



Postgraduate Diploma Application of Artificial Intelligence Techniques for Machine Translation

» Modality: online

» Duration: 6 months.

» Certificate: TECH Global University

» Accreditation: 18 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/artificial-intelligence/postgraduate-diploma/postgraduate-diploma-application-artificial-intelligence-techniques-machine-translation

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 $\begin{array}{c|c} 01 & 02 \\ \hline & & \text{Objectives} \\ \hline & & & \\ \hline & & \\ \hline & & & \\ \hline & &$

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The application of Artificial Intelligence (AI) techniques in machine translation has advanced significantly in recent years. Tools such as Google Translate and DeepL have improved significantly through the use of deep learning models, which analyze large volumes of multilingual data to provide more accurate and contextual translations. In fact, the machine translation market is estimated to reach \$1.5 billion, driven by the growing demand for multilingual communication in business, tourism and social media. In this context, TECH has created a complete online program that is perfectly suited to the work and personal schedules of graduates, always using the innovative methodology called Relearning.



tech 06 | Introduction

The application of Artificial Intelligence techniques in machine translation has reached new heights thanks to advances in Neural Machine Translation (NMT) models. As the architecture of these models is improved, techniques such as transfer learning and contextual attention are integrated, resulting in higher translation quality and broader support for multiple languages and domains.

This is how this Postgraduate Diploma was created, in which professionals will learn about the different approaches to translation and interpretation, from classical models to those based on Artificial Intelligence, as well as their relevance in natural language processing. In addition, they will acquire the necessary skills to implement advanced techniques to facilitate machine translation and improve the understanding of linguistic nuances.

They will also develop skills to evaluate the quality of the translations generated, using specific metrics and indicators to ensure the accuracy and efficiency of the results. This will not only increase productivity, but will also allow experts to adapt to a dynamic and constantly evolving work environment, where immediacy is crucial.

Finally, students will be able to integrate linguistic resources and databases into these platforms, which will enable them to improve the consistency and quality of their translations. This will not only foster familiarity with current technologies, but will also prepare them to face future challenges in the field of machine translation.

In this way, TECH has developed a comprehensive, fully online program, which only requires an electronic device with an Internet connection to access all educational materials. This eliminates problems such as travel to a physical location and the need to follow a rigid schedule. Additionally, it will be based on the innovative Relearning methodology, focused on the continuous repetition of key concepts to promote optimal assimilation of the contents.

This Postgraduate Diploma in Application of Artificial Intelligence Techniques for Machine Translation 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 Artificial Intelligence applied to Translation and Interpreting
- 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



You will be able to assess the quality of translations in real time and integrate linguistic resources, optimizing your workflow and increasing productivity and consistency in your projects"



You will become familiar with linguistic resources and databases, equipping you to face the challenges of the translation field, using tools that allow them to work more efficiently and effectively"

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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 experts in the field of educational coaching with extensive experience.

You will acquire knowledge of the evolution of linguistic models underpinning translation and interpreting, from classical approaches to innovations based on Artificial Intelligence.





