Postgraduate Certificate

Personalization and Automation in Medical Diagnostics using Artificial Intelligence

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Postgraduate Certificate

Personalization and Automation in Medical Diagnostics using Artificial Intelligence

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

Website: www.techtitute.com/us/medicina/postgraduate-certificate/personalization-automation-medical-diagnostics-artificial-intelligence

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01

Introduction

Personalization and automation in medical diagnosis through Artificial Intelligence is revolutionizing clinical practice, allowing faster and more accurate diagnoses, tailored to the individual characteristics of each patient. Therefore, this program offers a comprehensive update on the latest AI applications, from the automated analysis of medical images, to the generation of reports and personalized predictive models. From case studies and advanced tools, physicians will be able to integrate these technological innovations into their daily clinical practice, optimizing workflow and improving the quality of medical care. This fully online program will provide healthcare personnel the opportunity to update their knowledge in this field, through high quality multimedia content.

A 100% online program, designed with the latest in academic preparation, that will allow you to update your knowledge with a specific focus on Medical Diagnosis using Artificial Intelligence"

Currently, Artificial Intelligence assisted diagnostic system technologies are personalizing treatments by identifying unique patterns in each patient, improving the prediction of diseases such as Cancer or cardiac pathologies. This advance is transforming Precision Medicine and continues to evolve as more genomic and biometric data is integrated into algorithms.

This study plan aims to review the most up-to-date tools in medical diagnosis, such as Viz.ai, which uses advanced algorithms to quickly analyze CT images of patients with suspected strokes, allowing automatic prioritization of the most severe cases. This technology speeds up the decision-making process in real time, which is crucial in situations where every minute counts.

That is why the agenda of the academic program begins with a solid foundation in the theoretical foundations of Artificial Intelligence, where students will analyze the different types of data and the data life cycle. In addition, the critical role that data plays in the development and implementation of AI solutions will be analyzed, offering a holistic view of the process. The theoretical foundations of neural networks and their application in Deep Learning, a key technique in the evolution of modern AI, as well as bio-inspired computing, which mimics natural processes to develop intelligent systems, will also be addressed.

Therefore, the academic itinerary will focus on the implementation of solutions to automate processes and personalize medical diagnoses, as well as on the application of data mining and predictive analytics techniques. Consequently, this will be an exhaustive 100% online program, which will provide the ease of being able to take it comfortably, wherever and whenever graduates wish, as they will only need an electronic device with an Internet connection. It will also be based on the revolutionary Relearning methodology, consisting of the continuous reiteration of key concepts for an optimal and organic assimilation of the contents.

This **Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using Artificial Intelligence** contains the most complete and updated scientific program on the market. Its most notable features are:

- The development of practical cases presented by experts in Artificial Intelligence applied to Diagnostic Imaging
- The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable 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

Master automation techniques in medical diagnosis through Artificial Intelligence thanks to tools such as Viz.ai, which is able to detect diseases through algorithms"

Improve your skills in a flexible and up-to-date environment, in which you will master advanced clinical data processing and mining techniques, integrating technologies such as Natural Language Processing"

Become an expert in the use of machine learning algorithms and neural networks for the analysis of medical data, such as radiology images, thanks to an extensive library of multimedia resources.

Enroll in this program and take advantage of the revolutionary Relearning methodology, which will allow you to master in a practical and efficient way the application of Artificial Intelligence in medical diagnosis.

The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing 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 course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

