Professional Master's Degree
Artificial Intelligence in Cybersecurity

TECH is a member of:

tech global university

Professional Master's Degree
Artificial Intelligence in Cybersecurity

- » Modality: **online**
- » Duration: **12 months**
- » Certificate: **TECH Global University**
- » Accreditation: **90 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/information-technology/professional-master-degree/master-artificial-intelligence-cybersecurity**

Index

01
Introduction

Artificial Intelligence applied to Cybersecurity is a sector in full expansion due to the increase in digital threats and the need for proactive and effective responses. In this field, intelligent systems not only allow automating repetitive processes, but also analyze large volumes of data to identify anomalous patterns, anticipate attacks and strengthen protection systems. For this reason, TECH has developed a comprehensive university program that prepares computer scientists to face the current challenges in Cybersecurity, offering them the necessary tools to anticipate future threats, leading technological initiatives and ensuring the protection of critical infrastructures at a global level. All this, through a 100% online academic itinerary taught by the best experts in the sector.

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> With this innovative 100% online university program, you will master the most advanced techniques of modern cryptography, and design robust protection systems to ensure the privacy and authenticity of data"

Artificial Intelligence and Cybersecurity are two fundamental pillars in the digital era. While the former focuses on the development of systems capable of simulating human cognitive processes, Cybersecurity is responsible for protecting computer systems and data from malicious attacks. The combination of both disciplines makes it possible to create advanced solutions that not only detect and mitigate threats in real time, but also anticipate potential vulnerabilities, thus ensuring a safer digital environment. This context drives the need for highly qualified professionals who master both the fundamentals of Artificial Intelligence and its specific applications in cyber defense.

From these demands arises the Professional Master's Degree in Artificial Intelligence in Cybersecurity of TECH, a program structured in 20 comprehensive modules that address from the fundamentals of Artificial Intelligence and data management to deep learning, convolutional neural networks and the application of generative models in Cybersecurity. It also delves into threat detection, digital forensics and modern cryptography, using tools such as TensorFlow and advanced Artificial Intelligence models to meet the challenges of a constantly evolving digital environment. Therefore, this academic path enables computer scientists to anticipate emerging threats and lead security strategies in complex environments.

Regarding the methodology of this university program, TECH offers a 100% online environment that allows professionals to individually plan their schedules and pace of study. In addition, it uses its disruptive Relearning system, which facilitates the progressive assimilation of key concepts through contextualized reiteration and active learning. Along the same lines, graduates will only need an electronic device with an Internet connection to access the Virtual Campus. There they will be able to access a vast library of multimedia resources, such as interactive summaries, explanatory videos or specialized readings based on the latest evidence.

This **Professional Master's Degree in Artificial Intelligence in Cybersecurity** 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, Cybersecurity and advanced technologies
- 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

You will delve into how Artificial Intelligence transforms Cybersecurity with tools such as Neural Networks and generative models applied to threat detection and prevention"

" *You will optimize your strategic decision making through predictive analytics and the use of advanced models in cyber attack management"*

You will have at your disposal the most cutting-edge multimedia resources, from interactive overviews to explanatory videos and specialized readings.

You'll lead projects in key sectors, such as infrastructure protection and management of connected Internet of Things systems.

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 experts.

02
Syllabus

The syllabus of this Professional Master's Degree addresses both the fundamentals of Artificial Intelligence and its specific applications in the field of Cybersecurity. Throughout this academic course, computer scientists will delve into key topics such as algorithms, data mining and natural language processing. They will also delve into advanced neural networks and intelligent systems applied to forensic analysis, as well as intrusion detection and proactive defense, which will allow them to acquire the necessary tools to develop innovative solutions to digital threats.

With the Relearning methodology, of which TECH is a pioneer, you will specialize in the use of Bio-inspired Systems and Deep Learning to address complex problems in digital protection"

Module 1. Fundamentals of Artificial Intelligence

1.1.   History of Artificial Intelligence
    1.1.1.   When Do We Start Talking About Artificial Intelligence?
    1.1.2.   References in Film
    1.1.3.   Importance of Artificial Intelligence
    1.1.4.   Technologies that Enable and Support Artificial Intelligence
1.2.   Artificial Intelligence in Games
    1.2.1.   Game Theory
    1.2.2.   Minimax and Alpha-Beta Pruning
    1.2.3.   Simulation: Monte Carlo
1.3.   Neural Networks
    1.3.1.   Biological Fundamentals
    1.3.2.   Computational Model
    1.3.3.   Supervised and Unsupervised Neural Networks
    1.3.4.   Simple Perceptron
    1.3.5.   Multilayer Perceptron
1.4.   Genetic Algorithms
    1.4.1.   History
    1.4.2.   Biological Basis
    1.4.3.   Problem Coding
    1.4.4.   Generation of the Initial Population
    1.4.5.   Main Algorithm and Genetic Operators
    1.4.6.   Evaluation of Individuals: Fitness
1.5.   Thesauri, Vocabularies, Taxonomies
    1.5.1.   Vocabulary
    1.5.2.   Taxonomy
    1.5.3.   Thesauri
    1.5.4.   Ontologies
    1.5.5.   Knowledge Representation: Semantic Web
1.6.   Semantic Web
    1.6.1.   Specifications: RDF, RDFS and OWL
    1.6.2.   Inference/ Reasoning
    1.6.3.   *Linked Data*

1.7.   Expert Systems and DSS
    1.7.1.   Expert Systems
    1.7.2.   Decision Support Systems
1.8.   Chatbots and Virtual Assistants
    1.8.1.   Types of Assistants: Voice and Text Assistants
    1.8.2.   Fundamental Parts for the Development of an Assistant: Intents, Entities and Dialog Flow
    1.8.3.   Integrations: Web, Slack, Whatsapp, Facebook
    1.8.4.   Assistant Development Tools: *Dialog Flow, Watson Assistant*
1.9.   AI Implementation Strategy
1.10.   Future of Artificial Intelligence
    1.10.1.   Understand How to Detect Emotions Using Algorithms
    1.10.2.   Creating a Personality: Language, Expressions and Content
    1.10.3.   Trends of Artificial Intelligence
    1.10.4.   Reflections

Module 2. Data Types and Life Cycle

2.1.   Statistics
    2.1.1.   Statistics: Descriptive Statistics, Statistical Inferences
    2.1.2.   Population, Sample, Individual
    2.1.3.   Variables: Definition, Measurement Scales
2.2.   Types of Data Statistics
    2.2.1.   According to Type
        2.2.1.1. Quantitative: Continuous Data and Discrete Data
        2.2.1.2. Qualitative: Binomial Data, Nominal Data and Ordinal Data
    2.2.2.   According to Its Shape
        2.2.2.1. Numeric
        2.2.2.2. Text
        2.2.2.3. Logical
    2.2.3.   According to Its Source
        2.2.3.1. Primary
        2.2.3.2. Secondary