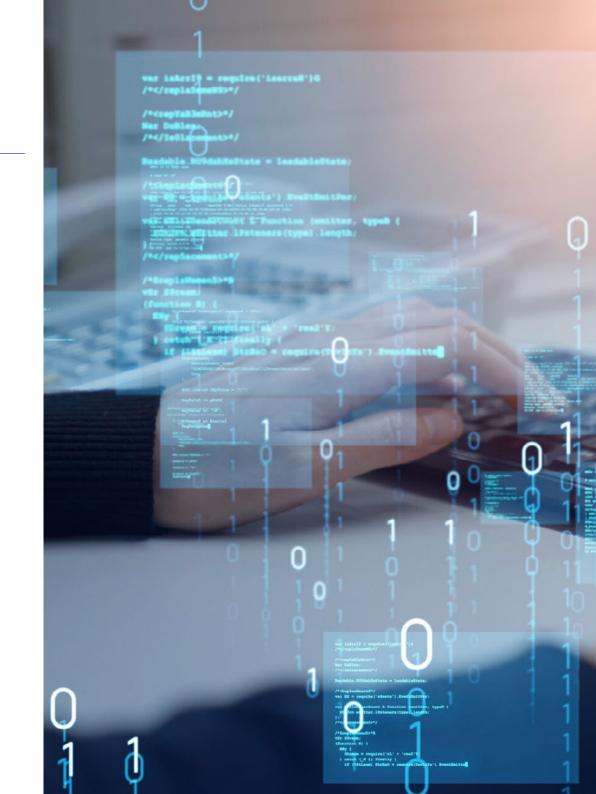


tech 10 | Objectives



General Objectives

- Understand classical and modern linguistic models and their application in Artificial Intelligence
- Acquire skills to use and optimize AI tools in real-time translation, ensuring accuracy and fluency in multilingual contexts
- Become skilled in the use of the main Al-assisted translation platforms and tools, integrating them effectively into the professional workflow
- Learn how to integrate speech recognition technologies into machine interpreting systems, improving accessibility and efficiency
- Design and program multilingual chatbots using AI, enhancing interaction with users in different languages
- Develop criteria and methods for assessing the quality of translations and interpretations performed with AI tools
- Integrate AI tools and platforms into the workflow of translators and interpreters, optimizing productivity and consistency
- Train in identifying and resolving ethical and social challenges related to the use of Artificial Intelligence in translation and interpreting
- Explore and implement innovations in the field of Al-assisted translation and interpretation, anticipating emerging trends
- Equip yourself with the necessary skills to lead projects and teams in the implementation of AI solutions in the field of translation and interpreting





Specific Objectives

Module 1. Linguistic Models and AI Application

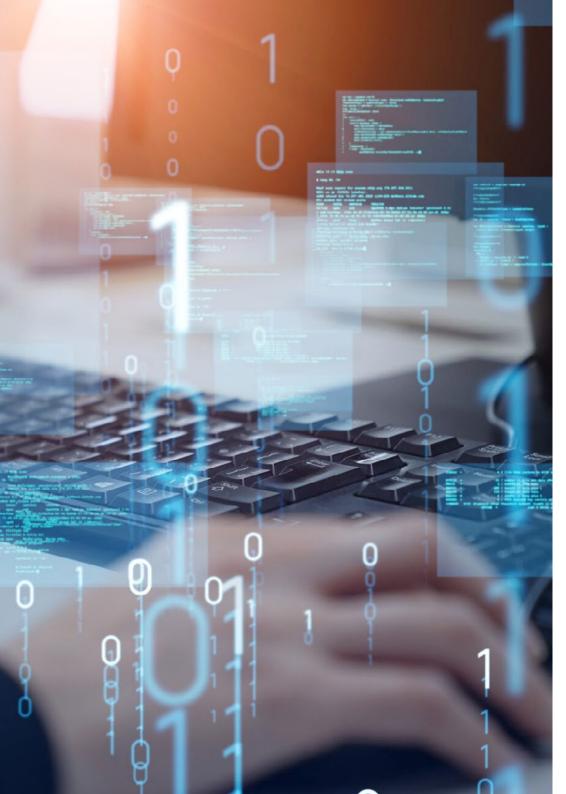
- Acquire a solid knowledge of the different linguistic models, from classical to Al-based, and their relevance in translation and interpreting
- Develop the skills to apply probabilistic, rule-based and deep learning models in Natural Language Processing (NLP) tasks

Module 2. Al and Real-Time Translation

- Learn to handle Al-based real-time translation tools, improving efficiency and accuracy in multilingual communication
- Develop skills to evaluate the quality of real-time translations, using specific metrics and indicators

Module 3. Al-Assisted Translation Tools and Platforms

- Familiarize yourself with the main Al-assisted translation tools and platforms (TAIA) and learn how to integrate them into your professional workflow
- Learn how to integrate linguistic resources and databases into TAIA tools, optimizing translation productivity and consistency







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Management



Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at Al Shepherds 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 University of Castilla La Mancha
- Master's Degree in Executive MBA from the Isabel I University
- 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



Course Management | 15 tech

Professors

Ms. Martínez Cerrato, Yésica

- Responsible for Technical Training at Securitas Seguridad España
- Education, Business and Marketing Specialist
- Product Manager in Electronic Security at Securitas Seguridad España
- Business Intelligence Analyst at Ricopia Technologies
- Computer Technician and Responsible for OTEC computer classrooms at the University of Alcalá de Henares
- Collaborator in the ASALUMA Association
- Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá de Henares

Ms. Del Rey Sánchez, Cristina

- Talent Management Administrative Officer at Securitas Seguridad España, S.L.
- Extracurricular Activities Center Coordinator
- Support classes and pedagogical interventions with Primary and Secondary Education students
- Postgraduate in Development, Delivery and Tutoring of e-Learning Training Actions.
- Postgraduate in Early Childhood Care
- Degree in Pedagogy from the Complutense University of Madrid





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Module 1. Linguistic Models and Al Application

