Postgraduate Certificate

Deep Neural Network Training in Deep Learning

tech global university

tech global university

Postgraduate Certificate
Deep Neural Network Training in Deep Learning

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

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/deep-neural-network-training-deep-learning**

Index

01

Introduction

In a constantly evolving technological environment, Deep Neural Network training has become an essential tool. Therefore, this complete TECH program has been specifically designed to meet the growing demand for qualified professionals in this area. This way, students will learn how to develop advanced Deep Neural Network algorithms and models, as well as how to optimize and adjust these models to obtain the best results. Therefore, the program is designed to provide students with a solid foundation in mathematics and statistics, which will enable them to apply these skills to a variety of fields. In addition, its 100% online format allows students to adapt their study pace to their needs and access the theoretical and practical contents from anywhere and at any time.

With the completion of this exclusive academic program you will work on improving your skills in different types of optimizers in a totally online format"

The Deep Learning is one of the areas of Engineering that is constantly evolving, and has become a fundamental tool for solving complex problems. In addition, Deep Neural Network Training is an essential technique within this field and is used in a wide variety of applications, from computer vision to natural language processing. As the amount of data and the complexity of the problems to be solved increases, it is necessary to have highly qualified professionals in this area. For this reason, this TECH program has been designed to meet the growing demand for professionals with experience in the implementation and training of deep neural network models.

Therefore, the program focuses on providing students with solid training in the theoretical and practical fundamentals of Deep Neural Network Training, including neural network architecture, reinforcement learning and model optimization. In this way, students will have the opportunity to learn cutting-edge tools such as TensorFlow and PyTorch, and apply their knowledge in Deep Learning practical projects.

With the objective of improving student learning, TECH has created a complete program based on the exclusive Relearning methodology. This teaching process was conceived so that the graduate integrates the fundamental concepts in a natural and progressive way through repetition. In this way, the student will acquire the necessary skills while adjusting the pace of study to their daily life.

TECH has created an online program so that the professional can focus on learning without having to worry about travel or fixed schedules. The student will have access to the theoretical and practical contents at any time and from anywhere, as long as they have a device with an Internet connection. Therefore, the learning process will be more comfortable and accessible.

This **Postgraduate Certificate in Deep Neural Network Training in Deep Learning** 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 *Deep Learning*
- The graphic, schematic, and practical contents with which they are created, provide practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used 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

Access and download detailed videos, clinical case analyses, interactive summaries and other complementary material of great interest”

Access a multimedia library full of materials in different audiovisual media that will facilitate the integration of knowledge so that you can apply it in your daily work life immediately"

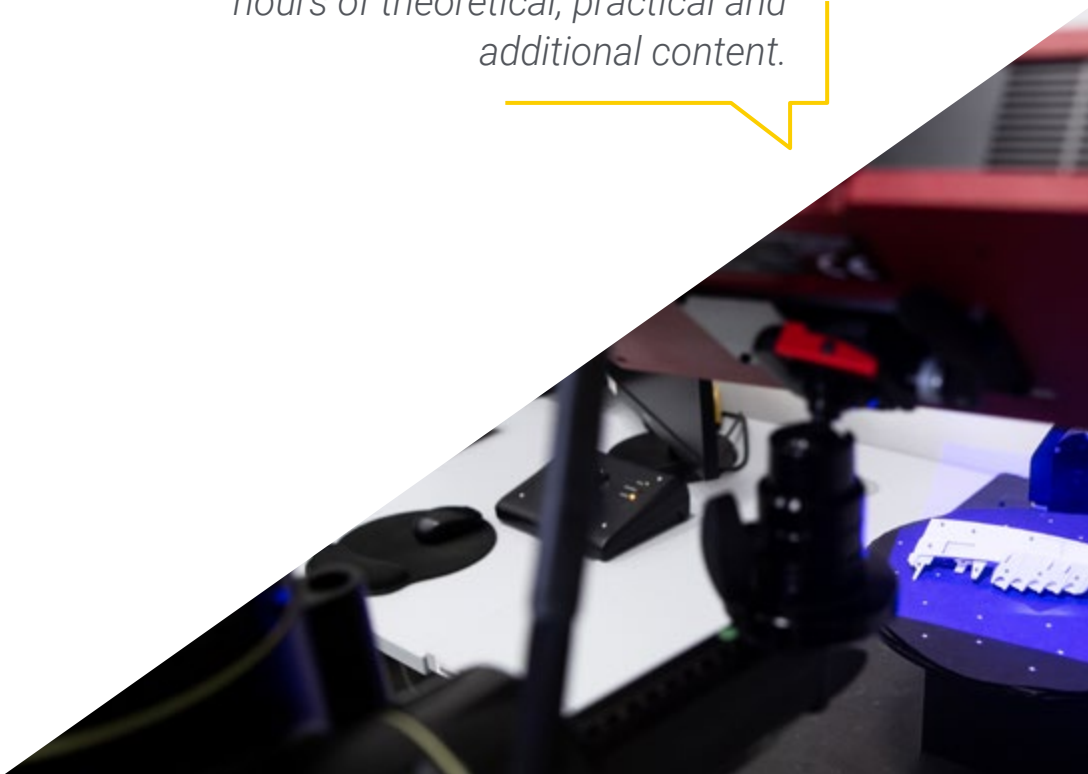
You will be able to download all the content to your electronic device from the Virtual Campus and consult it whenever you need it.