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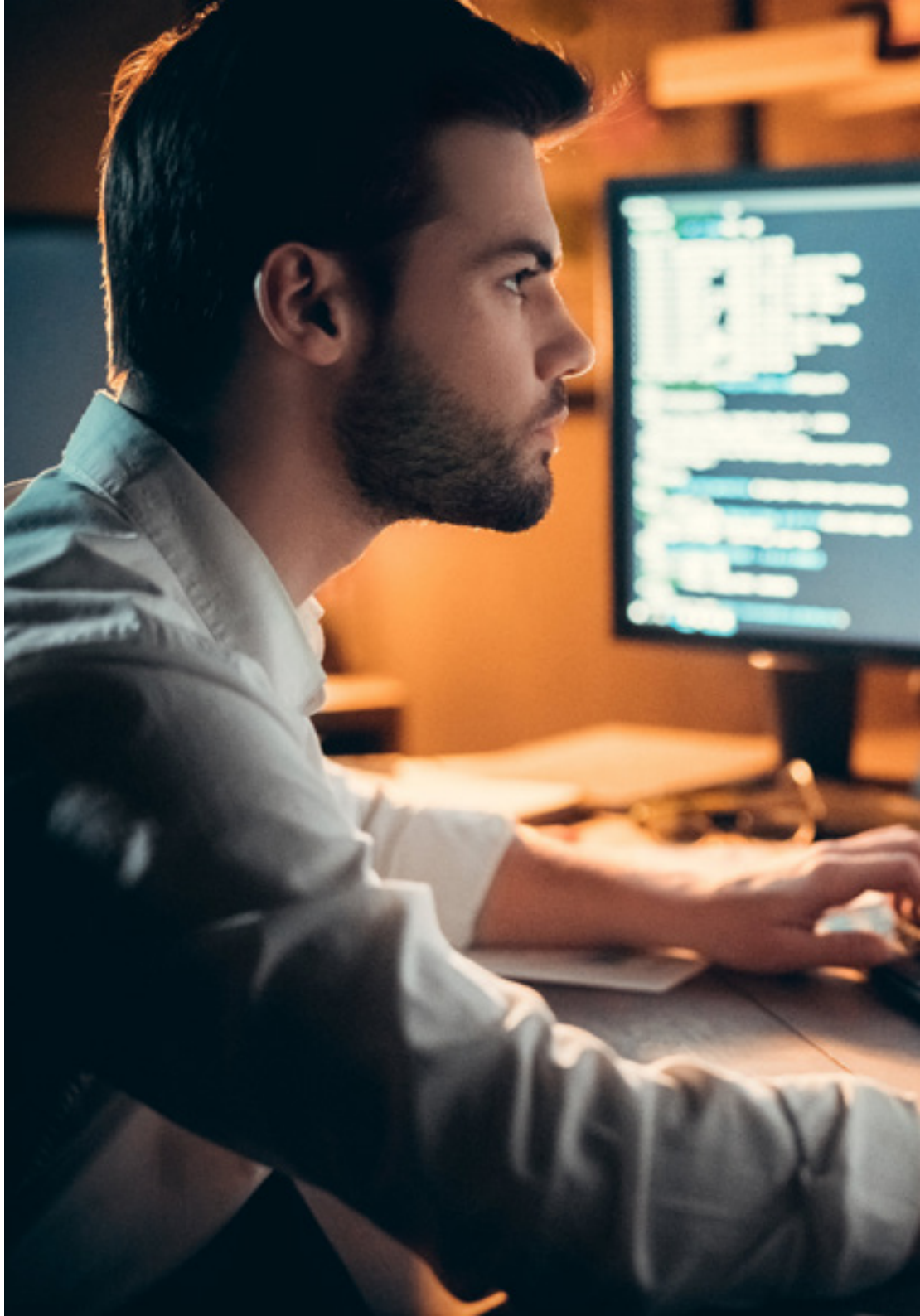
Objectives

The completion of this Postgraduate Certificate will allow physicians to acquire advanced research skills, essential to contribute to the progress of Artificial Intelligence applied to medical imaging. Therefore, through a comprehensive approach, professionals will develop key skills in personalization and automation in medical diagnosis, using AI technologies. In addition, the knowledge acquired will drive graduates from an innovative perspective, with full specialization to integrate automated and personalized solutions in their clinical practice, adapting to the demands of the sector and enhancing the development of an area in constant technological evolution.

You will delve into the personalization of treatments through Artificial Intelligence, analyzing case studies on disease prediction, therapy optimization and the design of predictive models"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data life cycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for Deep Learning development
- Explore bio-inspired computing and its relevance in the development of intelligent systems
- Develop skills to use and apply advanced Artificial Intelligence tools in the interpretation and analysis of medical images, improving diagnostic accuracy
- Implement Artificial Intelligence solutions that allow the automation of processes and the personalization of diagnostics
- Apply Data Mining and Predictive Analytics techniques to make evidence-based clinical decisions
- Acquire research skills that allow experts to contribute to the advancement of Artificial Intelligence in medical imaging



Specific Objectives

- Acquire skills to personalize diagnoses using Artificial Intelligence, correlating imaging findings with genomic and other biomarker data
- Master automation in medical image acquisition and processing, applying advanced Artificial Intelligence technologies

Delve into bio-inspired computing to more quickly predict the existence of diseases in high-risk patients, through the best didactic materials, at the forefront of technology and education"

03

Course Management

Doctors who carry out this university program will have at their disposal a teaching team specialized in medical diagnosis and automation techniques, with extensive experience in leading hospitals. Therefore, the faculty will share in this study plan the methods used for the diagnosis and treatment of diseases, aligned with the latest research in the field. Therefore, the clinical cases provided by these experts will be of great value so that graduates can directly apply this knowledge in their daily clinical practice.