- 1.1. Classical Models of Linguistics and their Relevance to Al
 - 1.1.1. Generative and Transformational Grammar
 - 1.1.2. Structural Linguistic Theory
 - 1.1.3. Formal Grammar Theory
 - 1.1.4. Applications of Classical Models in Al
- 1.2. Probabilistic Models in Linguistics and Their Application in Al
 - 1.2.1. Hidden Markov Models (HMM)
 - 1.2.2. Statistical Language Models
 - 1.2.3. Supervised and Unsupervised Learning Algorithms
 - 1.2.4. Applications in Speech Recognition and Text Processing
- 1.3. Rule-Based Models and Their Implementation in Al. GPT
 - 1.3.1. Formal Grammars and Rule Systems
 - 1.3.2. Knowledge Representation and Computational Logic
 - 1.3.3. Expert Systems and Inference Engines
 - 1.3.4. Applications in Dialog Systems and Virtual Assistants
- 1.4. Deep Learning Models in Linguistics and Their Use in Al
 - 1.4.1. Convolutional Neural Networks for Text Processing
 - 1.4.2. Recurrent Neural Networks and LSTM for Sequence Modeling
 - 1.4.3. Attention Models and Transformers. APERTIUM
 - 1.4.4. Applications in Machine Translation, Text Generation and Sentiment Analysis.
- 1.5. Distributed Language Representations and Their Impact on Al
 - 1.5.1. Word Embeddings and Vector Space Models
 - 1.5.2. Distributed Representations of Sentences and Documents
 - 1.5.3. Bag-of-Words Models and Continuous Language Models
 - 1.5.4. Applications in Information Retrieval, Document Clustering and Content Recommendation



- 1.6. Machine Translation Models and Their Evolution in Al. Lilt
 - 1.6.1. Statistical and Rule-Based Translation Models
 - 1.6.2. Advances in Neural Machine Translation
 - 1.6.3. Hybrid Approaches and Multilingual Models
 - 1.6.4. Applications in Online Translation and Content Localization Services
- 1.7. Sentiment Analysis Models and Their Usefulness in Al
 - 1.7.1. Sentiment Classification Methods
 - 1.7.2. Detection of Emotions in Text
 - 1.7.3. Analysis of User Opinions and Comments
 - 1.7.4. Applications in Social Networks, Analysis of Product Opinions and Customer Service
- 1.8. Language Generation Models and Their Application in Al. TransPerfect Globallink
 - 1.8.1. Autoregressive Text Generation Models
 - 1.8.2. Conditioned and Controlled Text Generation
 - 1.8.3. GPT-Based Natural Language Generation Models
 - 1.8.4. Applications in Automatic Typing, Text Summarization, and Intelligent Conversation
- 1.9. Speech Recognition Models and Their Integration in Al
 - 1.9.1. Audio Feature Extraction Methods
 - 1.9.2. Speech Recognition Models Based on Neural Networks
 - 1.9.3. Improvements in Speech Recognition Accuracy and Robustness
 - 1.9.4. Applications in Virtual Assistants, Transcription Systems and Speechbased Device Control
- 1.10. Challenges and Future of Linguistic Models in Al
 - 1.10.1. Challenges in Natural Language Understanding
 - 1.10.2. Limitations and Biases in Current Linguistic Models
 - 1.10.3. Research and Future Trends in Al Linguistic Modeling
 - 1.10.4. Impact on Future Applications such as General Artificial Intelligence (AGI) and Human Language Understanding. SmartCAt

Module 2. Al and Real-Time Translation

- 2.1. Introduction to Real-Time Translation with Al
 - 2.1.1. Definition and Basic Concepts
 - 2.1.2. Importance and Applications in Different Contexts
 - 2.1.3. Challenges and Opportunities
 - 2.1.4. Tools such as Fluently or Voice Tra
- 2.2. Artificial Intelligence Fundamentals in Translation
 - 2.2.1. Brief Introduction to Artificial Intelligence
 - 2.2.2. Specific Applications in Translation
 - 2.2.3. Relevant Models and Algorithms
- 2.3. Al-Based Real-Time Translation Tools
 - 2.3.1. Description of the Main Tools Available
 - 2.3.2. Comparison of Functionalities and Features
 - 2.3.3. Use Cases and Practical Examples
- 2.4. Neural Machine Translation (NMT) Models. SDL Language Cloud
 - 2.4.1. Principles and Operation of NMT Models
 - 2.4.2. Advantages over Traditional Approaches
 - 2.4.3. Development and Evolution of NMT Models
- 2.5. Natural Language Processing (NLP) in Real-Time Translation. SayHi TRanslate
 - 2.5.1. Basic NLP Concepts Relevant to Translation
 - 2.5.2. Preprocessing and Post-Processing Techniques
 - 2.5.3. Improving the Coherence and Cohesion of the Translated Text
- 2.6. Multilingual and Multimodal Translation Models
 - 2.6.1. Translation Models that Support Multiple Languages
 - 2.6.2. Integration of Modalities such as Text, Speech and Images
 - 2.6.3. Challenges and Considerations in Multilingual and Multimodal Translation
- 2.7. Quality Assessment in Real-Time Translation with Al
 - 2.7.1. Translation Quality Assessment Metrics
 - 2.7.2. Automatic and Human Evaluation Methods. iTranslate Voice
 - 2.7.3. Strategies to Improve Translation Quality