The best program in the current academic market is now available for you to delve deeper into the learning cycles through dozens of hours of theoretical, practical and additional content.

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

Its 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 an immersive education programmed to learn in real situations.

The design of this program 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 student will be assisted by an innovative interactive video system created by renowned experts.



02

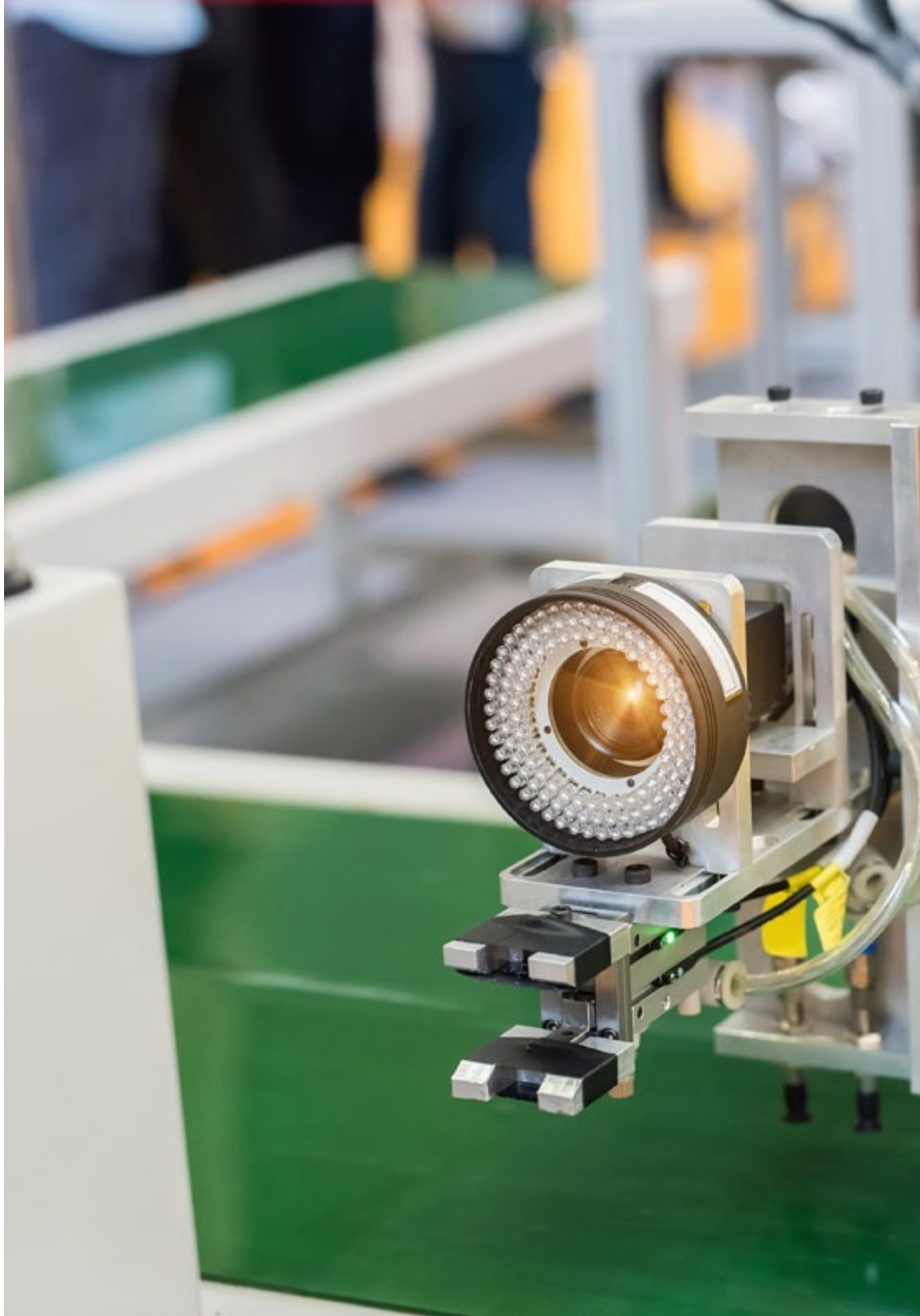
Objectives

This Postgraduate Certificate has been designed with the objective of providing the graduate with the most advanced theoretical, practical and additional contents in Deep Neural Network Training in *Deep Learning* and its multiple possibilities. Thanks to the high level of demand of its syllabus, any professional will be able to achieve their most ambitious goals through this program adapted to their needs and is presented in a 100% accessible and convenient online format.

Do you want to become an expert in Deep Learning? Now is your time, this is your program. Only with TECH"

General Objectives

- Lay the foundation for the key concepts of mathematical functions and their derivatives
- Apply these principles to deep learning algorithms to learn automatically
