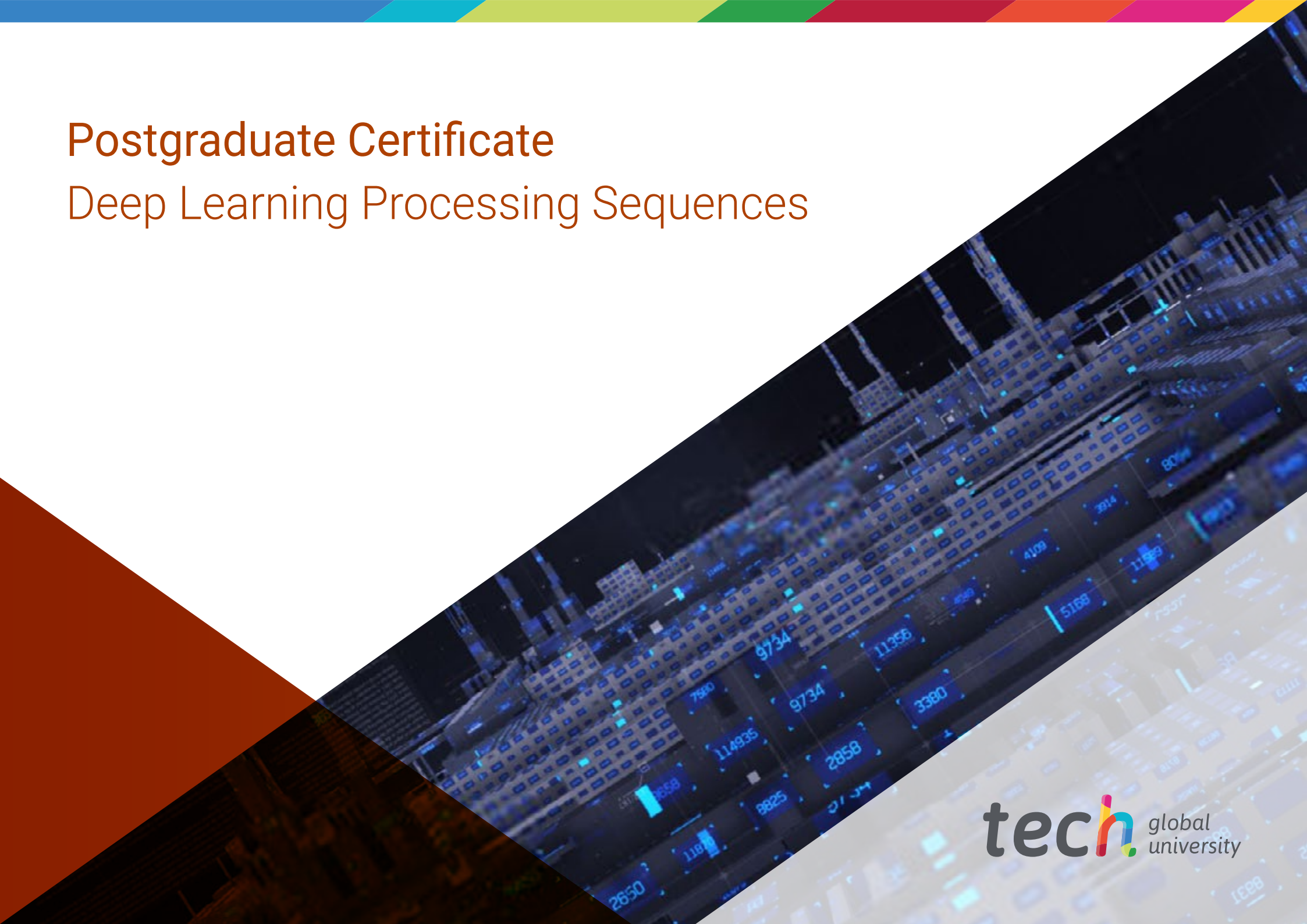
Postgraduate Certificate

Deep Learning Processing Sequences



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Postgraduate Certificate
Deep Learning Processing Sequences

- 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-learning-processing-sequences**

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01

Introduction

Sequence data processing has become an essential skill in a variety of fields, including natural language processing and bioinformatics. With this in mind, TECH's program has been carefully designed to meet the current needs of engineers and the growing demand for skilled professionals in this field. Therefore, this program offers comprehensive teaching in the most advanced Deep Learning techniques, including recurrent neural networks and attention, and how to apply them in different areas. The flexibility of the online format allows students to adapt their study pace to their personal needs and to access theoretical and practical content at any time and from anywhere, without the need to attend classes in person.

