AI for Virtual Environments: Practicum

Thursday 13:15

Instructor

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Course Description

This course is focused on implementation of artificial intelligence within the context of virtual environments and games. Topics include fundamentals of virtual environment and game design and interfaces as well as common topics in AI specific to such environments. Techniques covered include problem-solving algorithms, turn-based decisions, and behavioral / decision-making techniques used to develop agents as characters. The course will focus not just on developing intelligent systems but also those that develop user interest / engagement to enhance user experiences.

Course Pre-Requisites / Co-Requisites

Prerequisite: Data Structures Coursework

Course Objectives

By the end of the semester, successful students should be able to:

- implement recognized problem-solving algorithms to solve a well-defined problem
- combine simple steering behaviors to create fluid agent movement
- design agent decision-making behaviors using common industry frameworks
- create systems that are tailored for human rationality and expectations

Required Textbooks and Software

Students will need a laptop computer, but no other materials are required.

Recommended Materials

- Artificial Intelligence for Games, Ian Millington, 2009, 2nd Edition, CRC Press
- The Art of Game Design: A Book of Lenses, Jesse Schell, 2014, CRC Press

Course Schedule

Week Of	Subject
8/28, 9/04	Review Exercise: Data Structures
9/11, 9/18, 9/25, 10/09	Problem Solving Project: Path Planning *No class 10/02 - Florida student exam*
10/16	Steering Behaviors Exercise: Flocking
10/23	Gameplaying Exercise: Reversi
11/06, 11/13, 12/11	Decision-Making Project: Robocode *No class 11/27 – Thanksgiving (Florida holiday)* *No class 12/04 - Florida student exam*

Exercises. Short programming assignments to reinforce fundamental AI programming concepts.
Projects. Larger assignments, over multiple weeks, that thread together multiple concepts.

Course Expectations

Read and adhere to the syllabus. Emails requesting information contained in the syllabus will receive the lowest response priority with no guaranteed turnaround. Practically, this means responses will come only after the remaining email queue of the instructor is otherwise empty. This condition occurs approx. once every 24 months.

Students should visit office hours for help. Do not send email to, send private messages to, or "@" instructors or TAs for help. The TAs and instructor will often try to answer questions in the chat when possible, but the way to get personalized help is to visit or make arrangements!

Important non-project correspondence be via email. The chat system is helpful for simple questions and allows students to help one another, but students should not expect responses to important questions via chat. Please allow 48 business hours for responses; instructors and TAs have many responsibilities and respond as is practical.