- Examine the key concepts of Supervised Learning and how they apply to neural network models
- Analyze the training, evaluation, and analysis of neural network models
- Lay the foundation for the key concepts and main applications of deep learning
- Implement and optimizes neural networks with Keras
- Develop expertise in the training of deep neural networks
- Analyze the optimization and regularization mechanisms necessary for deep network training



Specific Objectives

- Analyze the gradient problems and how they can be avoided
- Determine how to reuse pre-trained layers to train deep neural networks
- Establish how to schedule the learning rate to obtain the best results

You will achieve your objectives with the help of a specialized teaching staff with extensive experience in evaluation metrics"

03

Course Management

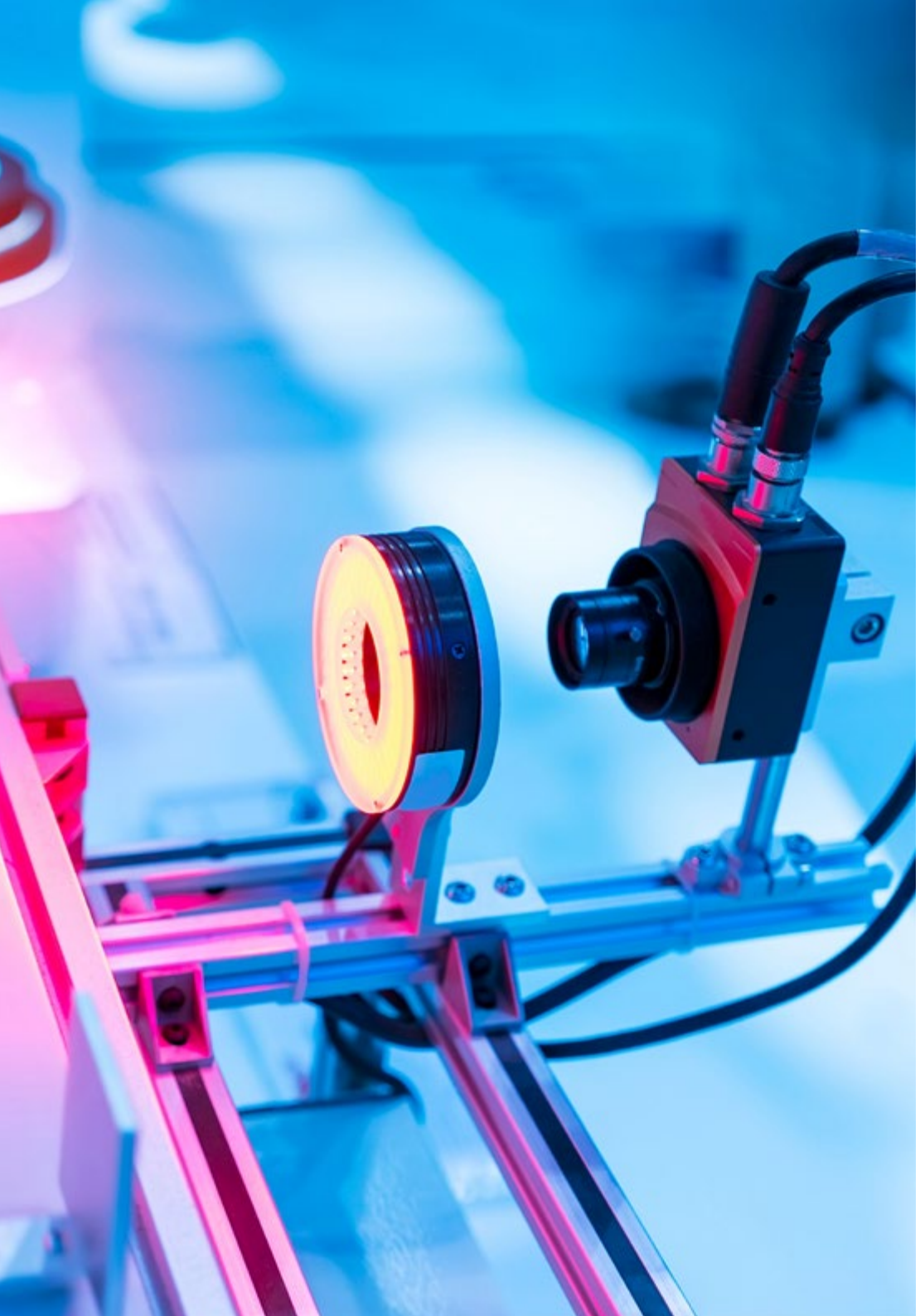
TECH has carefully selected the teaching staff of this program to provide an elite education to the students. They are highly prestigious and experienced professionals in the field of Engineering, able to offer a current and future vision of the sector. In this way, students will be able to acquire the best tools to develop their work activity in a constantly growing field and become experts in Deep Neural Network Training in Deep Learning.

