AI+ Game Design Practitioner™(AGAMING)

ID AGAMING **Price** CHF 995.—(excl. VAT) **Duration** 1 days

Who should attend

- Aspiring Game Developers – Ideal for those looking to integrate AI into game design and development.
- AI Enthusiasts – Perfect for learners eager to explore how AI shapes gaming experiences and player interactions.
- Game Designers – Suited for creatives aiming to use AI for storytelling, dynamic worlds, and adaptive gameplay.
- Software Engineers – Great for professionals seeking to apply programming and AI techniques within the gaming industry.
- Students & Researchers – Beneficial for those pursuing studies or research in AI, machine learning, or interactive entertainment.

Prerequisites

Requires basic programming knowledge in Python, understanding of linear algebra and probability, familiarity with machine learning concepts, and experience with Unity or Unreal Engine. Also, a creative problem-solving mindset is essential.

Course Objectives

- Industry-Relevant Curriculum Gain expertise in AI-driven game design, player behavior modeling, and adaptive gameplay mechanics.
- Hands-On Learning Work on real gaming projects integrating AI for character behavior, world generation, and personalization.
- Career Advancement Boost your profile for roles in game development, AI engineering, and interactive entertainment design.
- Cutting-Edge Tools Learn to use leading AI frameworks and gaming engines to develop immersive, intelligent experiences.

Course Content

Module 1: Introduction to AI in Games

- 1.1 What is AI?
- 1.2 Evolution of AI in the Gaming Industry
- 1.3 Types of AI in Games
- 1.4 Benefits, Challenges, and Innovations in Game AI

Module 2: Game Design Principles using AI

- 2.1 Understanding Game Mechanics and Player Experience
- 2.2 Role of AI in Gameplay and Narrative Design
- 2.3 Designing Game Environments for AI Interaction
- 2.4 AI-Driven Behavior vs Traditional Scripted Logic
- 2.5 Case Study: Dynamic AI and Narrative Adaptation in Middle earth: Shadow of Mordor
- 2.6 Hands-On Exercise: Designing Adaptive NPC Behavior and Environment Interaction

Module 3: Foundations of AI in Gaming

- 3.1 Core AI Concepts for Gaming
- 3.2 Search Algorithms and Pathfinding
- 3.3 AI Behavior Modeling and Procedural Content Generation (PCG)
- 3.4 Introduction to Machine Learning and Reinforcement Learning
- 3.5 Case Study: AI in Minecraft — Procedural Content Generation and Agent Navigation
- 3.6 Hands-On: Implementing A* Pathfinding and FSM for NPC Behavior

Module 4: Reinforcement Learning Fundamentals

- 4.1 Core Concepts: States, Actions, Rewards, Policies, Q-Learning:
- 4.2 Exploration versus Exploitation in Learning Systems:
- 4.3 Overview of Deep Q Networks (DQN) and Policy Gradient Methods
- 4.4 Case Study: Reinforcement Learning in DeepMind's AlphaGo
- 4.5 Hands-On: Train a Reinforcement Learning Model on OpenAI Gym's GridWorld

Module 5: Planning and Decision Making in Games

- 5.1 Minimax Algorithm and Alpha-Beta Pruning
- 5.2 Monte Carlo Tree Search (MCTS)
- 5.3 Applications in Board Games and Real-Time Strategy (RTS) Games
- 5.4 Case Study: Strategic AI in StarCraft II – Combining

Planning Algorithms for Real-Time Strategy
- 5.5 Hands-on Implementation: Guides on implementing the Minimax algorithm for Tic-Tac-Toe

Module 6: AI Techniques in 2D/3D Virtual Gaming Environments Basic

- 6.1 Overview of 2D and 3D Game Environments
- 6.2 Environment Representation Techniques
- 6.3 Navigation and Pathfinding in 2D/3D Spaces
- 6.4 Interaction and Behavior Systems in Virtual Environments
- 6.5 Case Study: Navigation and Interaction AI in The Legend of Zelda: Breath of the Wild
- 6.6 Hands-On: Building Basic Navigation and Interaction in 2D and 3D Game Environments