2.3. Life Cycle of Data
    2.3.1. Stages of the Cycle
    2.3.2. Milestones of the Cycle
    2.3.3. FAIR Principles
2.4. Initial Stages of the Cycle
    2.4.1. Definition of Goals
    2.4.2. Determination of Resource Requirements
    2.4.3. Gantt Chart
    2.4.4. Data Structure
2.5. Data Collection
    2.5.1. Methodology of Data Collection
    2.5.2. Data Collection Tools
    2.5.3. Data Collection Channels
2.6. Data Cleaning
    2.6.1. Phases of Data Cleansing
    2.6.2. Data Quality
    2.6.3. Data Manipulation (with R)
2.7. Data Analysis, Interpretation and Evaluation of Results
    2.7.1. Statistical Measures
    2.7.2. Relationship Indexes
    2.7.3. Data Mining
2.8. Datawarehouse
    2.8.1. Elements that Comprise It
    2.8.2. Design
    2.8.3. Aspects to Consider
2.9. Data Availability
    2.9.1. Access
    2.9.2. Uses
    2.9.3. Security
2.10. Regulatory Framework
    2.10.1. Data Protection Law
    2.10.2. Good Practices
    2.10.3. Other Regulatory Aspects

Module 3. Data in Artificial Intelligence

3.1. Data Science
    3.1.1. Data Science
    3.1.2. Advanced Tools for Data Scientists
3.2. Data, Information and Knowledge
    3.2.1. Data, Information and Knowledge
    3.2.2. Types of Data
    3.2.3. Data Sources
3.3. From Data to Information
    3.3.1. Data Analysis
    3.3.2. Types of Analysis
    3.3.3. Extraction of Information from a Dataset
3.4. Extraction of Information Through Visualization
    3.4.1. Visualization as an Analysis Tool
    3.4.2. Visualization Methods
    3.4.3. Visualization of a Data Set
3.5. Data Quality
    3.5.1. Quality Data
    3.5.2. Data Cleaning
    3.5.3. Basic Data Pre-Processing
3.6. *Dataset*
    3.6.1. Dataset Enrichment
    3.6.2. The Curse of Dimensionality
    3.6.3. Modification of Our Data Set
3.7. Unbalance
    3.7.1. Classes of Unbalance
    3.7.2. Unbalance Mitigation Techniques
    3.7.3. Balancing a Dataset
3.8. Unsupervised Models
    3.8.1. Unsupervised Model
    3.8.2. Methods
    3.8.3. Classification with Unsupervised Models

3.9.   Supervised Models
    3.9.1.   Supervised Model
    3.9.2.   Methods
    3.9.3.   Classification with Supervised Models

3.10.   Tools and Good Practices
    3.10.1.   Good Practices for Data Scientists
    3.10.2.   The Best Model
    3.10.3.   Useful Tools

Module 4. Data Mining: Selection, Pre-Processing and Transformation

4.1.   Statistical Inference
    4.1.1.   Descriptive Statistics vs. Statistical Inference
    4.1.2.   Parametric Procedures
    4.1.3.   Non-Parametric Procedures

4.2.   Exploratory Analysis
    4.2.1.   Descriptive Analysis
    4.2.2.   Visualization
    4.2.3.   Data Preparation

4.3.   Data Preparation
    4.3.1.   Integration and Data Cleaning
    4.3.2.   Normalization of Data
    4.3.3.   Transforming Attributes

4.4.   Missing Values
    4.4.1.   Treatment of Missing Values
    4.4.2.   Maximum Likelihood Imputation Methods
    4.4.3.   Missing Value Imputation Using Machine Learning

4.5.   Noise in the Data
    4.5.1.   Noise Classes and Attributes
    4.5.2.   Noise Filtering
    4.5.3.   The Effect of Noise

4.6.   The Curse of Dimensionality
    4.6.1.   Oversampling
    4.6.2.   Undersampling
    4.6.3.   Multidimensional Data Reduction

4.7.   From Continuous to Discrete Attributes
    4.7.1.   Continuous Data vs. Discreet Data
    4.7.2.   Discretization Process

4.8.   The Data
    4.8.1.   Data Selection
    4.8.2.   Prospects and Selection Criteria
    4.8.3.   Selection Methods

4.9.   Instance Selection
    4.9.1.   Methods for Instance Selection
    4.9.2.   Prototype Selection
    4.9.3.   Advanced Methods for Instance Selection

4.10.   Data Pre-Processing in Big Data Environments

Module 5. Algorithm and Complexity in Artificial Intelligence

5.1.   Introduction to Algorithm Design Strategies
    5.1.1.   Recursion
    5.1.2.   Divide and Conquer
    5.1.3.   Other Strategies

5.2.   Efficiency and Analysis of Algorithms
    5.2.1.   Efficiency Measures
    5.2.2.   Measuring the Size of the Input
    5.2.3.   Measuring Execution Time
    5.2.4.   Worst, Best and Average Case
    5.2.5.   Asymptotic Notation
    5.2.6.   Mathematical Analysis Criteria for Non-Recursive Algorithms
    5.2.7.   Mathematical Analysis of Recursive Algorithms
    5.2.8.   Empirical Analysis of Algorithms

5.3.   Sorting Algorithms
    5.3.1.   Concept of Sorting
    5.3.2.   Bubble Sorting
    5.3.3.   Sorting by Selection
    5.3.4.   Sorting by Insertion
    5.3.5.   Sorting by Merge (Merge_Sort)
    5.3.6.   Sorting Quickly (Quick_Sort)

Module 6. Intelligent Systems

6.6. Ontology Languages and Ontology Creation Software
    6.6.1. Triple RDF, Turtle and N
    6.6.2. RDF Schema
    6.6.3. OWL
    6.6.4. SPARQL
    6.6.5. Introduction to Ontology Creation Tools
    6.6.6. Installing and Using Protégé
6.7. Semantic Web
    6.7.1. Current and Future Status of the Semantic Web
    6.7.2. Semantic Web Applications
6.8. Other Knowledge Representation Models
    6.8.1. Vocabulary
    6.8.2. Global Vision
    6.8.3. Taxonomy
    6.8.4. Thesauri
    6.8.5. Folksonomy
    6.8.6. Comparison
    6.8.7. Mind Maps
6.9. Knowledge Representation Assessment and Integration
    6.9.1. Zero-Order Logic
    6.9.2. First-Order Logic
    6.9.3. Descriptive Logic
    6.9.4. Relationship between Different Types of Logic
    6.9.5. Prolog: Programming Based on First-Order Logic
6.10. Semantic Reasoners, Knowledge-Based Systems and Expert Systems
    6.10.1. Concept of Reasoner
    6.10.2. Reasoner Applications
    6.10.3. Knowledge-Based Systems
    6.10.4. MYCIN: History of Expert Systems
    6.10.5. Expert Systems Elements and Architecture
    6.10.6. Creating Expert Systems