You will have access to advices and practical keys from a team of experts versed in Deep Neural Network Training in Deep Learning"

Management

Mr. Gil Contreras, Armando

- Lead Big Data Scientist-Big Data at Jhonson Controls
- *Data Scientist-Big Data* at Opensistemas
- Fund Auditor at Creativity and Technology and PricewaterhouseCoopers
- Professor at EAE Business School
- Degree in Economics from the Instituto Tecnológico de Santo Domingo INTEC
- Master's Degree in Data Science at Centro Universitario de Tecnología y Arte
- Master MBA in International Relations and Business at Centro de Estudios Financieros CEF
- Postgraduate Degree in Corporate Finance at the Instituto Tecnológico de Santo Domingo



Professors

Mr. Delgado Panadero, Ángel

- ML Engenieer at Paradigma Digital
- Computer Vision Engineer at NTT Disruption
- Data Scientist at Singular People
- Data Analyst at Parclick
- Tutor at Master in Big data and Analytics at EAE Business School
- Degree in Physics at the University of Salamanca

Mr. Matos, Dionis

- *Data Engineer* at Wide Agency Sodexo
- *Data Consultant* at Tokiota Site
- *Data Engineer* at Devoteam Testa Home
- *Business Intelligence Developer* at Ibermatica Daimler
- Máster Big Data and Analytics /Project Management(Minor) at EAE Business School

Mr. Villar Valor, Javier

- Director and Founder Partner Impulsa2
- Chief Operating Officer of Summa Insurance Brokers
- Responsible for identifying improvement opportunities at Liberty Seguros
- Director of Transformation and Professional Excellence at Johnson Controls Iberia
- Responsible for the organization of the company Groupama Seguros
- Responsible for Lean Six Sigma methodology at Honeywell
- Director of Quality and Purchasing at SP & PO
- Professor at the European Business School

04

Structure and Content

TECH uses the effective *Relearning* methodology in all its programs, with which the student will be able to integrate the most important concepts through repetition in different formats throughout the program. In this way, the hours of orthodox study and memorization are reduced, moving on to a progressive and natural acquisition of knowledge. Therefore, the professional who decides to take this program will have an advanced and complete syllabus, which also presents innovative multimedia content. In this way, the graduate is guaranteed a unique academic experience, adapted to the demands and needs of today's labor market.

A multidisciplinary and dynamic Postgraduate Certificate, perfect for updating your knowledge of stochastic gradients and learning transfer training"

Module 1. Deep Neural Network Training

1.1. Gradient Problems
- 1.1.1. Gradient Optimization Techniques
- 1.1.2. Stochastic Gradients
- 1.1.3. Weight Initialization Techniques