Module 7: Adaptive Systems and Dynamic Difficulty

- 7.1 Adaptive Systems Overview
- 7.2 Dynamic Difficulty Adjustment (DDA) Principles
- 7.3 Adaptive Storytelling, Personalization, and Player Profiling
- 7.4 AI Techniques in Adaptive Systems
- 7.5 Implementation Strategies and Tools
- 7.6 Case Study: Dynamic Enemy Management and Replayability with Left 4 Dead’s AI Director
- 7.7 Hands-On: Developing an Adaptive Dynamic Difficulty System in Unity

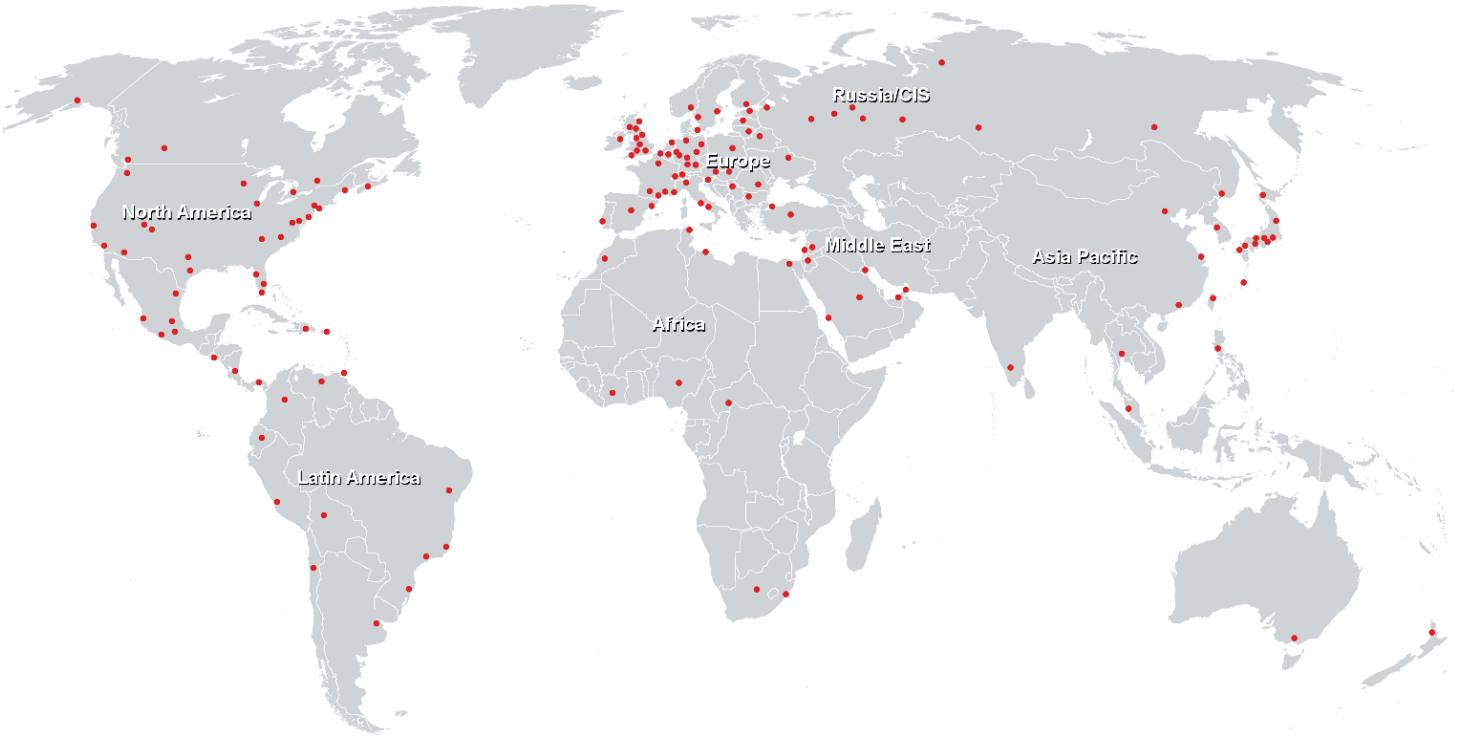
Module 8: Future of AI in Gaming

- 8.1 Generalist AI Agents and Transfer Learning
- 8.2 AI-Powered Game Design and Testing Tools
- 8.3 Ethical Considerations and AI Transparency
- 8.4 Emerging Technologies: VR/AR AI and AI in Esports Coaching

Module 9: Capstone Project

AI+ Game Design Practitioner™(AGAMING)

Training Centres worldwide





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