Postgraduate Certificate

3D Digital Image Processing
in Computer Vision

tec**h** global university

Postgraduate Certificate
3D Digital Image Processing in Computer Vision

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Global University**
- » Credits: **6 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/in/artificial-intelligence/postgraduate-certificate/3d-digital-image-processing-computer-vision**

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01

Introduction

According to a recent study conducted by a prestigious consulting firm, one of the areas where more professionals are needed in the short term is Computer Vision. Experts in this field are capable of processing and transforming large volumes of data into numerical data. In this way, they provide business conclusions of great importance for large companies. To this end, it is vital that specialists keep abreast of new techniques emerging in 3D Digital Image Processing. At the same time, they need to acquire the skills necessary to handle their tools effectively. TECH therefore offers an online university program that will enable professionals to enrich their practice with the most innovative image processing software on the market.

With this 100% online Postgraduate Certificate you will incorporate to your work the most effective filters to clean, improve and analyze three-dimensional data"

Visual digital content, nowadays, is everywhere. For example, in cell phones. However, these devices alone cannot interpret ocular information to make decisions. Therefore, Computer Vision is responsible for teaching machines to both locate and recognize patterns through mathematical algorithms. In this sense, 3D Digital Image Processing plays a key role in creating three-dimensional models of scenes from data captured by sensors such as stereo cameras. As such, these systems are useful in applications such as engineering, design or simulation.

In this context, TECH launches a complete program in 3D Digital Image Processing in Computer Vision. Its main objective is that students acquire a deep knowledge of its fundamentals and learn the most innovative procedures for the manipulation of three-dimensional images. To achieve this, the curriculum will address in detail aspects such as metrology software, data visualization or the Open3D library. At the same time, the syllabus will emphasize the importance of *Point Cloud* for reconstructing three-dimensional models and analyzing the geometric characteristics of objects. In addition, students will examine the various forms of data visualization to subsequently represent them in web environments for users to interact with the models using technologies such as JavaScript.

On the other hand, the approach of this university program reinforces its innovative character. TECH provides a 100% online educational environment, adapting to the needs of busy professionals who wish to advance their careers. The methodology is based on the *Relearning* method, consisting of the progressive and natural reiteration of key concepts to ensure their assimilation. Therefore, the program combines flexibility with a robust pedagogical approach that will ensure students' learning success.

This **Postgraduate Certificate in 3D Digital Image Processing in Computer Vision** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in computer science and computer vision.
- 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 the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- 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

Tackle the Point Clouds at the world's best digital university according to Forbes"

Do you want to get the most out of the Open3D? Manage this tool to perfection in just 6 weeks through this university program"
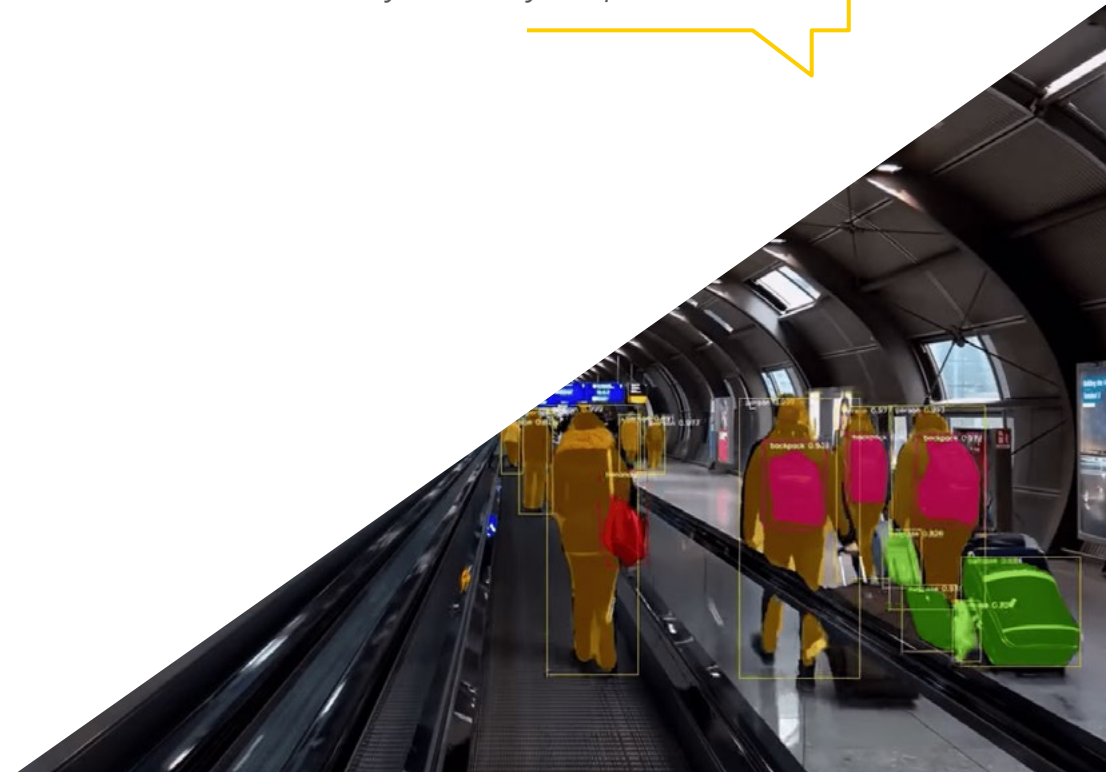
Give your professional career a boost by incorporating the latest advances in Data Visualization into your projects.