Master, through this qualification, the interpretation of the time series analysis results allowing the optimization of component and relationship analysis"

Deep Learning Processing Sequences has acquired great importance in solving complex problems, especially in natural language processing and understanding patterns in temporal data. Therefore, the increasing importance of data sequence processing has led to a greater demand for highly qualified professionals in the area.

For this reason, TECH's Postgraduate Certificate in Deep Learning Processing Sequences provides the opportunity to acquire highly demanded skills and contribute to the solution of complex problems in a variety of fields. In this way, it has been designed to address current market needs and provide students with a multidisciplinary teaching in the processing of data streams through the use of Deep Learning techniques. Students will learn to implement advanced techniques, such as recurrent and convolutional neural networks, to address practical problems.

TECH uses in all its academic programs the effective Relearning methodology, based on the progressive and natural repetition of the fundamental concepts so that the graduate integrates them in an effective way. In this way, students acquire the necessary skills by adjusting their pace of study to their personal life. In addition, the up-to-date and practical contents of the program, in combination with this methodology, guarantee a complete and rigorous didactic experience in the processing of data sequences.

In addition, the program is available in a 100% online format, which allows students to adjust their study pace according to their needs and to access the theoretical and practical contents at any time and place. This way, they will be able to access the theoretical and practical resources from anywhere and at any time, all they need is a device with Internet connection. For all of the above reasons, it is a program that guarantees a flexible learning experience adapted to the individual needs of each student.

This **Postgraduate Certificate in Deep Learning Processing Sequences** 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 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

This Postgraduate Certificate will allow you to learn about statistical models for forecasting, as well as evaluation metrics"

You will learn through a 100% online methodology that will allow you to study without the need to make uncomfortable trips to an academic center"

Combine this excellent learning with your professional and personal duties thanks to the teaching tools that TECH offers.

Throughout this academic program, you will delve into the management of long sequences and you will be able to perform cluster analysis.

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.

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Objectives

The purpose of the Postgraduate Certificate is to provide the graduate with access to the most innovative theoretical, practical and additional content in Deep Learning Processing Sequences, in just 6 weeks. Thanks to the high quality of the syllabus, any professional will be able to reach their highest objectives through this program, which adapts to their needs and is presented in a 100% online, convenient and accessible format.

Learn about Recurrent Neural Network training types and Backpropagation over time with this program"