A team specialized in medical diagnosis using Artificial Intelligence tools will provide you with the most commonly used guidelines currently used in the treatment of patients with chronic diseases"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shephers GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- PhD. in Psychology from the University of Castilla La Mancha
- PhD in Economics, Business and Finance from the Camilo José Cela University
- PhD in Psychology from the University of Castilla La Mancha
- Master in Executive MBA from Universidad Isabel I
- Master's Degree in Sales and Marketing Management, Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- Member of: SMILE Research Group

Professors

Mr. Popescu Radu, Daniel Vasile

- Independent Specialist in Pharmacology, Nutrition and Dietetics
- Freelance Producer of Teaching and Scientific Content
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Master's Degree in Nutrition and Health at the Open University of Catalonia
- Master's Degree in Psychopharmacology from the University of Valencia
- Pharmacist from the Complutense University of Madrid
- Nutritionist-Dietitian by the European University Miguel de Cervantes

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

04

Structure and Content

This 6-week Postgraduate Certificate will delve into Personalization and Automation in Medical Diagnosis through the use of Artificial Intelligence. In this way, throughout this specialization, physicians will analyze various disease detection techniques through AI, as well as medical image processing using Butterfly Network. In addition, they will update their knowledge in algorithms for real-time processing of images during medical procedures. All this will be facilitated thanks to the Relearning system, implemented by TECH in all its programs, allowing an assimilation of the contents without the need for long hours of study.

This program will offer you a broad content on Artificial Intelligence models, focusing on the implementation of advanced technological solutions in hospital environments"

Module 1. Personalization and Automation in Medical Diagnostics using Artificial Intelligence

1.1. Application of Artificial Intelligence in Genomic Sequencing and Correlation with Imaging Findings using Fabric Genomics
- 1.1.1. Artificial Intelligence Techniques for the Integration of Genomic and Imaging Data
- 1.1.2. Predictive Models to Correlate Genetic Variants with Pathologies Visible in Images
- 1.1.3. Development of Algorithms for the Automatic Analysis of Sequences and their Representation in Images
- 1.1.4. Case Studies on the Clinical Impact of Genomics-Imaging Fusion

1.2. Advances in Artificial Intelligence for the Detailed Analysis of Biomedical Images with PathAI
- 1.2.1. Innovations in Image Processing and Analysis Techniques at the Cellular Level
- 1.2.2. Application of Artificial Intelligence for Resolution Enhancement in Microscopy Images
- 1.2.3. Deep Learning Algorithms Specialized in the Detection of Submicroscopic Patterns
- 1.2.4. Impact of Advances in Artificial Intelligence on Biomedical Research and Clinical Diagnosis

1.3. Automation in Medical Image Acquisition and Processing with Butterfly Network
- 1.3.1. Automated Systems for the Optimization of Image Acquisition Parameters
- 1.3.2. Artificial Intelligence in the Management and Maintenance of Imaging Equipment
- 1.3.3. Algorithms for Real-Time Processing of Images during Medical Procedures
- 1.3.4. Successful Cases in the Implementation of Automated Systems in Hospitals and Clinics

1.4. Personalization of Diagnoses using Artificial Intelligence and Precision Medicine with Tempus AI
- 1.4.1. Artificial Intelligence Models for Personalized Diagnostics Based on Genetic and Imaging Profiles
- 1.4.2. Strategies for the Integration of Clinical and Imaging Data in Therapeutic Planning
- 1.4.3. Impact of Precision Medicine on Clinical Outcomes Via AI
- 1.4.4. Ethical and Practical Challenges in Implementing Personalized Medicine

1.5. Innovations in AI-Assisted Diagnostics with Caption Health
- 1.5.1. Development of New Artificial Intelligence Tools for the Early Detection of Diseases
- 1.5.2. Advances in Artificial Intelligence Algorithms for the Interpretation of Complex Pathologies
- 1.5.3. Integration of AI-Assisted Diagnostics in Routine Clinical Practice
- 1.5.4. Evaluation of the Effectiveness and Acceptance of Diagnostic Artificial Intelligence by Healthcare Professionals