The TECH Relearning system will adapt to your schedule, so that you can combine your studies with the rest of your daily responsibilities.

The program's teaching staff includes professionals from the industry who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02
Objectives

Thanks to this university program, specialists will have at their disposal a wide range of innovative tools to enrich their work in 3D Image Processing. In this sense, they will have a solid understanding of Computer Vision, one of the most important branches of Machine Learning. Therefore, graduates will be highly qualified to develop innovative solutions that contribute to improve the efficiency of institutions. And all this in a diversity of applications such as health, logistics, security and *retail*.

You will achieve your most ambitious professional goals thanks to the distinctive approach of by this program, which will guide you through all stages of 3D Digital Image Processing"
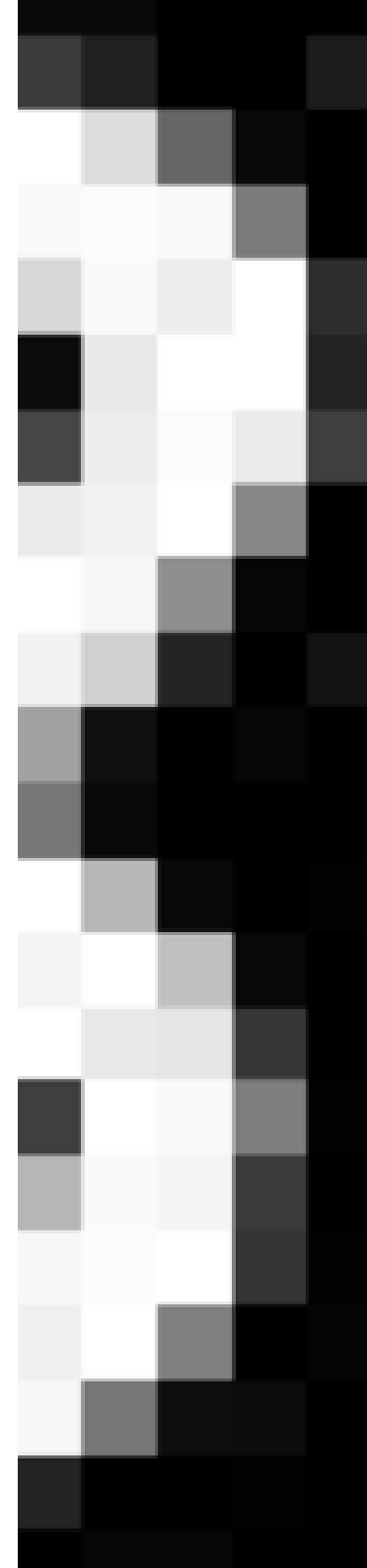
General Objectives

- Determine how a 3D image is formed and its characteristics
- Introducing the open 3D library
- Analyze the advantages and difficulties of working in 3D instead of 2D.
- Establish methods for the processing of 3D images.