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

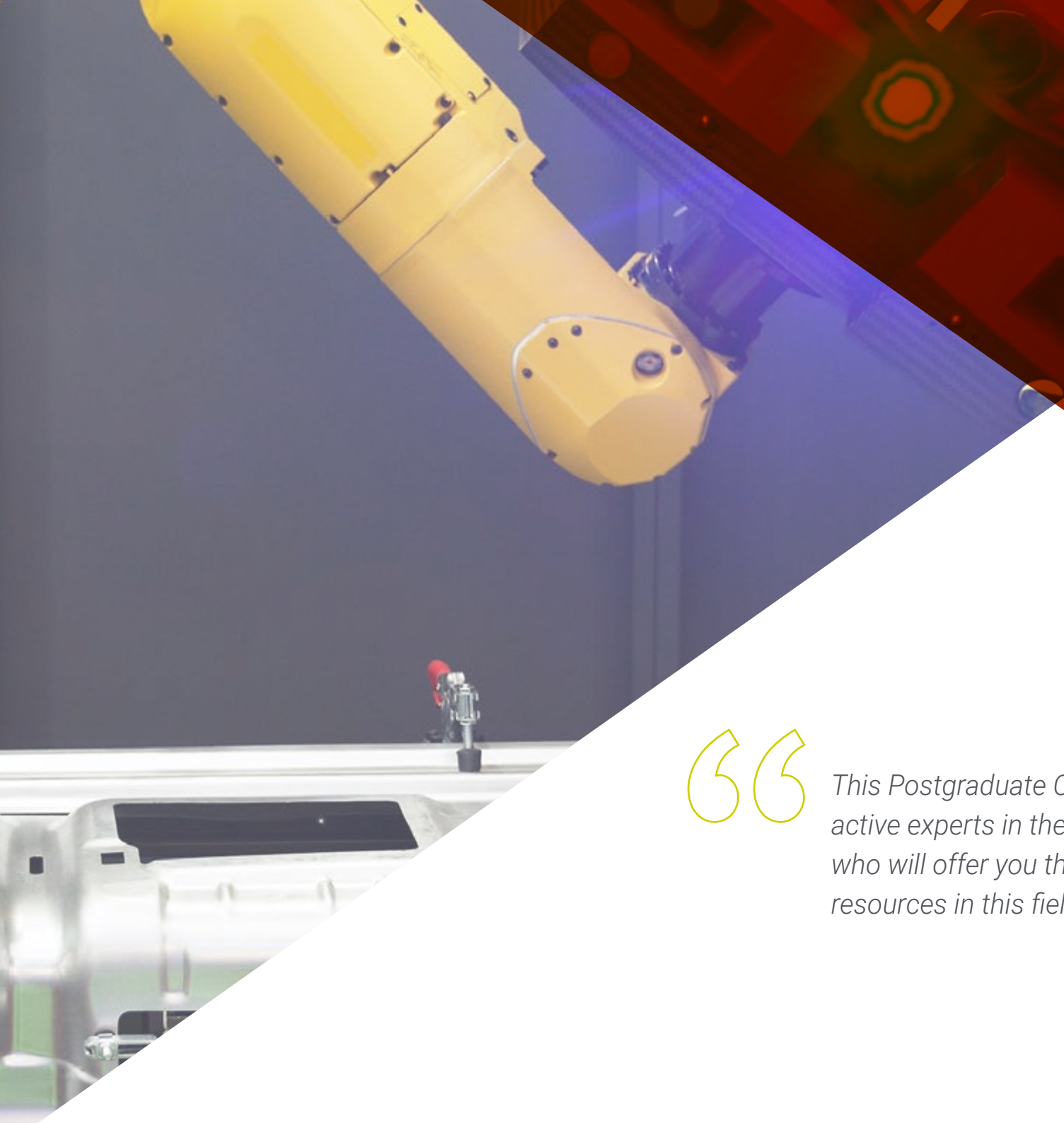
- Analyze the architecture of recurrent neurons and recurrent layers
- Examine the various training algorithms for training RNN models
- Evaluate the performance of RNN models using accuracy and sensitivity metrics

After graduating from this program, you will have in-depth knowledge of the RNN and pre-trained networks"

03

Course Management

The teaching team of the TECH program has been carefully selected to provide a quality education to students. They are highly recognized professionals with extensive experience in the field of Engineering, which allows them to offer a complete and up-to-date vision of the sector. In this way, students will be able to acquire the necessary skills to develop their work activity in a constantly evolving environment and specialize in Deep Learning Processing Sequences.



This Postgraduate Certificate is taught by active experts in the area of Deep Learning, who will offer you the most up-to-date didactic resources in this field"

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

A team of experts in Engineering, particularly in Deep Learning, has been in charge of designing the syllabus for this program. As a result, TECH has created a rigorous and intensive program that covers all the information needed to master this discipline in just 6 weeks of specialization. In addition to the complete syllabus, hours of additional diverse materials have been included so that graduates can work in a personalized manner according to their needs and requirements. All this is presented in a 100% online, convenient and flexible format, compatible with any device with Internet connection.

Improve your Deep Learning skills through the most complete syllabus on the market and achieve the career boost you've been longing for"

Module 1. Processing Sequences using RNNs (Recurrent Neural Networks) and CNNs (Convolutional Neural Networks)

1.1. Recurrent Neurons and Layers
- 1.1.1. Types of Recurrent Neurons
- 1.1.2. Architecture of a Recurrent Layer
- 1.1.3. Applications of Recurrent Layers

1.2. Recurrent Neural Network (RNN) Training
- 1.2.1. Backpropagation Over Time (BPTT)
- 1.2.2. Stochastic Downward Gradient
- 1.2.3. Regularization in RNN Training

