charles River Media, 2002-2008

ADDITIONAL BIBLIOGRAPHY

- Mat Buckland Programming Game AI by Example, Wordware Pub, 2004

- Brian Schwab AI game engine programming, Course Technology, 2008

- S. Russell, P. Norvig Artificial Intelligence: A Modern Approach, Prentice Hall, 2010