You will expand your knowledge through innovative multimedia didactic formats, which will guarantee successful learning"

Specific Objectives

- Examine a 3D image
- Analyze the software used for 3D data processing
- Developing open3D
- Determine the relevant data in a 3D image
- Establish denoising filters
- Propose Geometric Calculation tools
- Analyze object detection methodologies
- Evaluate triangulation and scene reconstruction methods

03
Course Management

To maintain intact the quality that defines all its university programs, TECH carefully chooses the teaching staff that make them up. On this occasion, for the design and delivery of this Postgraduate Certificate has real references in Computer Vision. These professionals are characterized by years of work experience in prestigious organizations, performing work in 3D Digital Image Processing. Committed to providing the best services, they keep their knowledge updated to use the most advanced tools in this field. Undoubtedly, all this is an endorsement for students seeking to specialize in a field that offers multiple opportunities.

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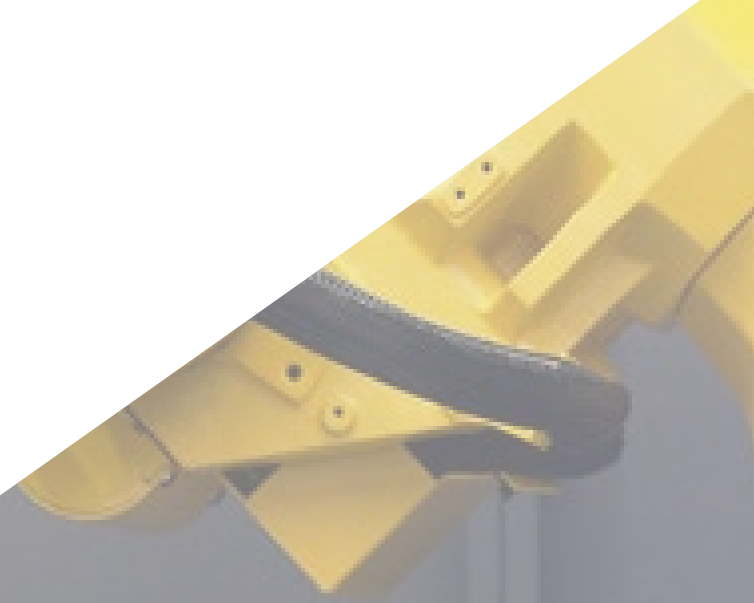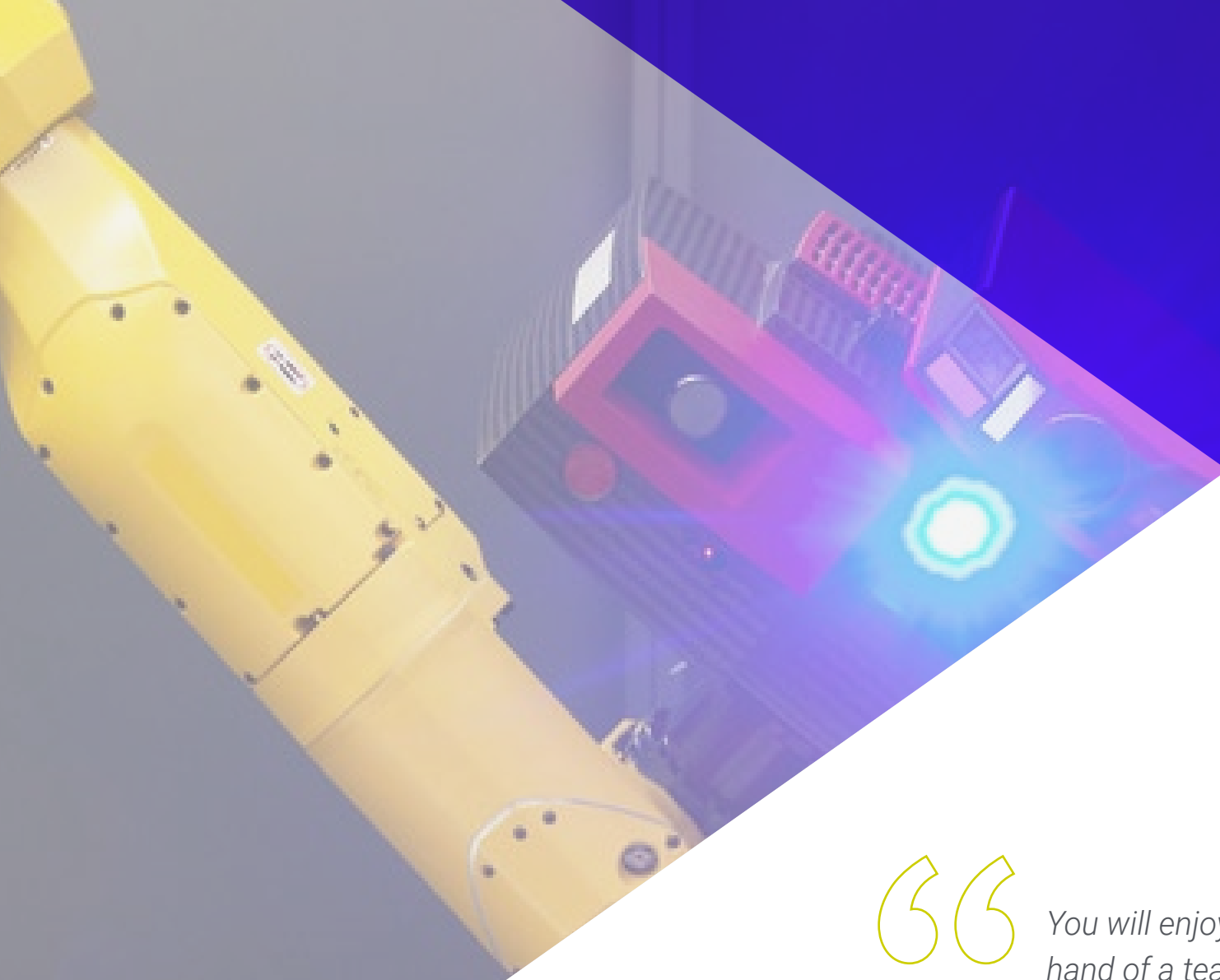
You will enjoy advice at all times, from the hand of a teaching team with extensive experience in the area of Computer Vision"