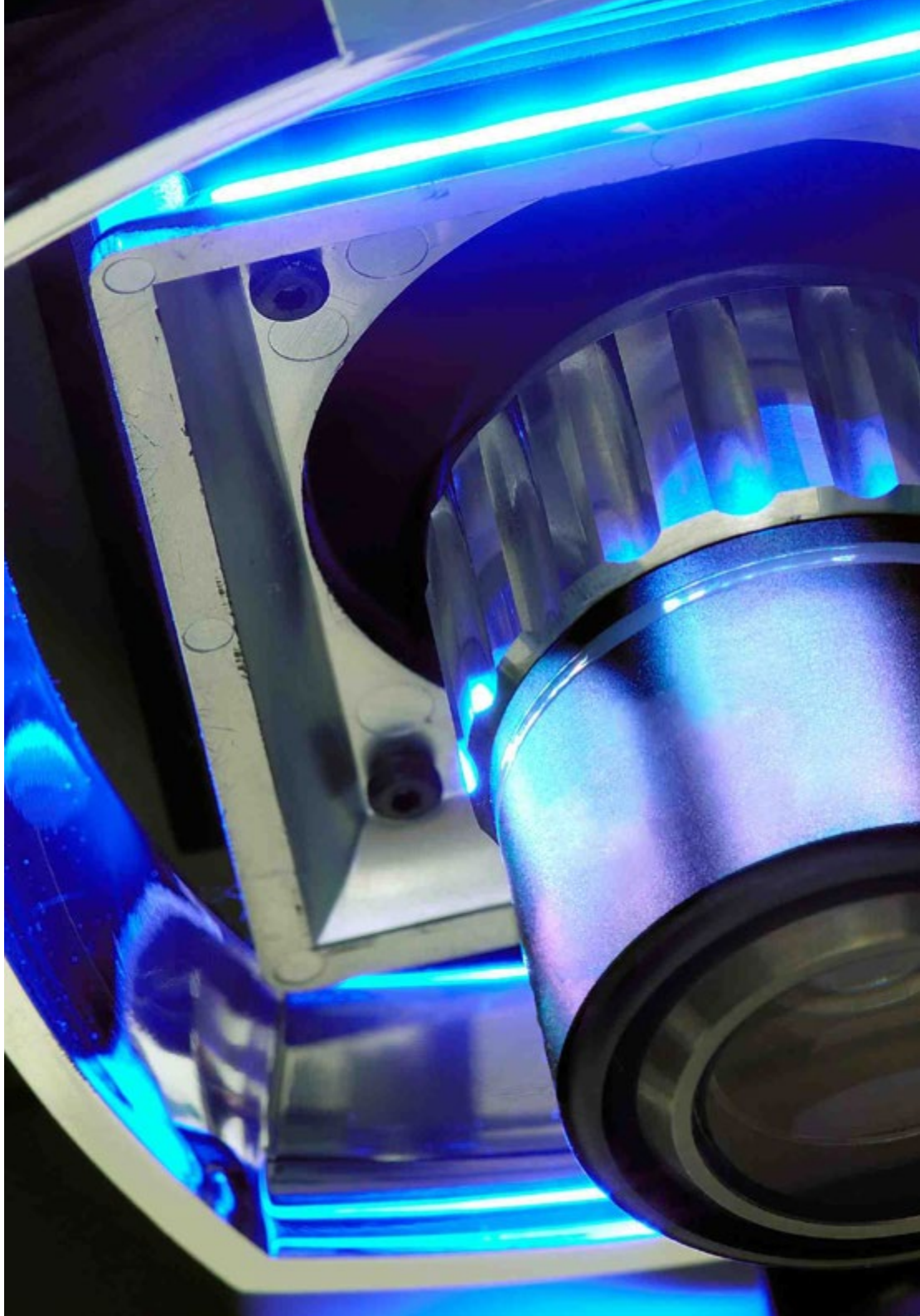
1.3. Evaluation of RNN Models
- 1.3.1. Evaluation Metrics
- 1.3.2. Cross Validation
- 1.3.3. Hyperparameters Adjustment