1.2. Reuse of Pre-trained Layers
- 1.2.1. Learning Transfer Training
- 1.2.2. Feature Extraction
- 1.2.3. Deep Learning

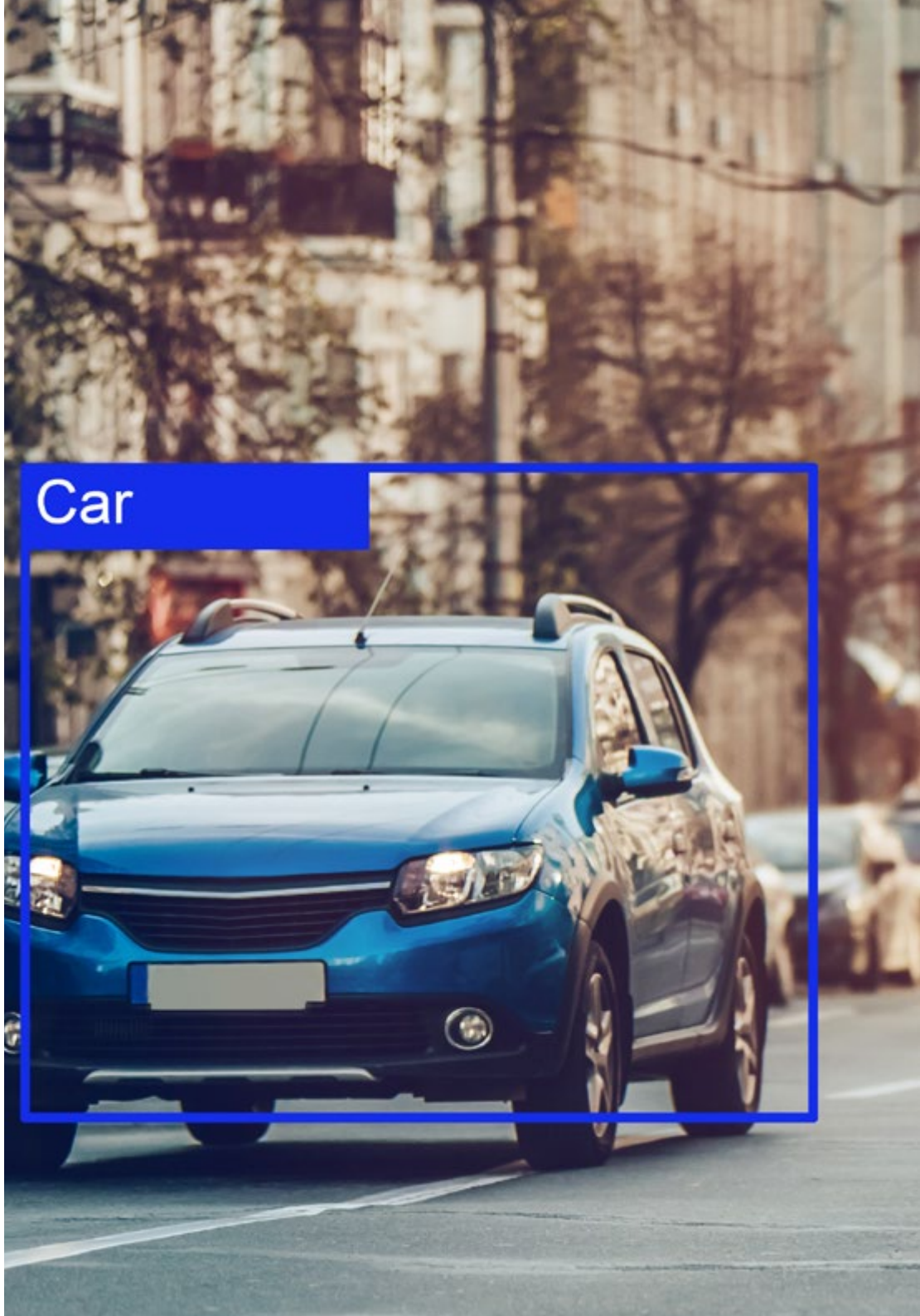
1.3. Optimizers
- 1.3.1. Stochastic Gradient Descent Optimizers
- 1.3.2. Adam and RMSprop Optimizers
- 1.3.3. Moment Optimizers