Management

### Mr. Redondo Cabanillas, Sergio

- Machine Vision Research and Development Specialist at BCN Vision
- Development and *Backoffice* Team Leader at BCN Vision
- Project Manager and development of computer vision solutions.
- Sound Technician at Media Arts Studio
- Specialization in Image and Sound by the Polytechnic University of Catalonia.
- Graduate in Political Science and Industry from the Autonomous University of Barcelona.
- Higher Level Training Cycle in Sound Villar CP

Professors

Ms. García Moll, Clara
- Junior Visual Computer Engineer at LabLENI
- Computer Vision Engineer. Satellogic
- Full Stack Developer. Grupo Catfons
- Audiovisual Systems Engineering. Pompeu Fabra University (Barcelona).
- Master's Degree in Computer Vision. Autonomous University of Barcelona
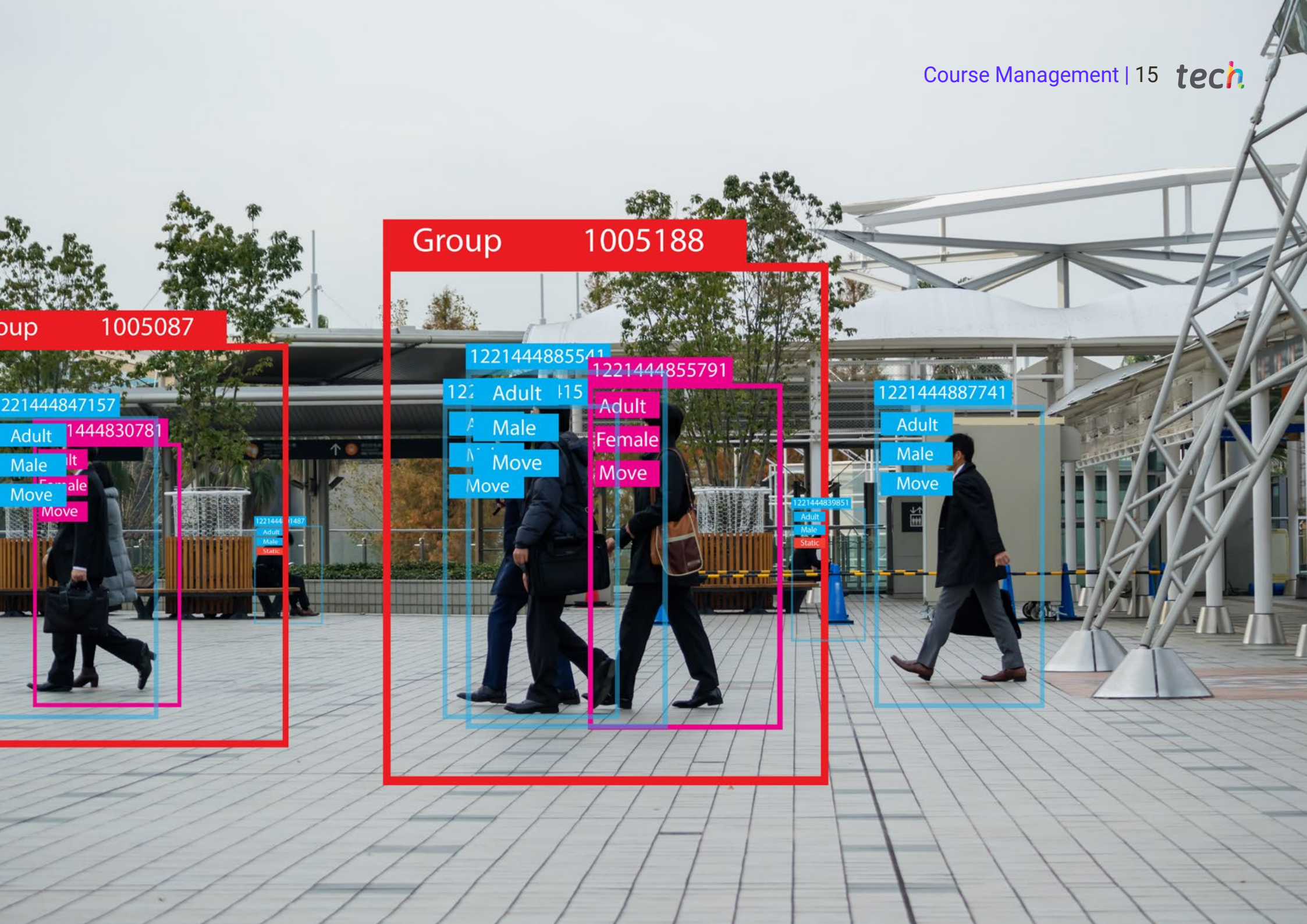
04
Structure and Content

Under a theoretical-practical approach, this program will provide graduates with a comprehensive view of 3D Image Processing in Computer Vision. To achieve this, the curriculum will thoroughly analyze the latest developments for both the analysis and visualization of three-dimensional visual resources. Students will delve into the use of Open3D, a tool that will allow them to handle data in depth maps. Also, the syllabus will delve into the presentation of this information using web technologies such as HTML. Students will also acquire advanced skills that will enable them to successfully overcome the challenges that arise during their work.