Module 7. Machine Learning and Data Mining

7.1. Introduction to Knowledge Discovery Processes and Basic Concepts of Machine Learning
    7.1.1. Key Concepts of Knowledge Discovery Processes
    7.1.2. Historical Perspective of Knowledge Discovery Processes
    7.1.3. Stages of the Knowledge Discovery Processes
    7.1.4. Techniques Used in Knowledge Discovery Processes
    7.1.5. Characteristics of Good Machine Learning Models
    7.1.6. Types of Machine Learning Information
    7.1.7. Basic Learning Concepts
    7.1.8. Basic Concepts of Unsupervised Learning
7.2. Data Exploration and Pre-Processing
    7.2.1. Data Processing
    7.2.2. Data Processing in the Data Analysis Flow
    7.2.3. Types of Data
    7.2.4. Data Transformations
    7.2.5. Visualization and Exploration of Continuous Variables
    7.2.6. Visualization and Exploration of Categorical Variables
    7.2.7. Correlation Measures
    7.2.8. Most Common Graphic Representations
    7.2.9. Introduction to Multivariate Analysis and Dimensionality Reduction
7.3. Decision Trees
    7.3.1. ID Algorithm
    7.3.2. Algorithm C
    7.3.3. Overtraining and Pruning
    7.3.4. Result Analysis
7.4. Evaluation of Classifiers
    7.4.1. Confusion Matrices
    7.4.2. Numerical Evaluation Matrices
    7.4.3. Kappa Statistic
    7.4.4. ROC Curves

