



AI+ Game Design Agent™

Certification



Executive Summary

The AI+ Game Design Agent certification equips learners with essential skills for integrating artificial intelligence into game design. It focuses on leveraging AI to enhance game mechanics, player experience, and procedural content generation. This certification covers AI concepts, including machine learning algorithms, pathfinding, and behavior modeling, and demonstrates how these technologies can be applied in the development of engaging and dynamic games. Ideal for game designers, developers, and AI enthusiasts, this certification provides practical knowledge to create smarter, more adaptive gaming environments that improve both player interaction and game longevity.



Prerequisites

- **Basic Programming Knowledge:** Familiarity with coding concepts and languages.
- **Game Design Fundamentals:** Understanding of core game mechanics and structure.
- **Mathematics and Algorithms:** Strong grasp of logic and problem-solving techniques.
- **Artificial Intelligence Basics:** Introductory knowledge of AI principles and models.
- **Creative Thinking:** Ability to envision dynamic and interactive game elements.



Exam Blueprint

Number
of Questions

50

Passing
Score

35/50 or 70%

Duration

90 Minutes

Format

**Online via AI
Proctoring platform**

Question Type

**Multiple Choice/Multiple
Response**

Exam Overview

Module	Weight
Understanding AI Agents	7%
Introduction to AI Game Agent	15%
Reinforcement Learning in Game Design	15%
AI for NPCs and Pathfinding	15%
AI for Strategic Decision-Making	12%
AI Game Agent in 3D Virtual Environments	12%
Future Trends in AI Game Design	12%
Capstone Project	12%
	100%

Certification Modules

Module 1

Understanding AI Agents

1.1 What are AI Agents?

1.2 Agent Architectures and Environments

1.3 Decision Making and Behavior Basics

1.4 Introduction to Multi-Agent Systems

1.5 Case Study: Pac-Man Ghost AI

1.6 Hands On: Build a Basic Reactive AI Agent Navigating a Simple Environment Using Pygame

Module 2

Introduction to AI Game Agent

2.1 What is an AI Game Agent?

2.2 Key Components of AI Game Agent

2.3 Agent Architectures

2.4 AI Game Agent Behaviors

2.5 Case Study: Racing Games (e.g., Mario Kart, Forza Horizon)

2.6 Hands-On: Creating a Simple Box Movement Game in Playcanvas

Module 3

Reinforcement Learning in Game Design

3.1 Basics of Reinforcement Learning

3.2 Key Algorithms: Q-Learning and SARSA

3.3 Applying RL to Game Agents

3.4 Challenges and Solutions in Game-based RL

3.5 Case Study: AlphaZero in Games: Mastering Chess, Shogi, and Go through Self-Play and Reinforcement Learning

3.6 Hands On: Train a simple RL agent in OpenAI Gym environment

Module 4

AI for NPCs and Pathfinding

4.1 Understanding NPCs as AI Agents

4.2 Simple AI Techniques for NPCs

4.3 Pathfinding Algorithms

4.4 Obstacle Avoidance and Movement Optimization

4.5 Case Study

4.6 Hands-On

Module 5

AI for Strategic Decision-Making

5.1 Decision Trees and Minimax for Game AI

5.2 Monte Carlo Tree Search (MCTS) for AI Agent

5.3 Utility-Based Decision Making for Game AI

5.4 AI in Real-Time Strategy (RTS) Games

5.5 Case Study: StarCraft II AI by DeepMind

5.6 Hands-On: Implement a Basic MCTS Agent for Tic-Tac-Toe Using Pygame

Module 6

AI Game Agent in 3D Virtual Environments

6.1 3D Environment Representation and Challenges for AI Agents

6.2 Navigation Mesh Generation for AI Agents in 3D

6.3 Complex Agent Behaviors in 3D Worlds

6.4 Case Study: The Last of Us

6.5 Hands On: Develop a 3D AI Agent with Navigation and Interaction in Unity Using NavMesh and C#

Module 7

Future Trends in AI Game Design

7.1 Current and Future AI Trends

7.2 The Future of Generalist AI in Gaming

7.3 Case Study

Module 8

Capstone Project

8.1. Task Description

8.2. Practical Implementation

8.3. Testing and Debugging

8.4. Hands-on

Certification Outcome

Upon completing the AI + Game Design Agent course, learners will acquire the skills to design, implement, and optimize AI-driven game agents. They will be proficient in using game development frameworks such as Unity3D, Playcanvas, and Pygame, applying AI techniques like pathfinding, reinforcement learning, and state machines to create intelligent, interactive agents. The course equips the participants with hands-on experience in developing functional AI agents for real-world gaming environments. Learners can tackle complex AI challenges in game design, preparing them for careers in AI-driven game development and interactive simulations.



