Miami Dade College

Course Description

DIG2626| Artificial Intelligence for Game Development | 4.00 credits

This course covers key aspects of Artificial Intelligence (AI) for students majoring in game development. Gaining a strong foundation in math (including advanced concepts of algebra and vector math) is suggested prior to enrolling in this course. Students will learn the origins and history of Artificial Intelligence, current and future uses of AI, AI methods algorithms such as: path planning, stimulus-response agents, agent architectures, decision-making systems, game trees, neural networks, and genetic algorithms. Students will create and modify existing games to include an AI system. Prerequisites: CAP 2047 and COP 2335

Course Competencies

Competency 1: The student will demonstrate comprehension of the history of Artificial Intelligence (AI) by:

1. Examining the origins of artificial intelligence for games, and the first games to use artificial intelligence.
2. Summarizing the history and future of artificial intelligence.

Competency 2: The student will analyze what Artificial Intelligence is by:

1. Distinguishing the different methods used to create AI for games.
2. Modifying existing AI methods for games.
3. Creating new AI methods games.
4. Discussing at what level of programming AI starts.

Competency 3: The student will evaluate AI Path Planning by:

1. Researching path planning.
2. Discussing the advantages and disadvantages of path planning.
3. Modifying existing path planning code to change the behavior of the game's computer controlled characters.
4. Enhancing existing games by creating computer controlled characters.

Competency 4: The student will demonstrate an application of stimulus-response agents by:

1. Modifying code for different stimulus-response agents.
2. Creating computer controlled characters using stimulus-response agents.
3. Combining aspects of stimulus-response agents systems with other artificial intelligence methods to create new systems for computer controlled characters

Competency 5: The student will demonstrate an application of agent architectures by:

1. Modifying code for different agent architectures.
2. Creating computer controlled characters using agent architectures.
3. Combining aspects of agent architectures systems with other AI methods to create new systems for computer controlled characters.

Competency 6: The student will demonstrate an application of decision-making systems by:

1. Modifying code for different decision making systems.
2. Creating computer controlled characters using decision making systems.

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3. Combining aspects of decision-making systems with other AI methods to create new systems for computer controlled characters.

Competency 7: The student will demonstrate an application of the game trees by:

1. Examining game tree systems.
2. Summarizing articles about game trees for the class.
3. Modifying an existing game tree system to perform differently.

Competency 8: The student will demonstrate an application of neural networks by:

1. Modifying code for artificial neural networks (ANNs).
2. Creating computer controlled characters using ANNs.
3. Combining aspects of neural networks systems with other AI methods to create new systems for computer controlled characters.

<u>Learning Outcomes:</u>
1. Communication
2. Information Literacy
3. Computer / Technology Usage