1.6. Applications of Artificial Intelligence in Microbiome Image Analysis with DayTwo AI
- 1.6.1. Artificial Intelligence Techniques for Image Analysis in Microbiome Studies
- 1.6.2. Correlation of Microbiome Imaging Data with Health Indicators
- 1.6.3. Impact of Microbiome Findings on Therapeutic Decisions
- 1.6.4. Challenges in the Standardization and Validation of Microbiome Imaging

1.7. Use of Wearables to Improve the Interpretation of Diagnostic Images with AliveCor
- 1.7.1. Integration of Wearable Data with Medical Images for Complete Diagnostics
- 1.7.2. AI Algorithms for the Analysis of Continuous Data and its Representation in Images
- 1.7.3. Technological Innovations in Wearable Devices for Health Monitoring
- 1.7.4. Case Studies on Improving Quality of Life Through Wearables and Imaging Diagnostics

1.8. Management of Diagnostic Imaging Data in Clinical Trials using Artificial Intelligence
- 1.8.1. AI Tools for the Efficient Management of Large Volumes of Image Data
- 1.8.2. Strategies to Ensure the Quality and Integrity of Data in Multicenter Studies
- 1.8.3. Artificial Intelligence Applications for Predictive Analytics in Clinical Trials
- 1.8.4. Challenges and Opportunities in the Standardization of Imaging Protocols in Global Trials

1.9. Development of Treatments and Vaccines Assisted by Advanced AI Diagnostics
- 1.9.1. Use of Artificial Intelligence to Design Personalized Treatments Based on Imaging and Clinical Data
- 1.9.2. Artificial Intelligence Models in the Accelerated Development of Vaccines Supported by Diagnostic Imaging
- 1.9.3. Evaluation of the Effectiveness of Treatments by Means of Image Monitoring
- 1.9.4. Impact of Artificial Intelligence in the Reduction of Time and Costs in the Development of New Therapies

1.10. AI Applications in Immunology and Immune Response Studies with ImmunoMind
- 1.10.1. AI Models for the Interpretation of Images Related to the Immune Response
- 1.10.2. Integration of Imaging Data and Immunological Analysis for Accurate Diagnosis
- 1.10.3. Development of Imaging Biomarkers for Autoimmune Diseases
- 1.10.4. Advances in the Personalization of Immunological Treatments through the Use of Artificial Intelligence

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"

At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.

According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

The effectiveness of the method is justified by four fundamental achievements:

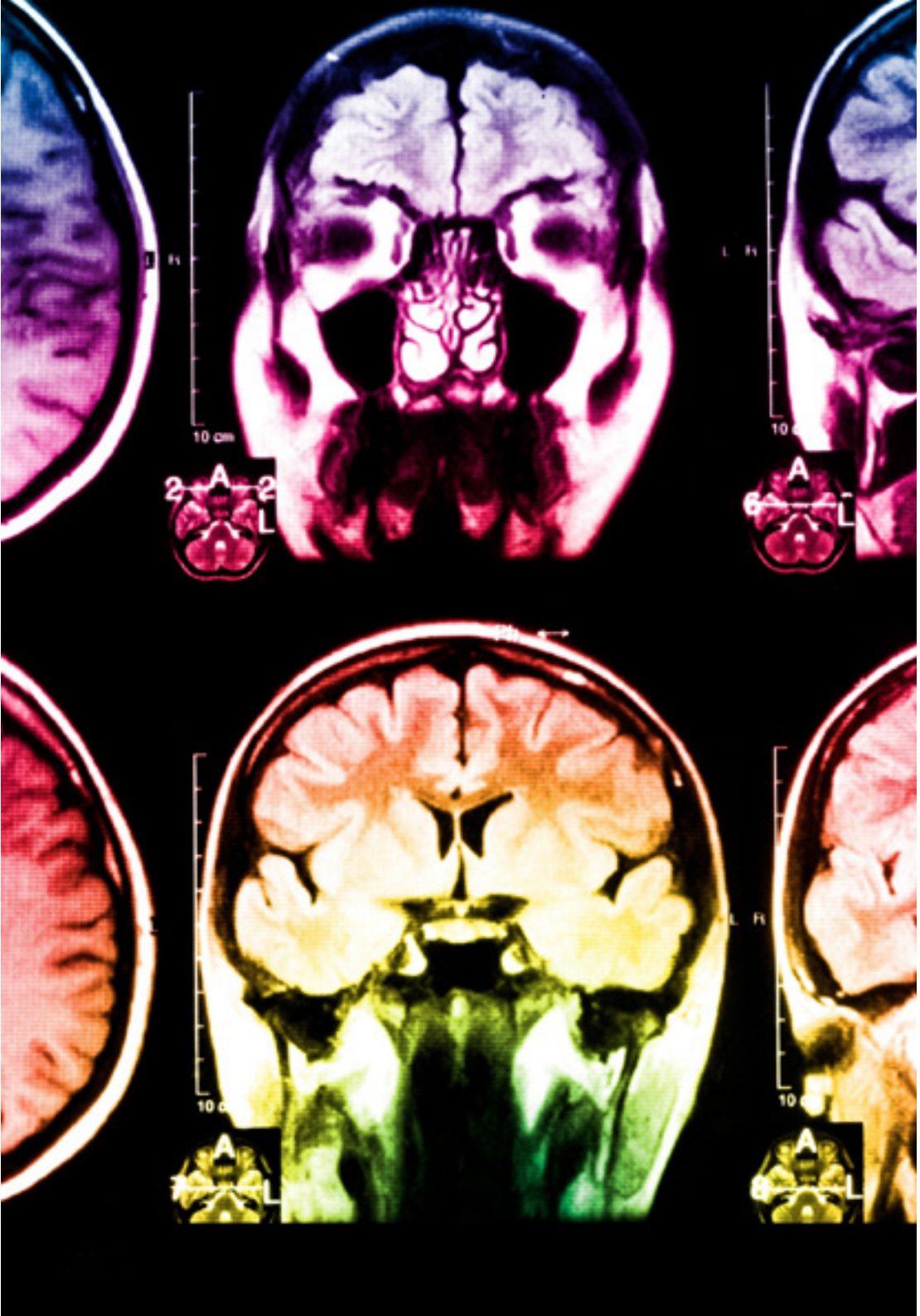
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

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.

Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.