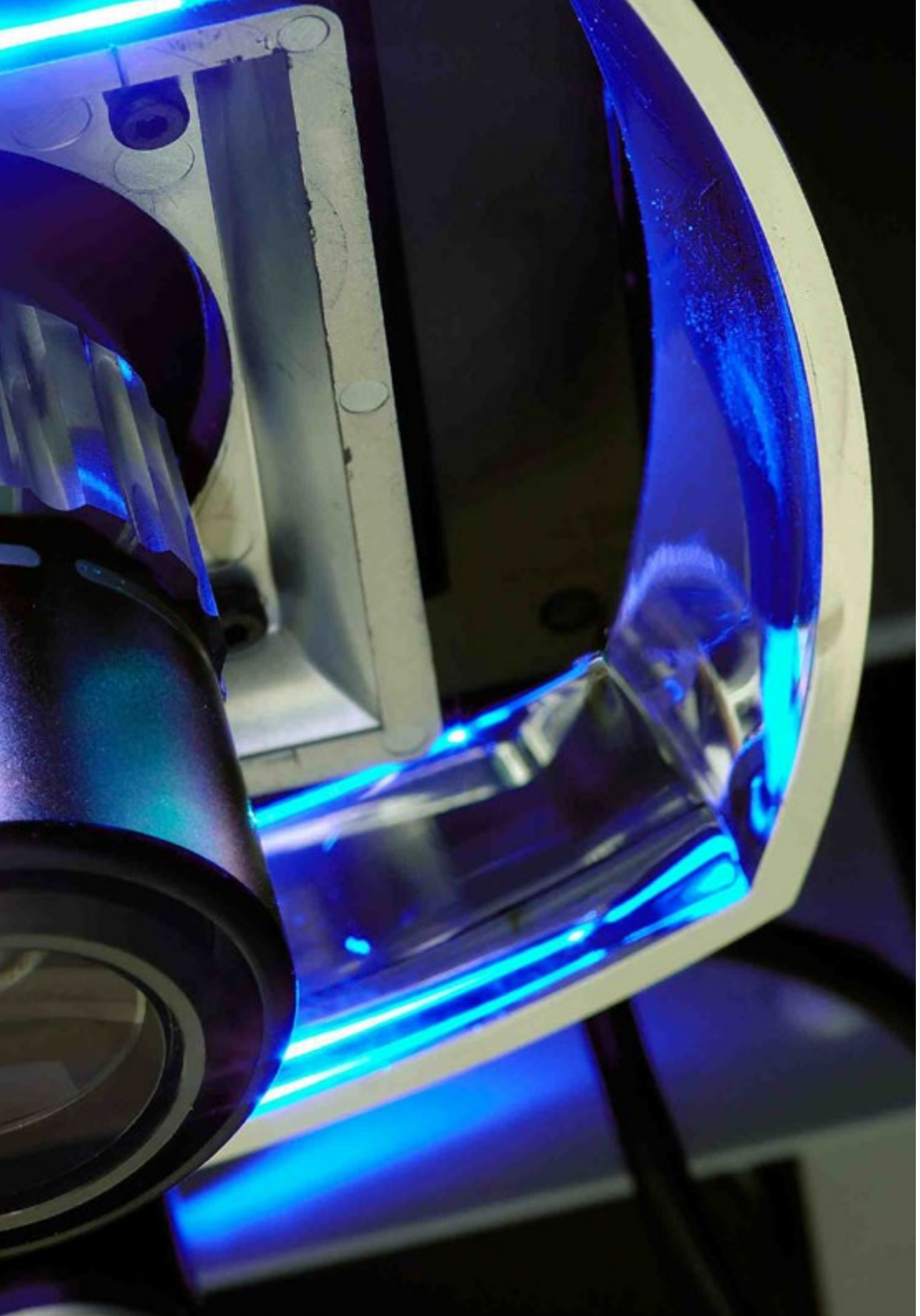
1.4. Prerenal RNNs
- 1.4.1. Prenetrated Networks
- 1.4.2. Transfer of Learning
- 1.4.3. Fine Tuning

1.5. Time Series Forecasting
- 1.5.1. Statistical Models for Forecasting
- 1.5.2. Time Series Models
- 1.5.3. Neural Network-Based Models

1.6. Interpretation of the Time Series Analysis Results
- 1.6.1. Main Component Analysis
- 1.6.2. Cluster Analysis
- 1.6.3. Correlation Analysis

1.7. Management of Long Sequences
- 1.7.1. Long Short-Term Memory (LSTM)
- 1.7.2. Gated Recurrent Units (GRU)
- 1.7.3. 1D Convolutional





1.8. Partial Sequence Learning
- 1.8.1. Deep Learning Methods
- 1.8.2. Generative Models
- 1.8.3. Reinforcement Learning

1.9. Practical Application of RNN and CNN
- 1.9.1. Natural Language Processing
- 1.9.2. Pattern Recognition
- 1.9.3. Computer Vision

1.10. Differences in Classic Results
- 1.10.1. Classic vs. RNN Methods
- 1.10.2. Classic vs. CNN Methods
- 1.10.3. Difference in Training Time
- 1.10.3. AI Scenario: Chat Bot

