

# Postgraduate Certificate Multi-agent Systems and Computational Perception





## Postgraduate Certificate Multi-agent Systems and Computational Perception

- » Course Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/information-technology/postgraduate-certificate/multi-agent-systems-computational-perception](http://www.techtitute.com/us/information-technology/postgraduate-certificate/multi-agent-systems-computational-perception)

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# 01

# Introduction

Multi-agent Systems are made up from different intelligent agents that interact with each other and are normally used to solve complex problems that an individual agent could not solve or would find too difficult. This Multi-agent Systems and Computational Perception program will allow professionals to acquire a wide vision in this field in order to develop quality work.



“

*IT professionals must continue their specialization to adapt to new developments in this field"*

The teaching team of this Postgraduate Certificate in Multi-agent Systems and Computational Perception has made a careful selection of each of the topics of this program in order to offer the student a study opportunity as complete as possible and always related to current events.

The program covers everything related to Multi-agent Systems, such as JADE platforms, artificial vision, digital images, shape recognition and natural language processing, among other aspects.

This training provides students with specific tools and skills to successfully develop their professional activity in the wide environment of Multi-agent Systems. It works on key competencies such as reality knowledge and daily practice in different IT areas and develops responsibility in monitoring and supervision of their work, as well as specific skills within this field.

In addition, as it is a 100% online Postgraduate Certificate, the student is not conditioned by fixed schedules or need to move to another physical location, but can access contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Multi-agent Systems and Computational Perception** contains the most complete and up-to-date program on the market.

The most important features include:

- ♦ Development of case studies presented by experts in Computer Engineering
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Special emphasis on innovative methodologies in Multi-agent Systems and Computational Management
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*Join our community of students and learn with the best. You will increase your professionalism in a comfortable way"*

**“** *This Postgraduate Certificate is the best investment you can make in selecting a refresher program to update your knowledge in Multi-Agent Systems and Computational Management”*

Its teaching staff includes professionals belonging to the IT field, who bring to this program their work experience, as well as renowned specialists from reference societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive education programmed to prepare for real situations.

The program design focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the professional will be assisted by an innovative interactive video system developed by renowned and experienced experts in Multi-agent Systems and computer management.

*This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online Postgraduate Certificate will allow you to balance your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The Postgraduate Certificate in Multi-agent Systems and Computational Perception is oriented to facilitate the professional's performance in this field so that they can acquire and learn main innovations in this area of Computer Science.







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*This is the best option to learn about the latest advances in Multi-agent Systems and computational management"*



### General Objective

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- Scientific and technological qualification, as well as preparation for professional practice in Multiagent Systems and computational management, all with a transversal and versatile education adapted to new technologies and innovations in this field



*Achieve professional success as a computer engineer with this intensive program, developed by professionals with wide experience in the sector"*





## Specific Objectives

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- To understand basic and advanced concepts related to agents and Multi-agent Systems
- To study FIPA agent standard, considering inter-agent communication, agent management and architecture, among other issues
- To deepen learning of JADE platform (Java Agent DEvelopment Framework), learning to program in it both basic and advanced concepts, including communication and agent discovery topics
- To build foundation for natural language processing, such as automatic speech recognition and computational linguistics
- To understand computer vision, digital image analysis, image transformation and segmentation

03

# Structure and Content

The structure of the contents has been designed by the best professionals in the field of Computer Engineering with extensive experience and recognized prestige in the profession.

A hand holding a pen is positioned over a document. The document features the text "DIGITAL TRANSFORMATION" in large, bold, white letters. The background is a blurred image of a computer keyboard. The overall color scheme is blue and teal.

*DIGITAL  
TRANSFORMATION*

AL  
ATION

“

*We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too”*

## Module 1. Multi-agent Systems and Computational Perception

- 1.1. Agents and Multi-agent Systems
  - 1.1.1. Concept of Agent
  - 1.1.2. Architecture
  - 1.1.3. Communication and Coordination
  - 1.1.4. Programming Languages and Tools
  - 1.1.5. Applications of the Agents
  - 1.1.6. The FIPA
- 1.2. The Standard for Agents: FIPA
  - 1.2.1. Communication between Agents
  - 1.2.2. Agent Management
  - 1.2.3. Abstract Architecture
  - 1.2.4. Other Specifications
- 1.3. The JADE Platform
  - 1.3.1. Software Agents According to JADE
  - 1.3.2. Architecture
  - 1.3.3. Installation and Execution
  - 1.3.4. JADE Packages
- 1.4. Basic Programming with JADE
  - 1.4.1. The Management Console
  - 1.4.2. Basic Creation of Agents
- 1.5. Advanced Programming with JADE
  - 1.5.1. Advanced Creation of Agents
  - 1.5.2. Communication between Agents
  - 1.5.3. Discovering Agents
- 1.6. Computer Vision
  - 1.6.1. Processing and Digital Analysis of Images
  - 1.6.2. Image Analysis and Artificial Vision
  - 1.6.3. Image Processing and Human Vision
  - 1.6.4. Image Capturing System
  - 1.6.5. Image Formation and Perception





- 1.7. Digital Image Analysis
  - 1.7.1. Stages of the Image Analysis Process
  - 1.7.2. Pre-Processing
  - 1.7.3. Basic Operations
  - 1.7.4. Spatial Filtering
- 1.8. Digital Image Transformation and Image Segmentation
  - 1.8.1. Fourier Transform
  - 1.8.2. Frequency Filtering
  - 1.8.3. Basic Concepts
  - 1.8.4. Thresholding
  - 1.8.5. Contour Detection
- 1.9. Shape Recognition
  - 1.9.1. Feature Extraction
  - 1.9.2. Classification Algorithms
- 1.10. Natural Language Processing
  - 1.10.1. Automatic Speech Recognition
  - 1.10.2. Computational Linguistics



*This program will allow you to advance in your career comfortably"*

# 04 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*



*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



# 05 Certificate

The Postgraduate Certificate in Multi-agent Systems and Computational Perception ensures, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Technological University.





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*Successfully complete this program  
and receive your university qualification  
without having to travel or fill out  
laborious paperwork”*

This **Postgraduate Certificate in Multi-agent Systems and Computational Perception** contains the most complete and updated educational program in the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate Multi-agent in Systems and Computational Perception**

Official No. of Hours: **150h** .



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



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