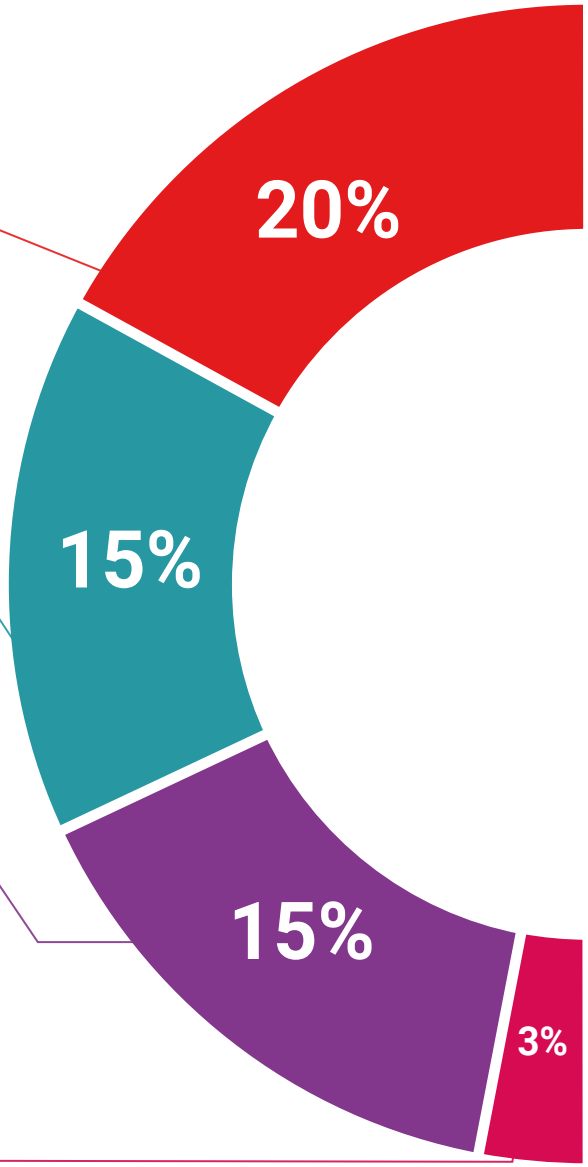
Interactive Summaries

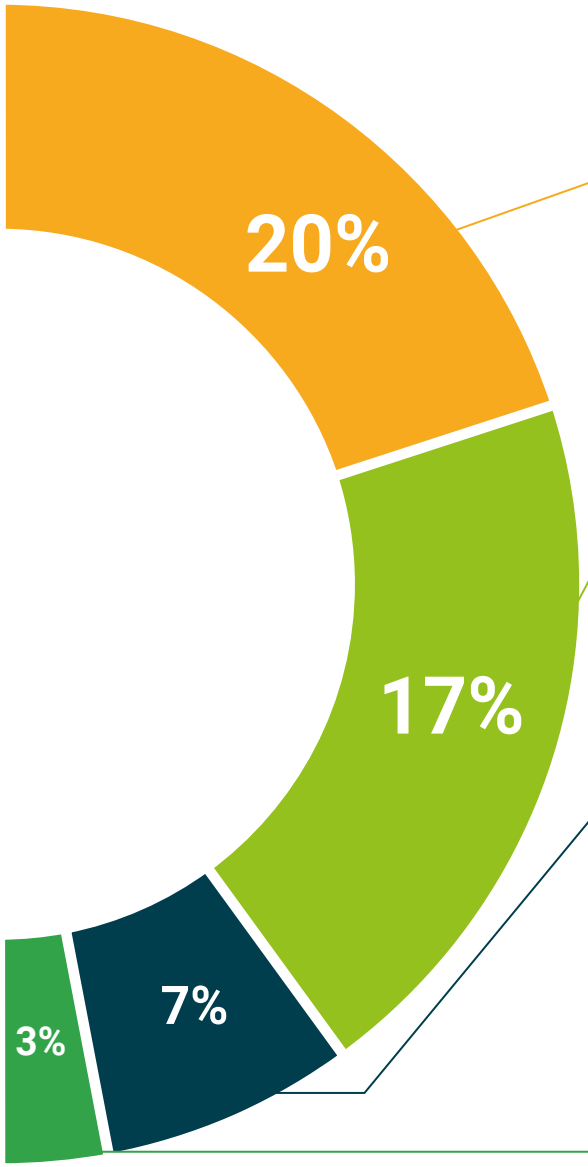
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

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.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

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.

Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

06

Certificate

The Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using Artificial Intelligence 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 private qualification will allow you to obtain a **Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using Artificial Intelligence** 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.

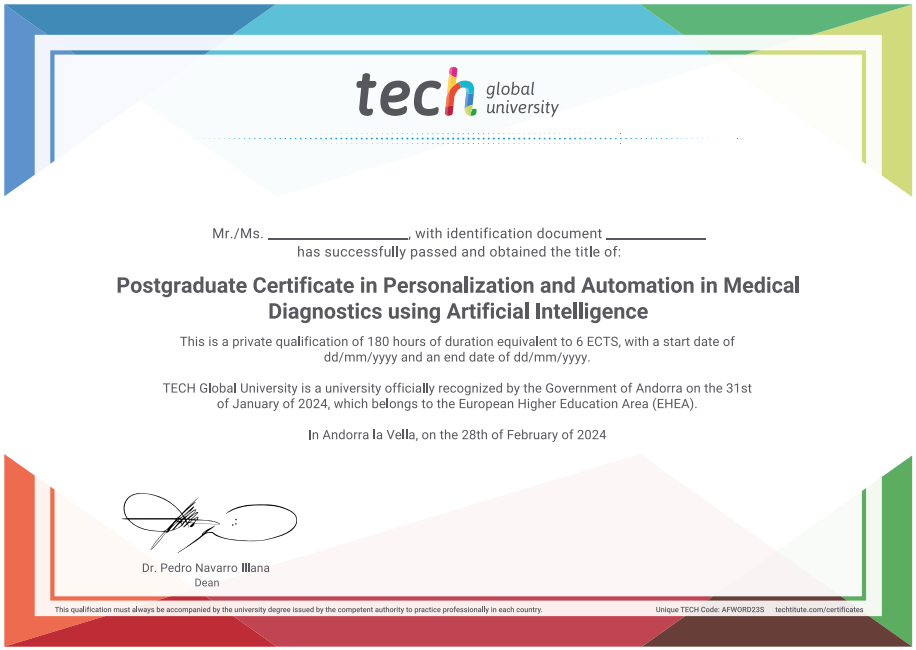
This **TECH Global University private qualification**, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Personalization and Automation in Medical Diagnostics using Artificial Intelligence**

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 Personalization and Automation in Medical Diagnostics using Artificial Intelligence

This is a private qualification 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
Dean

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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