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- 2.8. Integration of Real-Time Translation Tools in Professional Environments
 - 2.8.1. Use of Translation Tools in Daily Work
 - 2.8.2. Integration with Content Management and Localization Systems
 - 2.8.3. Adaptation of Tools to Specific User Needs
- 2.9. Ethical and Social Challenges in Real-Time Translation with Al
 - 2.9.1. Biases and Discrimination in Machine Translation
 - 2.9.2. Privacy and Security of User Data
 - 2.9.3. Impact on Linguistic and Cultural Diversity
- 2.10. Future of Al-Based Real-Time Translation. Applingua
 - 2.10.1. Emerging Trends and Technological Advances
 - 2.10.2. Future Prospects and Potential Innovative Applications
 - 2.10.3. Implications for Global Communication and Language Accessibility

Module 3. Al-Assisted Translation Tools and Platforms

- 3.1. Introduction to Al-Assisted Translation Tools and Platforms
 - 3.1.1. Definition and Basic Concepts
 - 3.1.2. Brief History and Evolution
 - 3.1.3. Importance and Benefits in Professional Translation
- 3.2. Main Al-Assisted Translation Tools
 - 3.2.1. Description and Functionalities of the Leading Tools on the Market
 - 3.2.2. Comparison of Features and Prices
 - 3.2.3. Use Cases and Practical Examples
- 3.3. Professional Al-Assisted Translation Platforms. Wordfast
 - 3.3.1. Description of Popular Al-Assisted Translation Platforms
 - 3.3.2. Specific Functionalities for Translation Teams and Agencies
 - 3.3.3. Integration with Other Project Management Systems and Tools
- 3.4. Machine Translation Models Implemented in Al-Assisted Translation Tools
 - 3.4.1. Statistical Translation Models
 - 3.4.2. Neural Translation Models
 - 3.4.3. Advances in Neural Machine Translation (NMT) and Its Impact on Al-Assisted Translation Tools

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- 3.5. Integration of Linguistic Resources and Databases in Al-Assisted Translation Tools
 - 3.5.1. Using Corpus and Linguistic Databases to Improve Translation Accuracy
 - 3.5.2. Integrating Specialized Dictionaries and Glossaries
 - 3.5.3. Importance of Context and Specific Terminology in Al-Assisted Translation
- 3.6. User Interface and User Experience in Al-Assisted Translation Tools
 - 3.6.1. User Interface Design and Usability
 - 3.6.2. Customization and Preference Settings
 - 3.6.3. Accessibility and Multilingual Support on Al-Assisted Translation Platforms
- 3.7. Quality Assessment in Al-Assisted Translation
 - 3.7.1. Translation Quality Assessment Metrics
 - 3.7.2. Machine vs. Human Evaluation
 - 3.7.3. Strategies to Improve the Quality of Al-Assisted Translation
- B.8. Integration of Al-Assisted Translation Tools into the Translator's Workflow
 - 3.8.1. Incorporation of Al-Assisted Translation Tools into the Translation Process
 - 3.8.2. Optimizing Workflow and Increasing Productivity
 - 3.8.3. Collaboration and Teamwork in Al-Assisted Translation Environments
- 3.9. Ethical and Social Challenges in the Use of Al-Assisted Translation Tools
 - 3.9.1. Biases and Discrimination in Machine Translation
 - 3.9.2. Privacy and Security of User Data
 - 8.9.3. Impact on the Translation Profession and on Linguistic and Cultural Diversity
- 3.10. Future of Al-Assisted Translation Tools and IA. Wordbee
 - 3.10.1. Emerging Trends and Technological Developments
 - 3.10.2. Future Prospects and Potential Innovative Applications
 - 3.10.3. Implications for Training and Professional Development in the Field of Translation



You will gain a comprehensive and up-todate vision that will enable you to develop innovative solutions to improve professional development and job satisfaction"





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Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.