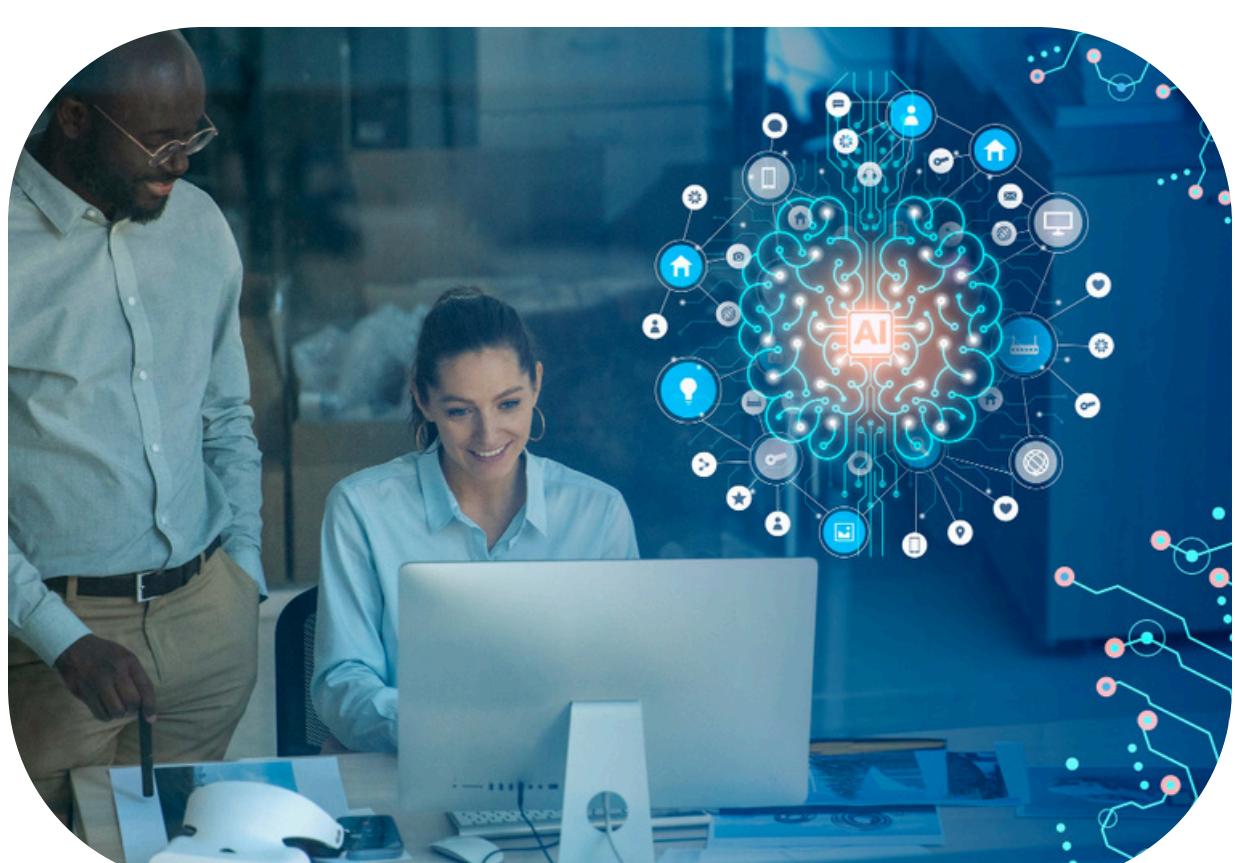
Market Insight

The AI + Game Design Agent certification addresses the growing demand for professionals skilled in AI-driven game development. With the gaming industry increasingly incorporating intelligent agents, there is a significant need for experts who can design, implement, and optimize AI systems.