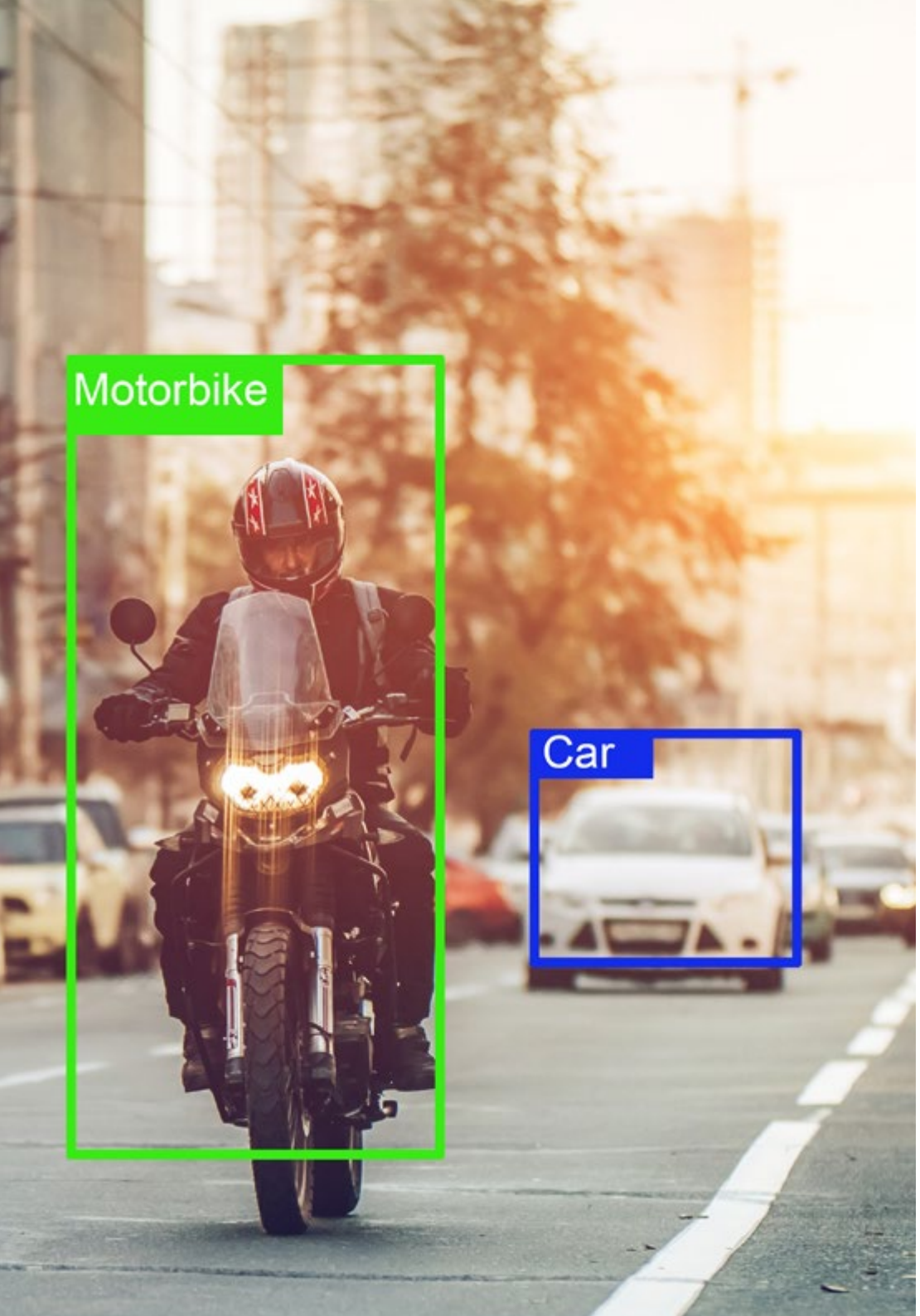
1.4. Learning Rate Scheduling
- 1.4.1. Automatic Learning Rate Control
- 1.4.2. Learning Cycles
- 1.4.3. Smoothing Terms

1.5. Over-Adjustment
- 1.5.1. Cross Validation
- 1.5.2. Regularization
- 1.5.3. Evaluation Metrics

1.6. Practical Guidelines
- 1.6.1. Model Design
- 1.6.2. Selection of Assessment Metrics and Parameters
- 1.6.3. Hypothesis Testing

1.7. *Transfer Learning*
- 1.7.1. Learning Transfer Training
- 1.7.2. Feature Extraction
- 1.7.3. Deep Learning





1.8. *Data Augmentation*
- 1.8.1. Image Transformations
- 1.8.2. Synthetic Data Generation
- 1.8.3. Text Transformation

1.9. Practical Application of Transfer Learning
- 1.9.1. Learning Transfer Training
- 1.9.2. Feature Extraction
- 1.9.3. Deep Learning

1.10. Regularization
- 1.10.1. L1 and L2
- 1.10.2. Maximum Entropy Regularization
- 1.10.3. *Dropout*

A unique program structured for you to achieve proficiency in Deep Neural Network Training in Deep Learning"

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 is the most widely used learning system in the best faculties in the world. 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 program, the studies 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