At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"



You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.



The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.



Our program prepares you to face new challenges in uncertain environments and achieve success in your career"

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.



Relearning Methodology

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

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



Methodology | 27 tech

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.



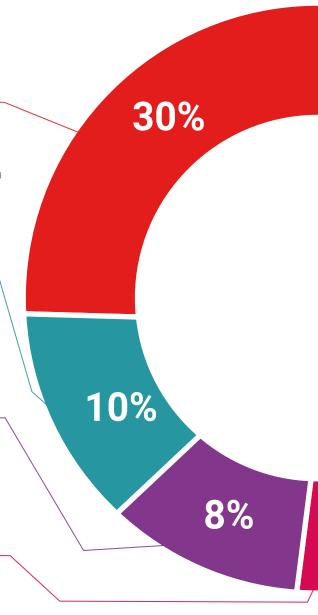
Practising Skills and Abilities

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.





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.

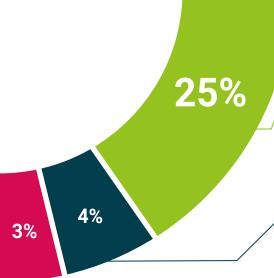


This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

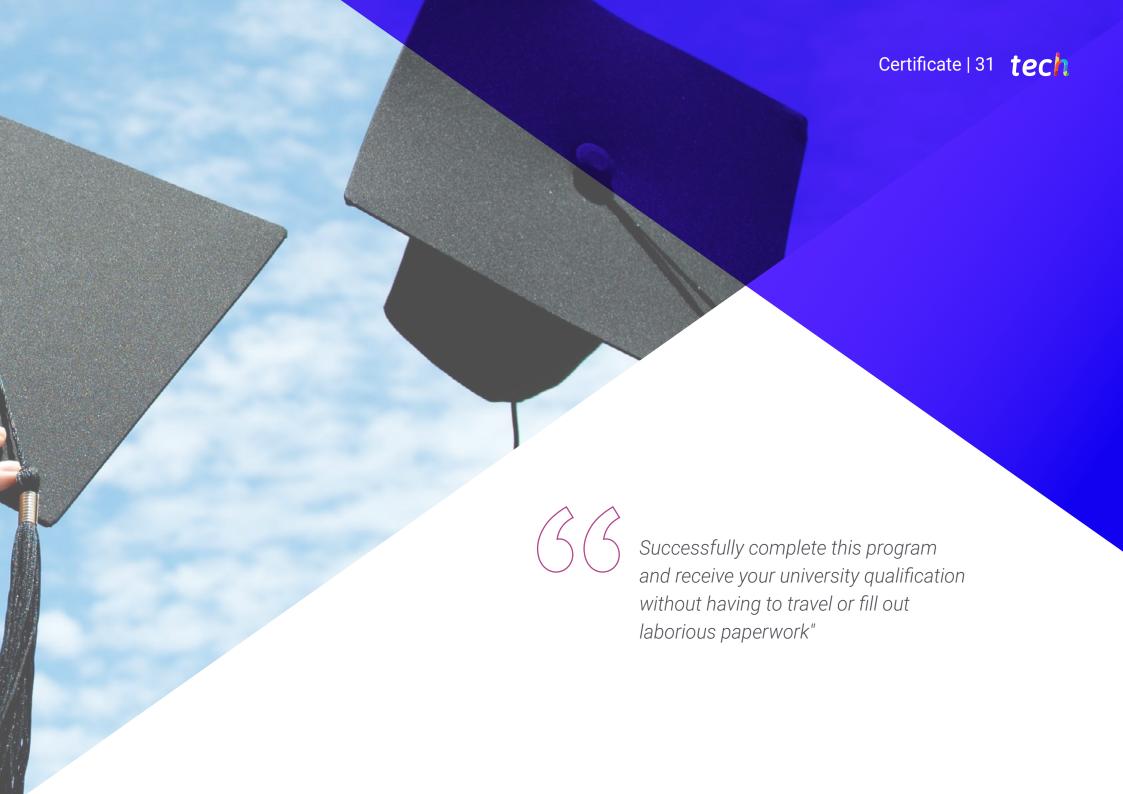
We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.





20%





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This private qualification will allow you to obtain a **Postgraduate Diploma in Application of Artificial Intelligence Techniques for Machine Translation** 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 Diploma in Application of Artificial Intelligence Techniques for Machine Translation

Modality: online

Duration: 6 months

Accreditation: 18 ECTS



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

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