7.5. Classification Rules

    7.5.1. Rule Evaluation Measures

    7.5.2. Introduction to Graphic Representation

    7.5.3. Sequential Overlay Algorithm

7.6. Neural Networks

    7.6.1. Basic Concepts

    7.6.2. Simple Neural Networks

    7.6.3. Backpropagation Algorithm

    7.6.4. Introduction to Recurrent Neural Networks

7.7. Bayesian Methods

    7.7.1. Basic Probability Concepts

    7.7.2. Bayes' Theorem

    7.7.3. Naive Bayes

    7.7.4. Introduction to Bayesian Networks

7.8. Regression and Continuous Response Models

    7.8.1. Simple Linear Regression

    7.8.2. Multiple Linear Regression

    7.8.3. Logistic Regression

    7.8.4. Regression Trees

    7.8.5. Introduction to Support Vector Machines (SVM)

    7.8.6. Goodness-of-Fit Measures

7.9. *Clustering*

    7.9.1. Basic Concepts

    7.9.2. Hierarchical Clustering

    7.9.3. Probabilistic Methods

    7.9.4. EM Algorithm

    7.9.5. B-Cubed Method

    7.9.6. Implicit Methods

7.10. Text Mining and Natural Language Processing (NLP)

    7.10.1. Basic Concepts

    7.10.2. Corpus Creation

    7.10.3. Descriptive Analysis

    7.10.4. Introduction to Feelings Analysis

Module 8. Neural Networks, the Basis of Deep Learning

8.1. Deep Learning

    8.1.1. Types of Deep Learning

    8.1.2. Applications of Deep Learning

    8.1.3. Advantages and Disadvantages of Deep Learning

8.2. Operations

    8.2.1. Sum

    8.2.2. Product

    8.2.3. Transfer

8.3. Layers

    8.3.1. Input Layer

    8.3.2. Hidden Layer

    8.3.3. Output Layer

8.4. Union of Layers and Operations

    8.4.1. Architecture Design

    8.4.2. Connection between Layers

    8.4.3. Forward Propagation

8.5. Construction of the First Neural Network

    8.5.1. Network Design

    8.5.2. Establish the Weights

    8.5.3. Network Training

8.6. Trainer and Optimizer

    8.6.1. Optimizer Selection

    8.6.2. Establishment of a Loss Function

    8.6.3. Establishing a Metric

8.7. Application of the Principles of Neural Networks

    8.7.1. Activation Functions

    8.7.2. Backward Propagation

    8.7.3. Parameter Adjustment

8.8. From Biological to Artificial Neurons

    8.8.1. Functioning of a Biological Neuron

    8.8.2. Transfer of Knowledge to Artificial Neurons

    8.8.3. Establish Relations Between the Two

Module 9. Deep Neural Networks Training

Module 10. Model Customization and Training with TensorFlow

Module 11. Deep Computer Vision with Convolutional Neural Networks

11.9.   Object Detection and Object Tracking

    11.9.1.   Object Detection Methods

    11.9.2.   Object Tracking Algorithms

    11.9.3.   Tracking and Localization Techniques

11.10. Semantic Segmentation

    11.10.1. Deep Learning for Semantic Segmentation

    11.10.1. Edge Detection

    11.10.1. Rule-Based Segmentation Methods

Module 12. Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention

12.1.   Text Generation Using RNN

    12.1.1.   Training an RNN for Text Generation

    12.1.2.   Natural Language Generation with RNN

    12.1.3.   Text Generation Applications with RNN

12.2.   Training Data Set Creation

    12.2.1.   Preparation of the Data for Training an RNN

    12.2.2.   Storage of the Training Dataset

    12.2.3.   Data Cleaning and Transformation

    12.2.4.   Sentiment Analysis

12.3.   Classification of Opinions with RNN

    12.3.1.   Detection of Themes in Comments

    12.3.2.   Sentiment Analysis with Deep Learning Algorithms

12.4.   Encoder-Decoder Network for Neural Machine Translation

    12.4.1.   Training an RNN for Machine Translation

    12.4.2.   Use of an Encoder-Decoder Network for Machine Translation

    12.4.3.   Improving the Accuracy of Machine Translation with RNNs

12.5.   Attention Mechanisms

    12.5.1.   Application of Care Mechanisms in RNN

    12.5.2.   Use of Care Mechanisms to Improve the Accuracy of the Models

    12.5.3.   Advantages of Attention Mechanisms in Neural Networks

12.6.   Transformer Models

    12.6.1.   Using Transformers Models for Natural Language Processing

    12.6.2.   Application of Transformers Models for Vision

    12.6.3.   Advantages of Transformers Models

12.7.   Transformers for Vision

    12.7.1.   Use of Transformers Models for Vision

    12.7.2.   Image Data Pre-Processing

    12.7.3.   Training a Transformers Model for Vision

12.8.   Hugging Face's Transformers Library

    12.8.1.   Using Hugging Face's Transformers Library

    12.8.2.   Hugging Face's Transformers Library Application

    12.8.3.   Advantages of Hugging Face's Transformers Library

12.9.   Other Transformers Libraries. Comparison

    12.9.1.   Comparison Between Different Transformers Libraries

    12.9.2.   Use of the Other Transformers Libraries

    12.9.3.   Advantages of the Other Transformers Libraries

12.10. Development of an NLP Application with RNN and Attention. Practical Application

    12.10.1. Development of a Natural Language Processing Application with RNN and Attention.

    12.10.2. Use of RNN, Attention Mechanisms and Transformers Models in the Application

    12.10.3. Evaluation of the Practical Application

Module 13. Autoencoders, GANs and Diffusion Models

13.1.   Representation of Efficient Data

    13.1.1.   Dimensionality Reduction

    13.1.2.   Deep Learning

    13.1.3.   Compact Representations

13.2.   PCA Realization with an Incomplete Linear Automatic Encoder

    13.2.1.   Training Process

    13.2.2.   Implementation in Python

    13.2.3.   Use of Test Data

13.3. Stacked Automatic Encoders
- 13.3.1. Deep Neural Networks
- 13.3.2. Construction of Coding Architectures
- 13.3.3. Use of Regularization

13.4. Convolutional Autoencoders
- 13.4.1. Design of Convolutional Models
- 13.4.2. Convolutional Model Training
- 13.4.3. Results Evaluation

13.5. Noise Suppression of Automatic Encoders
- 13.5.1. Filter Application
- 13.5.2. Design of Coding Models
- 13.5.3. Use of Regularization Techniques

13.6. Sparse Automatic Encoders
- 13.6.1. Increasing Coding Efficiency
- 13.6.2. Minimizing the Number of Parameters
- 13.6.3. Using Regularization Techniques

13.7. Variational Automatic Encoders
- 13.7.1. Use of Variational Optimization
- 13.7.2. Unsupervised Deep Learning
- 13.7.3. Deep Latent Representations

13.8. Generation of Fashion MNIST Images
- 13.8.1. Pattern Recognition
- 13.8.2. Image Generation
- 13.8.3. Deep Neural Networks Training

13.9. Generative Adversarial Networks and Diffusion Models
- 13.9.1. Content Generation from Images
- 13.9.2. Modeling of Data Distributions
- 13.9.3. Use of Adversarial Networks

13.10. Implementation of the Models
- 13.10.1. Practical Application
- 13.10.2. Implementation of the Models
- 13.10.3. Use of Real Data
- 13.10.4. Results Evaluation

Module 14. Bio-Inspired Computing

14.1. Introduction to Bio-Inspired Computing
- 14.1.1. Introduction to Bio-Inspired Computing

14.2. Social Adaptation Algorithms
- 14.2.1. Bio-Inspired Computation Based on Ant Colonies
- 14.2.2. Variants of Ant Colony Algorithms
- 14.2.3. Particle Cloud Computing

14.3. Genetic Algorithms
- 14.3.1. General Structure
- 14.3.2. Implementations of the Major Operators

14.4. Space Exploration-Exploitation Strategies for Genetic Algorithms
- 14.4.1. CHC Algorithm
- 14.4.2. Multimodal Problems

14.5. Evolutionary Computing Models (I)
- 14.5.1. Evolutionary Strategies
- 14.5.2. Evolutionary Programming
- 14.5.3. Algorithms Based on Differential Evolution

14.6. Evolutionary Computation Models (II)
- 14.6.1. Evolutionary Models Based on Estimation of Distributions (EDA)
- 14.6.2. Genetic Programming

14.7. Evolutionary Programming Applied to Learning Problems
- 14.7.1. Rules-Based Learning
- 14.7.2. Evolutionary Methods in Instance Selection Problems

14.8. Multi-Objective Problems
- 14.8.1. Concept of Dominance
- 14.8.2. Application of Evolutionary Algorithms to Multi-Objective Problems

14.9. Neural Networks (I)
- 14.9.1. Introduction to Neural Networks
- 14.9.2. Practical Example with Neural Networks

Module 17. Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

Module 19. Digital Forensics and Artificial Intelligence-Assisted Incident Response

19.1.   ChatGPT Forensic Processes for the Identification of Evidence
    19.1.1.   Basic Concepts of Forensic Analysis in Digital Environments
    19.1.2.   Stages of Evidence Identification and Collection
    19.1.3.   Role of ChatGPT in the Support of Forensic Identification

19.2.   Gemini and ChatGPT in Data Identification and Data Mining
    19.2.1.   Fundamentals of Data Extraction for Forensic Analysis
    19.2.2.   Relevant Data Identification Techniques
    19.2.3.   Contribution of Artificial Intelligence to the Automation of the Extraction Process

19.3.   Log Analysis and Event Correlation with Artificial Intelligence
    19.3.1.   Importance of Logs in Incident Analysis
    19.3.2.   Event Correlation Techniques for Incident Reconstruction
    19.3.3.   Use of Artificial Intelligence to Identify Patterns in Log Correlation

19.4.   Data Recovery and Restoration of Systems Using Artificial Intelligence
    19.4.1.   Data Recovery Principles and Their Importance in Digital Forensics
    19.4.2.   Restoration Techniques of Compromised Systems
    19.4.3.   Application of Artificial Intelligence to Improve Recovery and Restoration Processes

19.5.   Machine Learning for Incident Detection and Reconstruction
    19.5.1.   Introduction to Machine Learning in Incident Detection
    19.5.2.   Incident Reconstruction Techniques with Artificial Intelligence Models
    19.5.3.   Ethical and Practical Considerations in Event Detection

19.6.   Incident Reconstruction and Simulation with ChatGPT
    19.6.1.   Fundamentals of Incident Reconstruction in Forensic Analysis
    19.6.2.   ChatGPT's Ability to Create Incident Simulations
    19.6.3.   Limitations and Challenges in Complex Incident Simulation

