

**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,
BHOPAL**

New Scheme Based On AICTE Flexible Curricula

CSE-Artificial Intelligence and Machine Learning/ Artificial Intelligence and Machine Learning, VII-Semester

AL702(A) AI in Gaming

Course Objective: The students should be able to understand and use AI techniques for generating efficient, intelligent behavior in games. Additional attention is to be given to AI algorithms for improving game play experience.

Detailed contents:

Unit I: Introduction: Introduction to Game AI, kind of AI used in game development, model of game AI, AI engine structure.

Unit II: Movement Algorithms and Steering Behaviour kinematic movement algorithms, problems related to the steering behaviour of objects and Solutions. **Coordinated Movement and Motor Control** This unit discusses the concepts related to coordinated movements and motor control.

Unit III: Pathfinding Basic Path finding Algorithms in game development, Path finding for complex solutions

Unit IV: Decision-Making and Uncertainty decision trees and state machines for game development, models for implementing knowledge uncertainty, such as fuzzy logic and Markov systems.

Unit V: Introduction to Learning Mechanisms Board game theory and discusses the implementation of some key algorithms, such as minimax and negamax, Random Number Generation and Maximizing, algorithms for implementing action prediction, decision learning and reinforcement learning.

Alternative NPTEL/SWAYAM Course:

NPTEL Course Name, Artificial Intelligence: Search Methods For Problem Solving, Instructor H Prof. Deepak Khemani, Host Institute IIT Madras

Suggested Reference:

1. <https://www.athabasca.ca/syllabi/comp/comp452.php>
2. <https://www.udemy.com/course/artificial-intelligence-for-simple-games>
- / 3. Artificial Intelligence for Games, Ian Millington and John Funge, CRC Press; 2nd edition, 2009.
4. Artificial Intelligence and Games, Georgios N. Yannakakis and Julian Togelius, Springer International Publishing, 2018.

Course outcomes: After completion of course, students would be able to:

1. Understand identify tasks that can be tackled using AI techniques.
2. Apply appropriate AI technique for the problem under investigation.
3. Create efficient and robust AI algorithms for game tasks.
4. Apply learning mechanisms to gaming problems.