Value Proposition

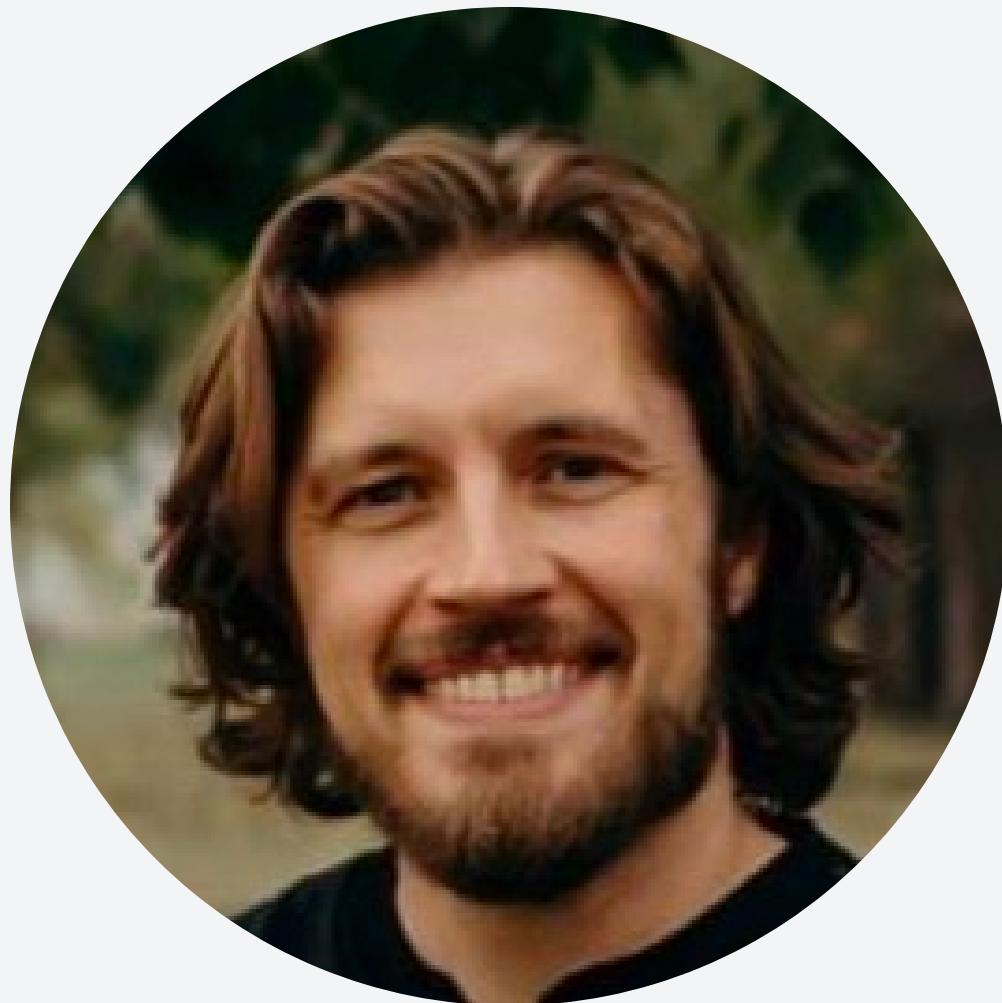
This certification empowers students with the practical skills and knowledge to create innovative AI game agents using popular frameworks. By mastering techniques like reinforcement learning, pathfinding, and behavior trees, graduates are prepared to excel in the rapidly evolving field of AI in game design.



Additional Features

The course includes hands-on projects, case studies, and real-world applications to ensure a comprehensive learning experience. Students gain access to industry-standard tools like Unity3D, Playcanvas, and Pygame, enhancing their proficiency in game development while learning to solve complex AI challenges.

AI Experts



Jason Kellington

AI Expert

As a consultant, trainer, and technical writer with more than 25 years of experience in IT, I specialize in the development and delivery of solutions focused on effective and efficient enterprise IT.



Justin Frébault

AI Expert

I'm a boutique data consultant specializing in data mesh and lakehouse solutions. I've dedicated my career to helping organizations transform their approach to data, moving beyond mere knowledge.



J Tom Kinser

AI Expert

I have over forty years of experience in software development, data engineering, management, and technical training. I am a Microsoft Certified Trainer and a software developer, holding multiple certifications.



Terumi Laskowsky

AI Expert

Country Manager for Global Consulting Services in Japan, Specialties: Information Security (Compliance, Policy, Application, Host, Network)



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