19.7.   Detection of Malicious Activity on Mobile Devices
    19.7.1.   Characteristics and Challenges in Forensic Analysis of Mobile Devices
    19.7.2.   Major Malicious Activities in Mobile Environments
    19.7.3.   Application of Artificial Intelligence to Identify Threats in Mobile Devices

19.8.   Automated Incident Response with Artificial Intelligence Workflows
    19.8.1.   Principles of Incident Response in Cybersecurity
    19.8.2.   Importance of Automation in Rapid Incident Response
    19.8.3.   Benefits of Artificial Intelligence-Assisted Workflows in Mitigation

19.9.   Ethics and Transparency in Forensic Analysis with Generative AI
    19.9.1.   Ethical Principles in the Use of Artificial Intelligence in Forensic Analysis
    19.9.2.   Transparency and Explainability of Generative Models in Forensics
    19.9.3.   Privacy and Accountability Considerations in Analysis

19.10. Forensic Analysis and Incident Recreation Lab with ChatGPT and Gemini
    19.10.1. Structure and Objectives of a Forensic Analysis Laboratory
    19.10.2. Benefits of Controlled Environments for Forensics Practice
    19.10.3. Key Components for Setting Up a Simulation Laboratory

Module 20. Predictive Models for Proactive Defense in Cybersecurity Using ChatGPT

20.1.   Predictive Analytics in Cybersecurity: Techniques and Applications with Artificial Intelligence
    20.1.1.   Basic Concepts of Predictive Analytics in Security
    20.1.2.   Predictive Techniques in the Field of Cybersecurity
    20.1.3.   Application of Artificial Intelligence in the Anticipation of Cyber Threats

20.2.   Regression and Classification Models with ChatGPT Support
    20.2.1.   Principles of Regression and Classification in Threat Prediction
    20.2.2.   Types of Classification Models in Cybersecurity
    20.2.3.   ChatGPT Assistance in the Interpretation of Predictive Models

20.3.   Identifying Emerging Threats with ChatGPT Predictions
    20.3.1.   Emerging Threat Detection Concepts
    20.3.2.   Techniques for Identifying New Attack Patterns
    20.3.3.   Limitations and Precautions in the Prediction of New Threats

You will delve into the integration of ChatGPT in risk analysis and automated incident response, to manage highly complex digital environments with precision"

03

Teaching Objectives

The main objective of this TECH university program is to provide professionals with the necessary skills to lead cybersecurity projects supported by Artificial Intelligence. Thanks to this academic itinerary, computer scientists will be able to design predictive models, implement advanced algorithms and develop effective strategies for the protection of both systems and data. In addition, they will acquire skills for proactive threat detection, digital forensics and optimization of technological resources in highly complex environments.

You will gain key skills to analyze large volumes of data, detect anomalous patterns and manage threats in real time"

General Objectives

- Master the fundamental principles of Artificial Intelligence and its application in Cybersecurity

- Analyze the data lifecycle and its impact on the implementation of intelligent systems

- Design advanced machine learning models for threat detection and mitigation

- Implement deep neural networks and deep learning systems in cybersecurity projects

- Apply data mining and natural language processing techniques to risk analysis

- Develop AI-based strategies for proactive protection of critical infrastructures

- Integrate bio-inspired intelligent systems for complex problem solving in digital environments

- Optimize algorithms and tools such as TensorFlow to customize security solutions

- Implement AI-assisted digital forensic analysis methods

- Design innovative solutions in modern cryptography to ensure data integrity

- Evaluate the effectiveness of predictive and generative models applied to cyber defense

- Encourage innovation in the development of AI-based tools to address emerging threats

Specific Objectives

Module 1. Fundamentals of Artificial Intelligence

- Analyze the historical evolution of Artificial Intelligence, from its beginnings to its current state, identifying key milestones and developments
- Understand the functioning of neural networks and their application in learning models in Artificial Intelligence
- Study the principles and applications of genetic algorithms, analyzing their usefulness in solving complex problems
- Analyze the importance of thesauri, vocabularies and taxonomies in structuring and processing data for Artificial Intelligence systems

Module 2. Data Types and Life Cycle

- Identify and classify the different types of statistical data, from quantitative to qualitative data
- Analyze the life cycle of data, from generation to disposal, identifying key stages
- Explore the initial stages of the data life cycle, highlighting the importance of data planning and structure
- Study data collection processes, including methodology, tools and collection channels
- Explore the Datawarehouse concept, with emphasis on the elements that comprise it and its design
- Analyze the regulatory aspects related to data management, complying with privacy and security regulations, as well as best practices.

Module 3. Data in Artificial Intelligence

- Master the fundamentals of data science, covering tools, types and sources for information analysis
- Explore the process of transforming data into information using data mining and visualization techniques
- Study the structure and characteristics of datasets, understanding their importance in the preparation and use of data for Artificial Intelligence models
- Use specific tools and best practices in data handling and processing, ensuring efficiency and quality in the implementation of Artificial Intelligence

Module 4. Data Mining. Selection, Preprocessing and Transformation

- Master the techniques of statistical inference to understand and apply statistical methods in data mining
- Perform detailed exploratory analysis of data sets to identify relevant patterns, anomalies, and trends
- Develop skills for data preparation, including data cleaning, integration, and formatting for use in data mining
- Implement effective strategies for handling missing values in datasets, applying imputation or elimination methods according to context
- Identify and mitigate noise present in data, using filtering and smoothing techniques to improve the quality of the data set
- Address data pre-processing in Big Data environments

Module 5. Algorithm and Complexity in Artificial Intelligence

- Introduce algorithm design strategies, providing a solid understanding of fundamental approaches to problem solving
- Study and apply sorting algorithms, understanding their performance and comparing their efficiency in different contexts
- Investigate algorithms with Heaps, analyzing their implementation and usefulness in efficient data manipulation
- Analyze graph-based algorithms, exploring their application in the representation and solution of problems involving complex relationships
- Study Greedy algorithms, understanding their logic and applications in solving optimization problems
- Investigate and apply the backtracking technique for systematic problem solving, analyzing its effectiveness in various scenarios

Module 6. Intelligent Systems

- Explore agent theory, understanding the fundamental concepts of its operation and its application in Artificial Intelligence and software engineering
- Analyze the concept of the semantic web and its impact on the organization and retrieval of information in digital environments
- Evaluate and compare different knowledge representations, integrating these to improve the efficiency and accuracy of intelligent systems
- Study semantic reasoners, knowledge-based systems and expert systems, understanding their functionality and applications in intelligent decision making

