

Postgraduate Certificate

Deep Learning

Processing Sequences



Postgraduate Certificate Deep Learning Processing Sequences

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

Website: www.techtute.com/in/information-technology/postgraduate-certificate/deep-learning-processing-sequences

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01

Introduction

Processing Sequences are a key technique in Deep Learning and are of great importance in solving problems in different fields, such as natural language processing, computer vision and bioinformatics. This technique has proven to be very effective for tasks that require understanding the temporal or spatial structure of the input data. For this reason, TECH has designed a degree that allows students to maximize their knowledge on aspects such as Recurrent Neurons and Layers, Evaluation Metrics, Cluster Analysis and 1D Convolutional, among others. All this, thanks to a 100% online modality and with the most dynamic and practical multimedia materials available in the academic market.





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Acquire new knowledge about Object Tracking Algorithms and Advantages of Pretrained Models, thanks to the best online university in the world according to Forbes"

Processing sequences are a fundamental technique in Deep Learning that has proven to be very effective in solving problems in different fields. These techniques allow neural networks to understand the temporal or spatial structure of the input data, which improves the accuracy of predictions and the quality of solutions.

For this reason, TECH has designed a Postgraduate Certificate in Deep Learning Processing Sequences with which it seeks to provide students with the necessary skills and competencies to be able to perform their work as specialists, with the highest possible efficiency and quality. Therefore, throughout this program, aspects such as Natural Language processing or Generative Models, Principal Component Analysis or Cross Validation will be addressed.

All this, through a convenient 100% online modality that allows students to organize their schedules and studies, combining them with their other work. In addition, this degree has the most complete theoretical and practical materials on the market, which facilitates the student's study process and allows them to achieve their objectives quickly and accurately.

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 Processing Sequences
- ◆ The graphic, schematic and eminently practical contents of the book provide sporting and practical information on those 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
- ◆ The availability of access to content from any fixed or portable device with an Internet connection



Become an expert in Deep Learning in only 6 weeks and with total freedom to organize your schedule, so you can combine your studies with your other occupations"

“

Reach your maximum potential as an expert in Deep Learning Processing Sequences, thanks to TECH and the most innovative materials”

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.

Access all RNN and CNN Practical Application content from your tablet, mobile or computer.

Delve into Partial Sequence Learning and Reinforcement Learning, from the comfort of your home and at any time of the day.



02 Objectives

The purpose of this Postgraduate Certificate in Deep Learning Processing Sequences is that the student acquires a precise update of his knowledge in this area. An acquisition of new skills that will allow the student to work with the highest possible quality and efficiency. All this, thanks to TECH and a 100% online modality that gives total freedom of organization and schedules to the student.



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Delve into all the essentials of Sequence Processing using RNN, from the comfort of your home or work office"



General Objectives

- ◆ Support the key concepts of mathematical functions and their derivatives
- ◆ Apply these principles to deep learning algorithms for machine learning
- ◆ 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
- ◆ Provide a rationale for the key concepts and main applications of deep learning
- ◆ Implementing and optimizing neural networks with Keras
- ◆ Develop expertise in deep neural network training
- ◆ Analyze the optimization and regularization mechanisms required for deep network training





Specific objectives

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

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*Exceed your highest expectations,
thanks to a unique program with the
most complete theoretical and practical
materials on the academic market”*

03

Course Management

In order to provide a degree of the highest quality and usefulness, TECH has selected professionals specialized in Deep Learning as part of this teaching staff, who have been in charge of the design of the most advanced contents. This way, you will learn from the most prestigious experts the keys to your professional development in a field that adapts to new technologies and the latest market advances.



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The most experienced faculty will provide you with the latest advances on Deep Learning Processing Sequences, preparing you to face the current challenges in this area”

Management



D. Gil Contreras, Armando

- ◆ *Lead Big Data Scientist-Big Data* at Jhonson Controls
- ◆ *Data Scientist-Big Data* at Opensistemas
- ◆ Creativity and Technology Fund Auditor and PricewaterhouseCoopers
- ◆ Lecturer at EAE Business School
- ◆ Degree in Economics from the Santo Domingo Technology Institute INTEC
- ◆ Master in Data Science at the University Center of Technology and the Arts
- ◆ Master MBA in International Relations and Business at the Center for Financial Studies CEF
- ◆ Postgraduate in Corporate Finance at the Santo Domingo Institute of Technology