A Postgraduate Certificate designed by professionals for you to obtain a deep knowledge in Deep Learning Processing Sequences"

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

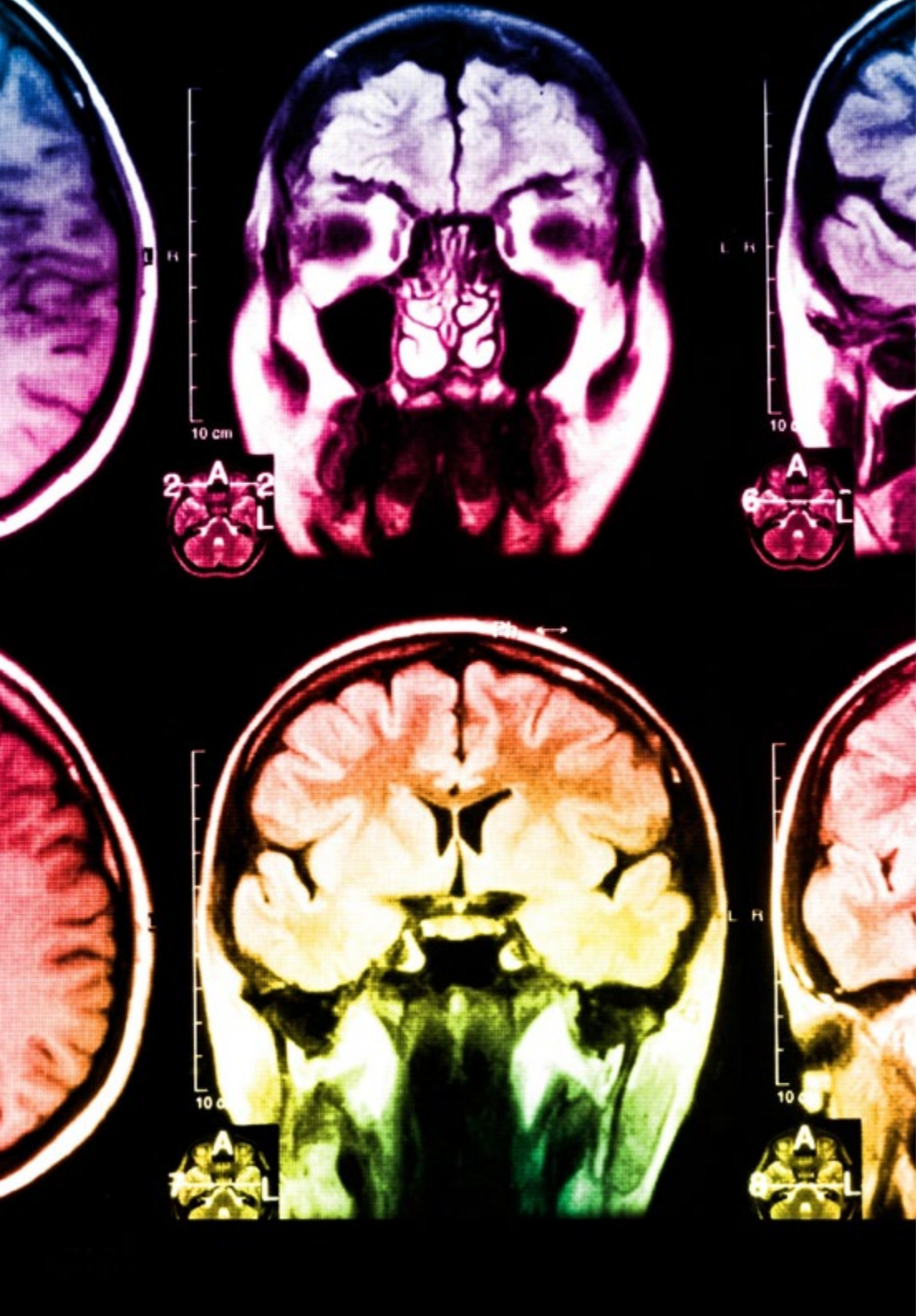
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