Module 7. Machine Learning and Data Mining

- Introduce the processes of knowledge discovery and the fundamental concepts of machine learning
- Evaluate classifiers using specific techniques to measure their performance and accuracy in data classification
- Study neural networks, understanding their operation and architecture to solve complex machine learning problems
- Explore Bayesian methods and their application in machine learning, including networks and Bayesian classifiers
- Analyze regression and continuous response models for predicting numerical values from data
- Explore text mining and natural language processing (NLP), understanding how machine learning techniques are applied to analyze and understand text

Module 8. Neural Networks, the Basis of Deep Learning

- Master the fundamentals of Deep Learning, understanding its essential role in Deep Learning
- Explore the fundamental operations in neural networks and understand their application in model building
- Analyze the different layers used in neural networks and learn how to select them appropriately
- Understand the effective linking of layers and operations to design complex and efficient neural network architectures
- Explore the connection between biological and artificial neurons for a deeper understanding of model design
- Tune hyperparameters for Fine Tuning of neural networks, optimizing their performance on specific tasks

Module 9. Deep Neural Networks Training

- Solve gradient-related problems in deep neural network training
- Apply practical guidelines to ensure efficient and effective training of deep neural networks
- Implement Transfer Learning as an advanced technique to improve model performance on specific tasks
- Explore and apply Data Augmentation techniques to enrich datasets and improve model generalization
- Develop practical applications using Transfer Learning to solve real-world problems
- Understand and apply regularization techniques to improve generalization and avoid overfitting in deep neural networks

Module 10. Model Customization and Training with TensorFlow

- Master the fundamentals of TensorFlow and its integration with NumPy for efficient data management and calculations
- Customize models and training algorithms using the advanced capabilities of TensorFlow
- Implement the TFRecord format for storing and accessing large datasets in TensorFlow
- Use Keras preprocessing layers to facilitate the construction of custom models
- Explore the TensorFlow Datasets project to access predefined datasets and improve development efficiency
- Develop a Deep Learning application with TensorFlow, integrating the knowledge acquired in the module

Module 11. Deep Computer Vision with Convolutional Neural Networks

- Understand the architecture of the visual cortex and its relevance in Deep Computer Vision
- Explore and apply convolutional layers to extract key features from images
- Implement clustering layers and their use in Deep Computer Vision models with Keras
- Analyze various Convolutional Neural Network (CNN) architectures and their applicability in different contexts
- Develop and implement a CNN ResNet using the Keras library to improve model efficiency and performance
- Use pre-trained Keras models to leverage transfer learning for specific tasks
- Address object detection and object tracking strategies using Convolutional Neural Networks
- Implement semantic segmentation techniques to understand and classify objects in images in a detailed manner

Module 12. Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention

- Develop skills in text generation using Recurrent Neural Networks (RNN)
- Apply RNNs in opinion classification for sentiment analysis in texts
- Understand and apply attentional mechanisms in natural language processing models
- Analyze and use Transformers models in specific NLP tasks
- Delve into the application of Transformers models in the context of image processing and computer vision
- Become familiar with the Hugging Face Transformers library for efficient implementation of advanced models
- Compare different Transformers libraries to evaluate their suitability for specific tasks
- Develop a practical application of NLP that integrates RNN and attention mechanisms to solve real-world problems

Module 13. Autoencoders, GANs and Diffusion Models

- Develop efficient representations of data using Autoencoders, GANs and Diffusion Models.
- Perform PCA using an incomplete linear autoencoder to optimize data representation
- Delve and apply convolutional autoencoders for efficient visual data representations
- Generate fashion images from the MNIST dataset using Autoencoders
- Understand the concept of Generative Adversarial Networks (GANs) and Diffusion Models
- Implement and compare the performance of Diffusion Models and GANs in data generation

Module 14. Bio-Inspired Computing

- Introduce the fundamental concepts of bio-inspired computing
- Analyze social adaptation algorithms as a key approach in bio-inspired computing
- Examine models of evolutionary computation in the context of optimization
- Address the complexity of multi-objective problems in the framework of bio-inspired computing
- Explore the application of neural networks in the field of bio-inspired computing
- Delve into the implementation and usefulness of neural networks in bio-inspired computing

Module 15. Artificial Intelligence: Strategies and Applications

- Develop strategies for the implementation of artificial intelligence in financial services
- Analyze the implications of artificial intelligence in the delivery of healthcare services
- Identify and assess the risks associated with the use of Artificial Intelligence in the health care setting
- Assess the potential risks associated with the use of Artificial Intelligence in industry
- Apply artificial intelligence techniques in industry to improve productivity
- Design artificial intelligence solutions to optimize processes in public administration
- Evaluate the implementation of Artificial Intelligence technologies in the education sector
- Apply artificial intelligence techniques in forestry and agriculture to improve productivity

Module 16. Cybersecurity and Modern Threat Analysis with ChatGPT

- Understand the fundamental concepts of Cybersecurity, including modern threats and the CIA model
- Use ChatGPT for risk analysis, vulnerability detection and simulation of threat scenarios
- Develop skills to design effective cybersecurity policies and protect IoT devices using Artificial Intelligence
- Implement advanced threat management strategies using generative Artificial Intelligence to anticipate potential attacks
- Assess the impact of modern threats on critical infrastructures using AI-assisted simulation techniques
- Design customized solutions for the protection of corporate networks, based on advanced Artificial Intelligence tools

Module 17. Intrusion Detection and Prevention Using Generative Artificial Intelligence Models

- Master anomaly and intrusion pattern detection techniques with tools such as Gemini
- Apply generative models to simulate cyber-attacks and improve intrusion prevention
- Implement advanced IDS/IPS systems optimized with Artificial Intelligence, developing behavioral profiles and analyzing Big Data in real-time
- Design integrated security architectures with Artificial Intelligence for the protection of multi-user environments and distributed systems
- Use generative models to anticipate targeted attacks and elaborate countermeasures in real time
- Integrate predictive analytics into detection systems for dynamic management of emerging threats

Module 18. Modern Cryptography with ChatGPT Support for Data Protection

- Master the basics of advanced cryptography, including algorithms such as AES, RSA and post-quantum algorithms
- Use ChatGPT to teach, practice and optimize cryptographic methods
- Design and manage AI-assisted encryption systems, ensuring data privacy and authenticity
- Evaluate the resilience of cryptographic algorithms against simulated attack scenarios with generative Artificial Intelligence
- Develop optimized encryption and decryption strategies to protect critical infrastructures and sensitive data
- Implement post-quantum cryptography solutions to mitigate future risks in AI-based systems

Module 19. Digital Forensics and Artificial Intelligence-Assisted Incident Response