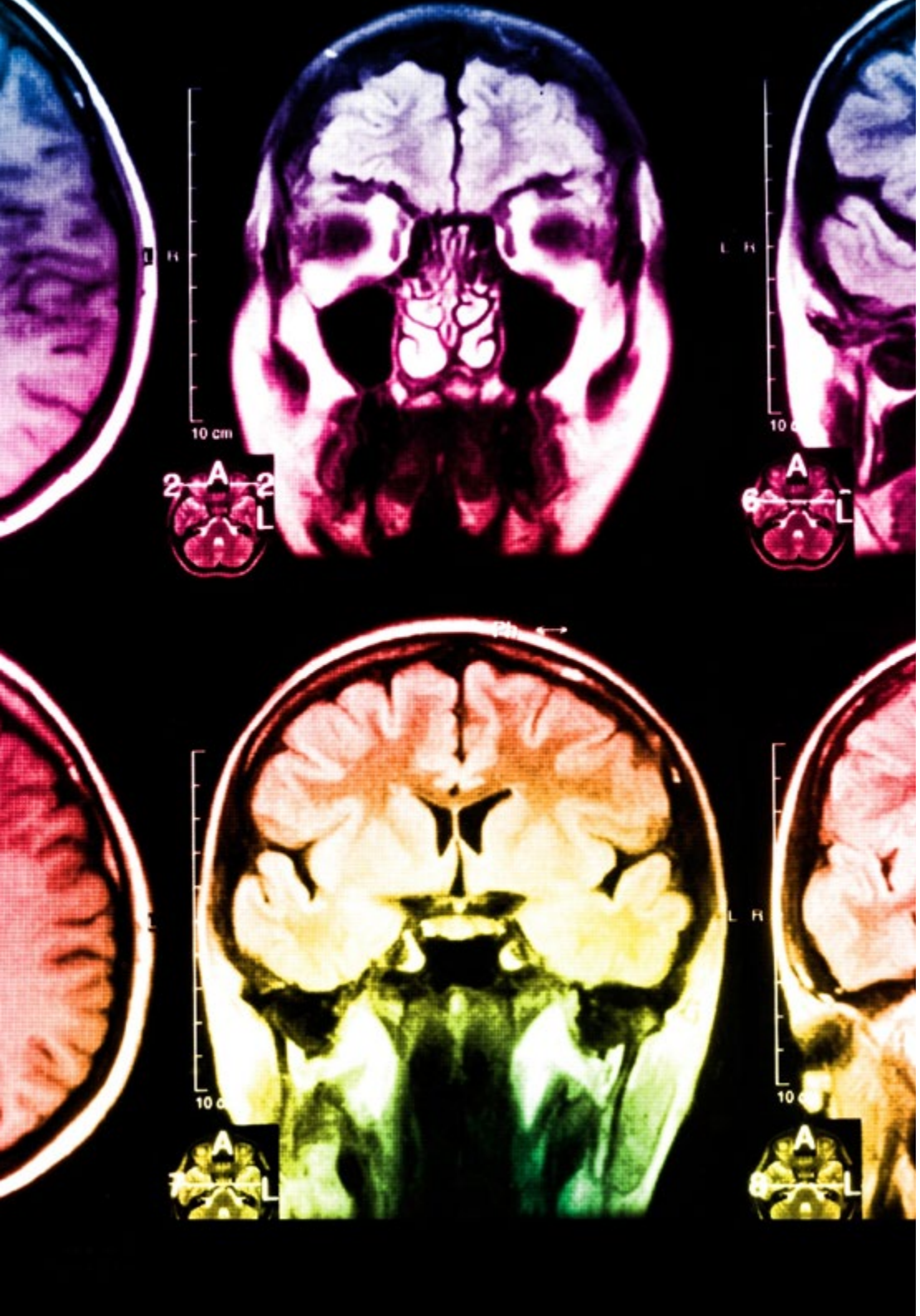
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