Professors

D. Delgado Panadero, Angel

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

D. Matos, Dionis

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



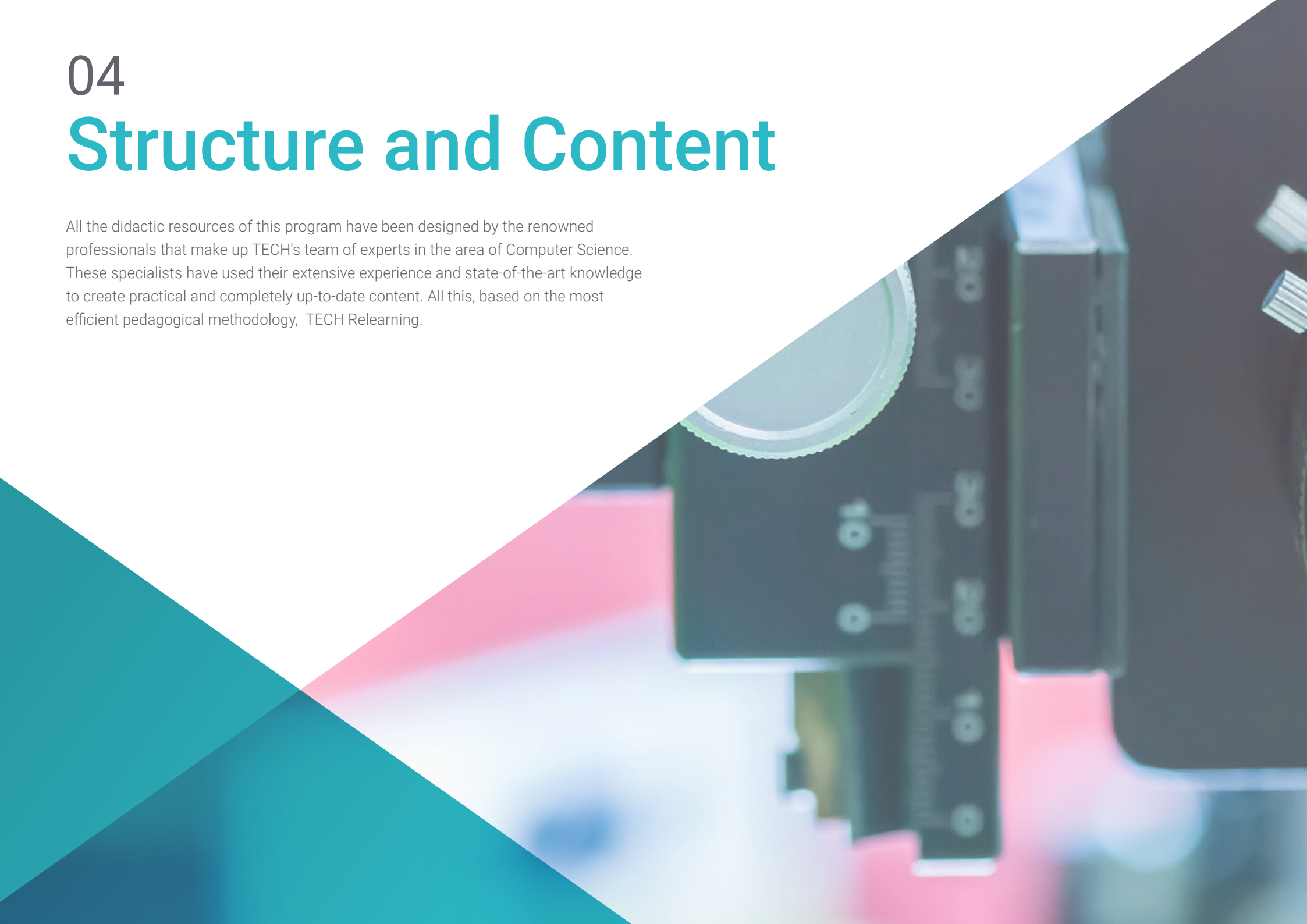
D. Villar Valor, Javier

- ◆ Director and founding partner Impulsa2
- ◆ Chief Operating Officer of Summa Insurance Brokers
- ◆ Responsible for identifying opportunities for improvement at Liberty Insurance
- ◆ Director of Transformation and Professional Excellence at Johnson Controls Iberia
- ◆ Responsible for the organization of Groupama Insurance Company
- ◆ Lean Six Sigma methodology manager at Honeywell
- ◆ Quality and Purchasing Manager at SP & PO
- ◆ Lecturer at the European Business School

04

Structure and Content

All the didactic resources of this program have been designed by the renowned professionals that make up TECH's team of experts in the area of Computer Science. These specialists have used their extensive experience and state-of-the-art knowledge to create practical and completely up-to-date content. All this, based on the most efficient pedagogical methodology, TECH Relearning.