- Learn to identify, extract and analyze digital evidence with the support of Artificial Intelligence tools
- Use Artificial Intelligence to automate data retrieval and reconstruction of security incidents
- Design and practice automated response workflows, ensuring speed and effectiveness in mitigating incidents
- Integrate advanced forensic analysis tools for the investigation of complex cyber-attacks
- Develop Artificial Intelligence-based event reconstruction techniques for post-incident audits
- Create automated incident response protocols, prioritizing operational continuity and damage mitigation

Module 20. Predictive Models for Proactive Defense in Cybersecurity Using ChatGPT

- Design advanced predictive models based on neural networks and reinforcement learning
- Implement simulations of threat scenarios to train teams and improve incident preparedness
- Evaluate and optimize proactive defense systems, integrating generative Artificial Intelligence for decision making and response automation
- Develop predictive defense frameworks adaptable to critical infrastructure and enterprise systems
- Use predictive analytics to identify emerging vulnerabilities before they are exploited
- Integrate generative Artificial Intelligence into strategic decision making processes for continuous improvement of defensive systems

04

Career Opportunities

With the skills and knowledge acquired through this university program, computer scientists will be able to access a wide range of job opportunities in key sectors such as Information Security, Risk Analysis and Critical Infrastructure Management. In this way, they will be able to play strategic roles in threat detection, predictive model design and advanced data protection, positioning them as leaders in a highly demanded field.

Your professional profile will enable you to work as a Cybersecurity Consultant, advising organizations on the integration of advanced technological solutions"

Graduate Profile

The graduate of this university program will be a professional specialized in integrating Artificial Intelligence and Cybersecurity to design innovative solutions to digital threats. They will have a deep knowledge of advanced tools, predictive models and modern cryptography, standing out for their ability to implement effective strategies in the protection of critical data and systems. This profile combines technical excellence and practical vision, ensuring your contribution to the transformation of the digital environment.

You will broaden your work horizons with a specialized approach, handling sophisticated methods such as Data Mining, Deep Learning and Digital Forensics.

◆ **Critical Thinking and Problem Solving:** Ability to analyze complex situations from multiple perspectives to identify patterns in digital threats and design innovative solutions using Artificial Intelligence that accurately and adaptively address technology challenges

◆ **Data-Driven Decision Making:** Ability to interpret large volumes of data and apply predictive models that inform real-time strategies ensuring actions aimed at mitigating risks efficiently

◆ **Technological Adaptability:** Competency to quickly integrate new tools, technologies and AI methodologies into professional practice responding in an agile manner to changes in the digital landscape and new forms of cyber attack

◆ **Ethical and Responsible Management:** In-depth understanding of the legal and ethical aspects related to data protection and the use of Artificial Intelligence acting in an ethical manner and aligned with international regulations to ensure the responsible use of Cybersecurity technologies

After completing the program, you will be able to use your knowledge and skills in the following positions:

1. **Analyst in Cyber Security with Artificial Intelligence:** In charge of identifying, preventing and mitigating digital threats using advanced Artificial Intelligence models for the protection of critical systems.
Responsibilities: Implement Artificial Intelligence based intrusion detection systems, analyze attack patterns and design effective countermeasures in real time.

2. **Analyst in Digital Forensics with Artificial Intelligence:** Responsible for identifying, extracting and analyzing digital evidence employing advanced Artificial Intelligence technologies.
Responsibilities: Automate data retrieval and incident reconstruction processes to ensure the integrity of cyber investigations.

3. **Proactive Digital Defense Consultant:** Specialized advisor in the development of Artificial Intelligence based security strategies to anticipate emerging threats in enterprise environments.
Responsibilities: Perform simulations of attack scenarios and design predictive solutions to protect critical infrastructures.

4. **Expert in Digital Forensic Analysis with Artificial Intelligence:** In charge of investigating and reconstructing cybersecurity incidents using Artificial Intelligence tools to extract and analyze digital evidence.
Responsibilities: Automate data recovery processes, perform post-incident audits and prepare technical reports for decision making.

5. **Cybersecurity Predictive Model Designer:** Focused on developing and implementing systems based on machine learning and neural networks to anticipate vulnerabilities.
Responsibilities: Create custom predictive models and optimize Artificial Intelligence tools to identify attack patterns before they materialize.

6. **Critical Infrastructure Security Coordinator:** Responsible for overseeing the implementation of AI-based cybersecurity solutions in strategic sectors such as energy, transportation or finance.
Responsibilities: Monitor threats in real time, integrate Artificial Intelligence systems into operating platforms and coordinate incident response.

7. **Manager of Cyber Risks with Artificial Intelligence:** Responsible for leading the planning and execution of strategies to identify and minimize cyber risks using Artificial Intelligence.
Responsibilities: Perform vulnerability assessments and design dynamic security frameworks based on Generative Artificial Intelligence.

8. **Responsible for Post Quantum Cryptography:** expert in designing robust encryption systems based on quantum computer resistant algorithms, ensuring long term data protection.
Responsibilities: Assess future threats and develop cryptographic solutions adapted to current and emerging needs.

9. **Administrator of Intrusion Detection Systems with Generative Artificial Intelligence:** Responsible for configuring and optimizing automated security tools that use generative Artificial Intelligence to detect and respond to threats.
Responsibilities: Monitor IDS/IPS systems, analyze real-time results and update detection algorithms based on emerging patterns.

10. **Artificial Intelligence-Assisted Digital Security Auditor:** Responsible for assessing and certifying digital security systems using advanced AI-assisted analysis tools.
Responsibilities: Identify security gaps, develop practical recommendations and ensure compliance with international cybersecurity regulations.

Academic and Research Opportunities

In addition to all the jobs you will be qualified for by studying this TECH Professional Master's Degree, you will also be able to pursue a solid academic and research career. After completing this university program, you will be ready to continue your studies associated with this field of knowledge and thus progressively achieve other scientific merits.

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.