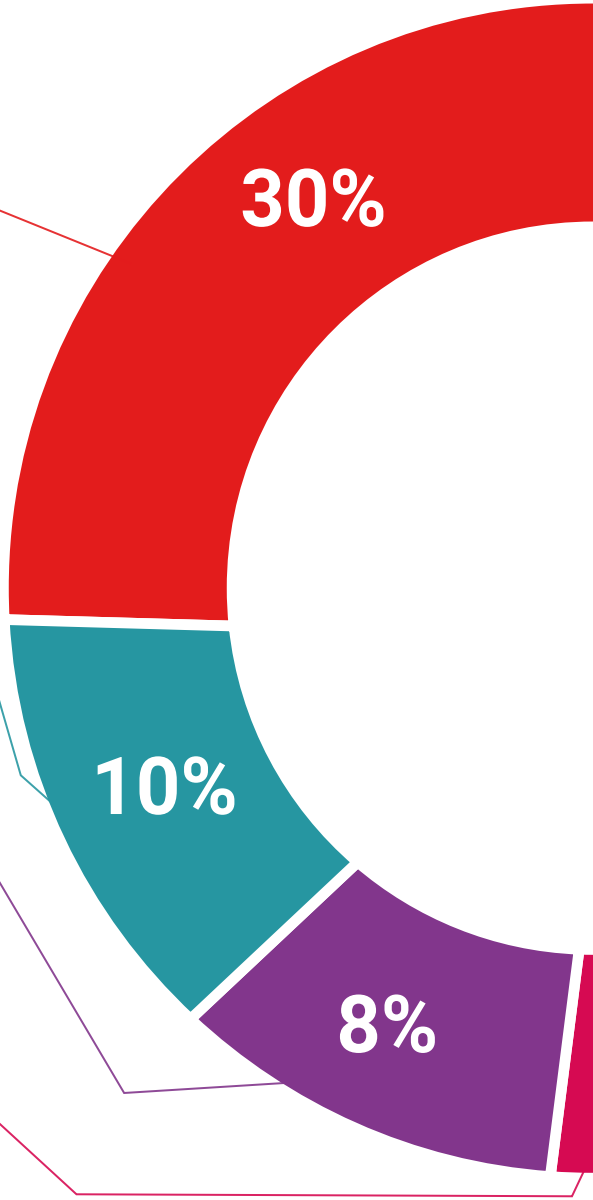
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

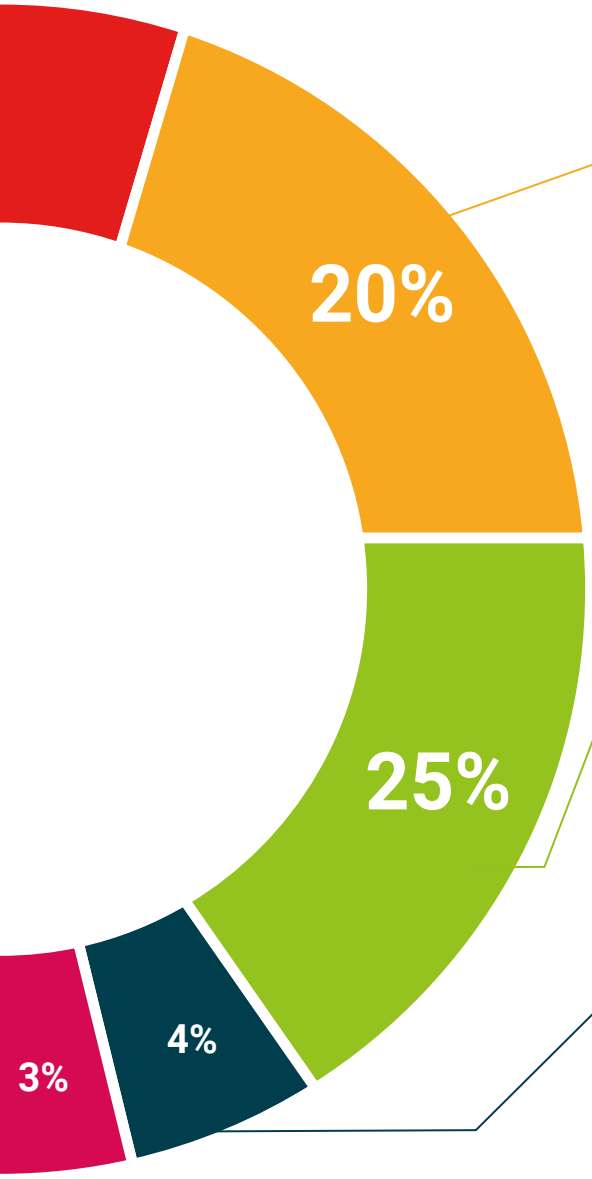
Practising Skills and Abilities

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.

06

Certificate

The Postgraduate Certificate in Deep Neural Network Training in *Deep Learning* 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 Deep Neural Network Training in Deep Learning** 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 Deep Neural Network Training in Deep Learning**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**


tech global university

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

Postgraduate Certificate in Deep Neural Network Training in Deep Learning

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

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

tech global university

Postgraduate Certificate

Deep Neural Network Training in Deep Learning

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

Postgraduate Certificate

Deep Neural Network Training in Deep Learning

tech global university