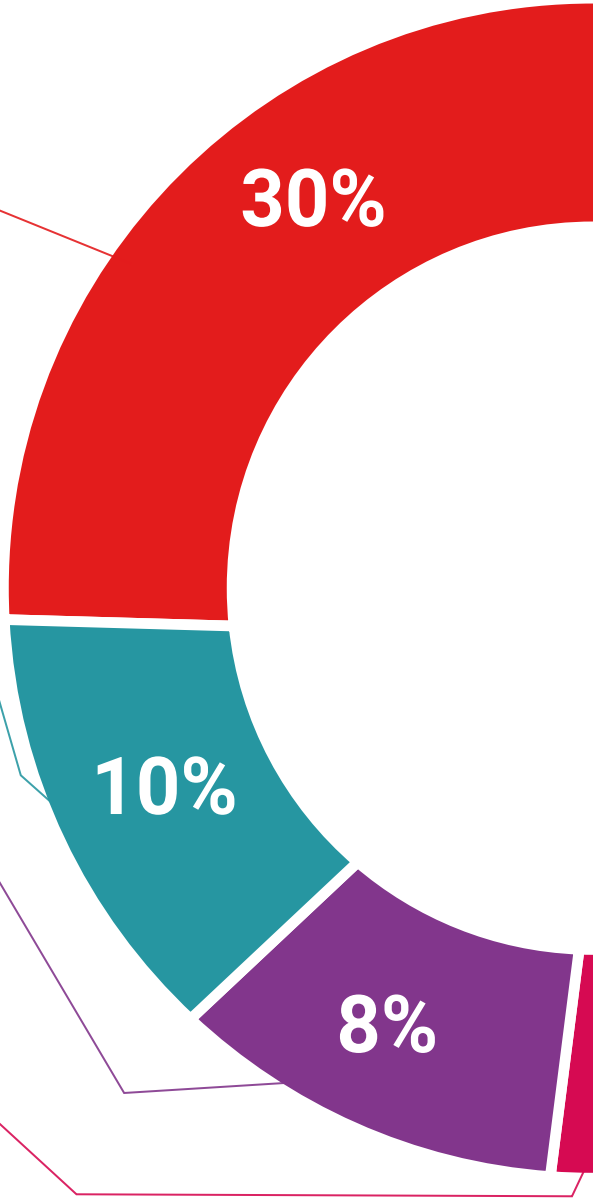
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

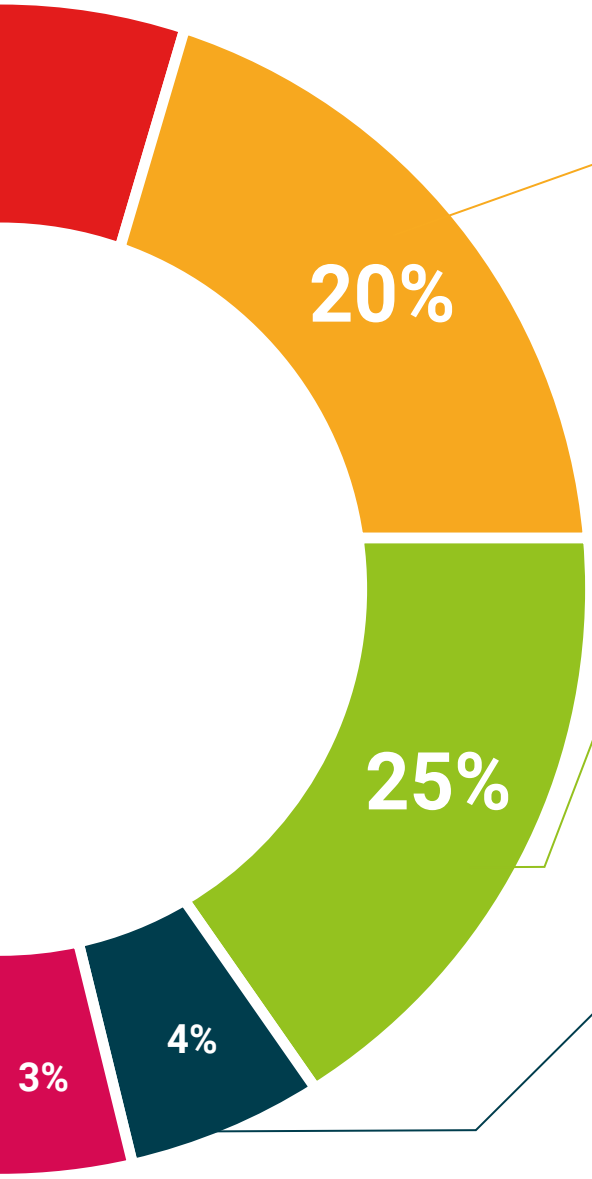
Practising Skills and Abilities

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 Learning Processing Sequences 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 Learning Processing Sequences** 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 Learning Processing Sequences**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**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Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Deep Learning Processing Sequences

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.