You will master the most effective metrology software to perform precise and accurate measurements of objects by means of this program"

Module 1. 3D Image Processing

A key qualification that will raise your professional horizons and allow you to stand out in an ever-growing technology sector"

05
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.
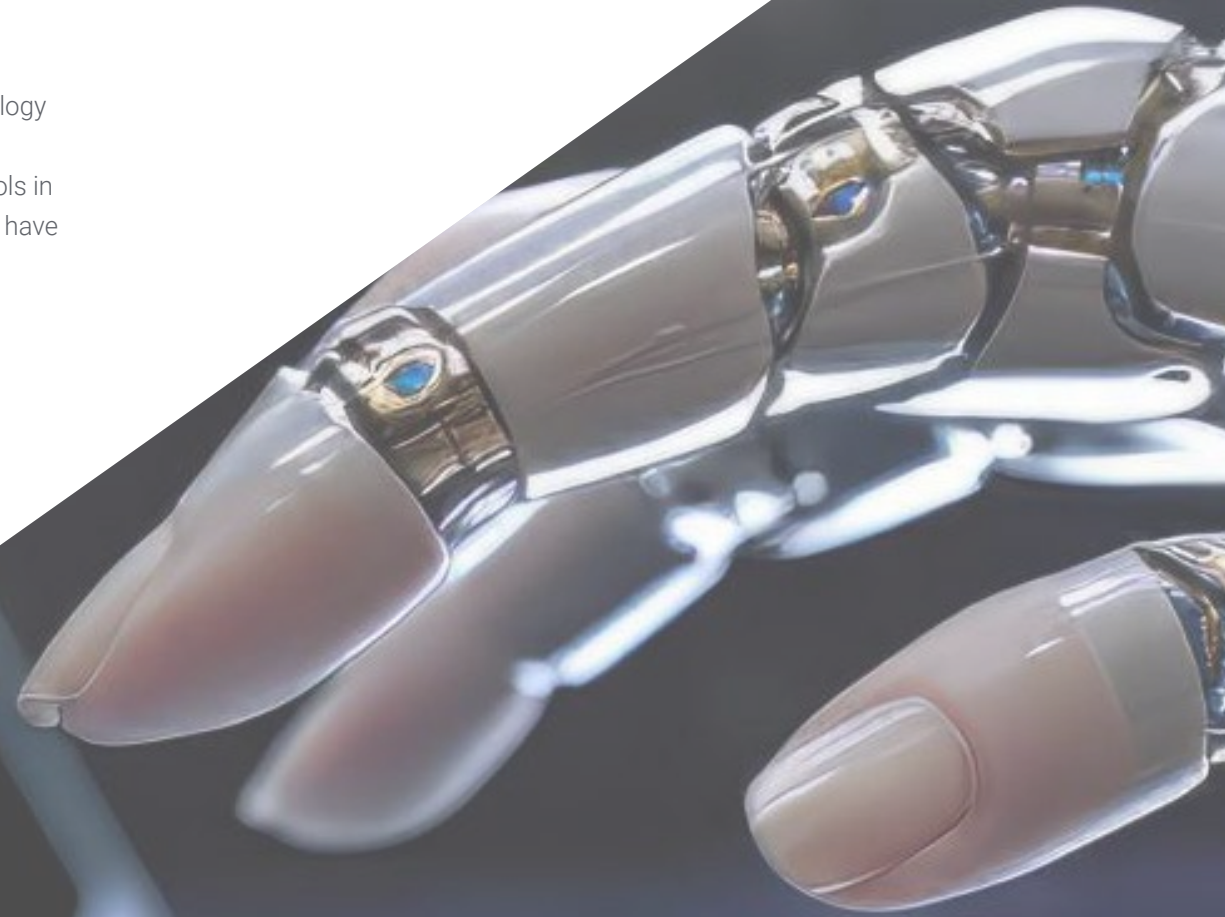
Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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.

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

10%

8%

20%

25%

4%

3%

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.

Certificate

The Postgraduate Certificate in 3D Digital Image Processing in Computer Vision guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

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

This program will allow you to obtain your **Postgraduate Certificate in 3D Digital Image Processing in Computer Vision** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in 3D Digital Image Processing in Computer Vision**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

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

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tech global university

Mr./Ms. _____, with identification document _____ has successfully passed and obtained the title of:

Postgraduate Certificate in 3D Digital Image Processing in Computer Vision

This is a program of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

Unique TECH Code: AFWORD23S   techtitute.com/certificates

tech global university

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