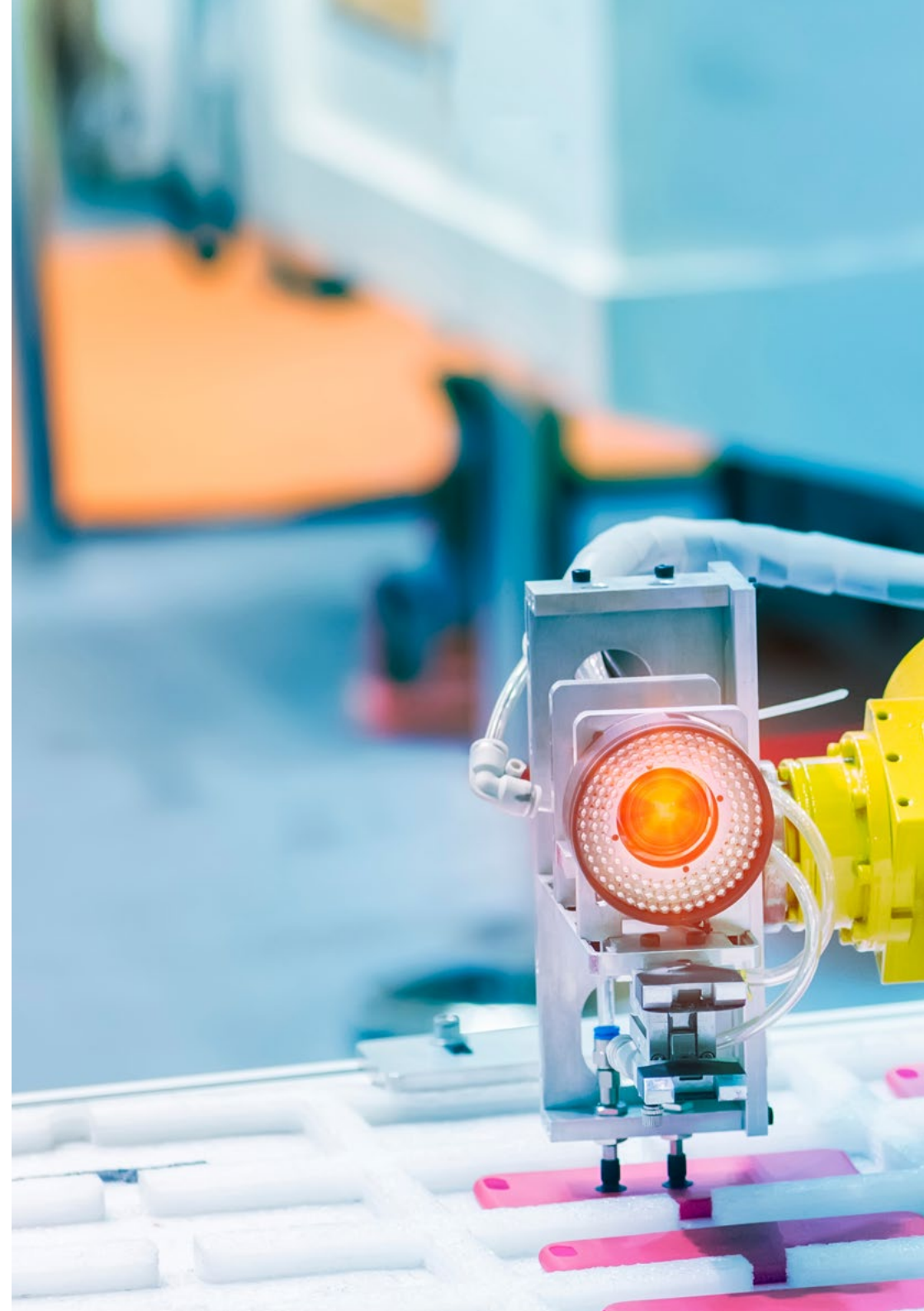


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The most comprehensive and complete view of one of the most important areas of Deep Learning, so you achieve success quickly and accurately”

Module 1. *Processing sequences using RNN (Recurrent Neural Networks) and CNN (Convolutional Neural Networks)*

- 1.1. Neurons and Recurrent Layers
 - 1.1.1. Recurrent Neuron Types
 - 1.1.2. Recurrent Layer Architecture
 - 1.1.3. Recurrent Layer Applications
- 1.2. Training of Recurrent Neural Networks (RNN)
 - 1.2.1. Backpropagation Through Time (BPTT)
 - 1.2.2. Stochastic Downward Gradient
 - 1.2.3. RNN Training Regularization
- 1.3. RNN Model Evaluation
 - 1.3.1. Evaluation Metrics
 - 1.3.2. Cross Validation
 - 1.3.3. Hyperparameter Setting
- 1.4. Pretrained RNNs
 - 1.4.1. Pretrained Networks
 - 1.4.2. Learning Transfer
 - 1.4.3. Fine Tuning
- 1.5. Forecasting a Time Series
 - 1.5.1. Statistical Forecasting Models
 - 1.5.2. Time Series Models
 - 1.5.3. Neural Network Based Models
- 1.6. Interpretation of the Results of Time Series Analysis
 - 1.6.1. Main Component Analysis
 - 1.6.2. Cluster Analysis
 - 1.6.3. Correlation Analysis
- 1.7. Handling 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. Classical vs. RNN Methods
 - 1.10.2. Classical vs. CNN Methods
 - 1.10.3. Difference in Training Time

“*Thanks to the most efficient pedagogical methodology, you will be able to acquire new knowledge in an agile and progressive way, without spending too much time studying*”



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.

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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 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 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 Deep Learning Processing Sequences** contains the most complete and up-to-date program on 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 certificate 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 in Deep Learning Processing Sequences**

Official N° of hours: **150 h.**



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

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education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
development language
virtual classroom

tech technological
university

Postgraduate Certificate

Deep Learning

Processing Sequences

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

Postgraduate Certificate

Deep Learning

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