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Postgraduate Certificate
Deep Learning Processing Sequences

- Modality: **online**
- Duration: **6 weeks**
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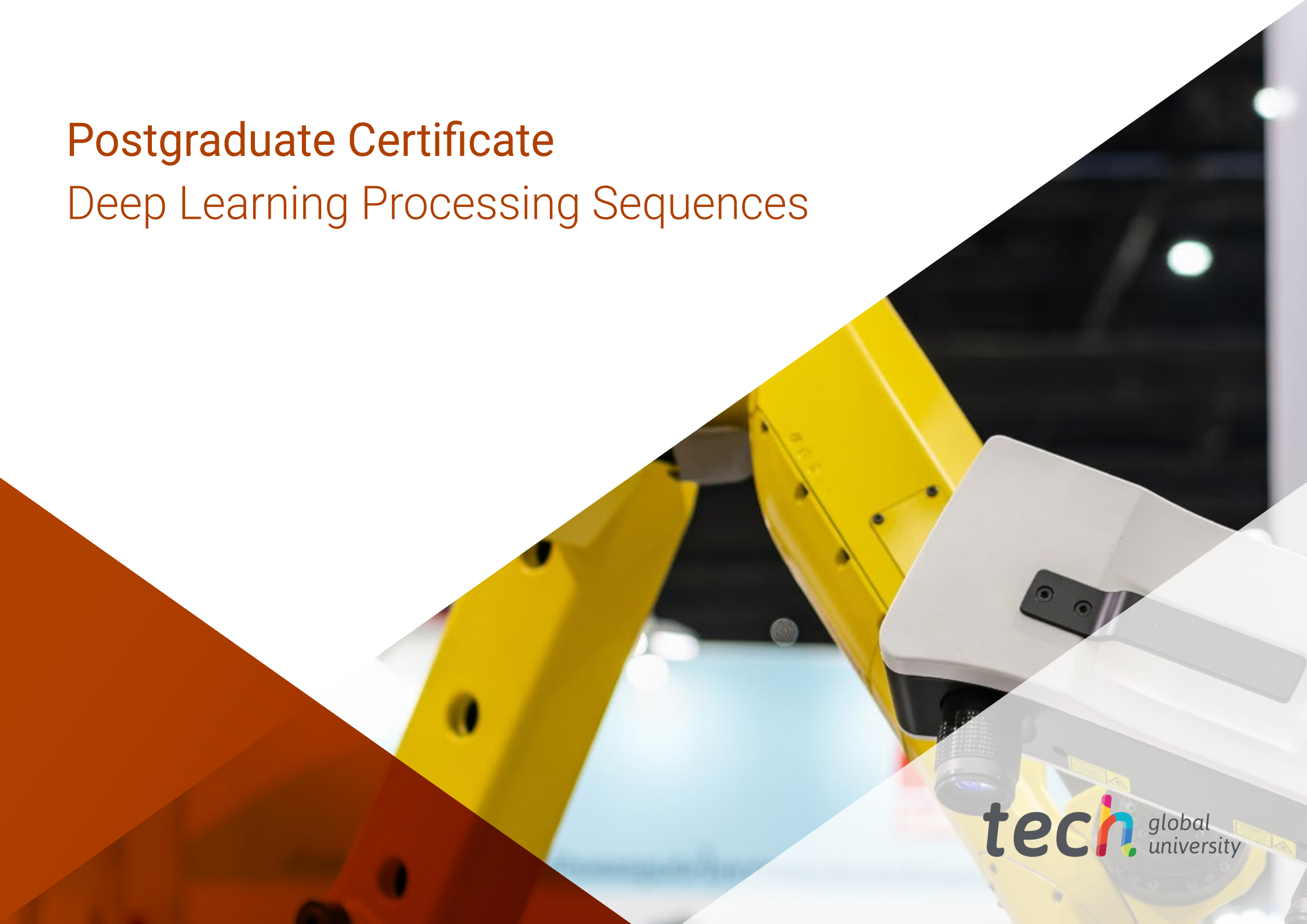
Postgraduate Certificate

Deep Learning Processing Sequences



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