TECH will prepare you to face new challenges in uncertain environments and achieve success in your career"

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.
The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

" *At TECH you will NOT have live classes
(which you might not be able to attend)"*
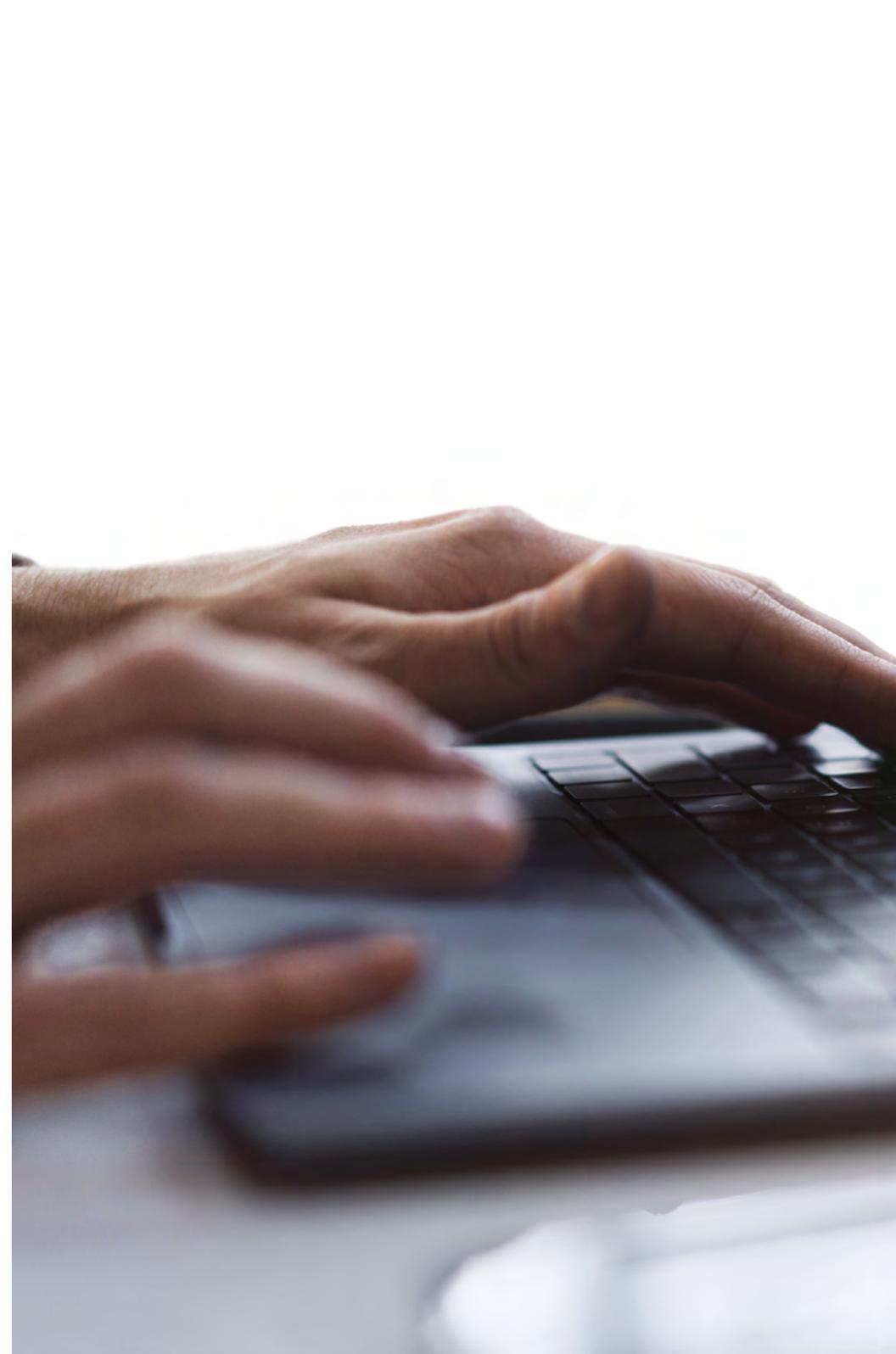
The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

> *TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"*

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.

Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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.

01
learning from evidence

02
relearning from evidence

03
testing

04
learning from an expert

05
neurocognitive context dependent learning

06
Von-Restorff effect

07
case based learning through storytelling

08
competencies testing (retesting)

A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.

> *The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"*

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 assess 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.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the quality of teaching, quality of materials, course structure and objectives is excellent. Not surprisingly, the institution became the best rated university by its students on the Global Score review platform, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

As such, the best educational materials, thoroughly prepared, will be available in this program:
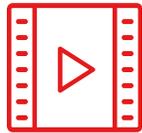
Study Material

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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

Interactive Summaries

We present 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, international guides... In our virtual library you will have access to everything you need to complete your education.

20%

15%

15%

3%

20%

17%

7%

3%
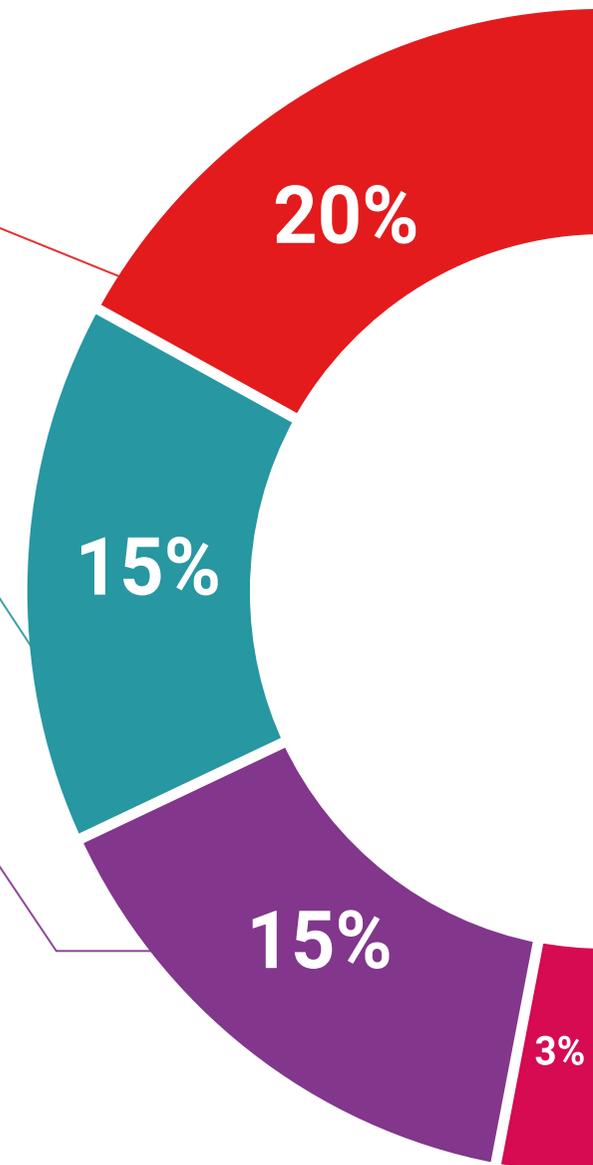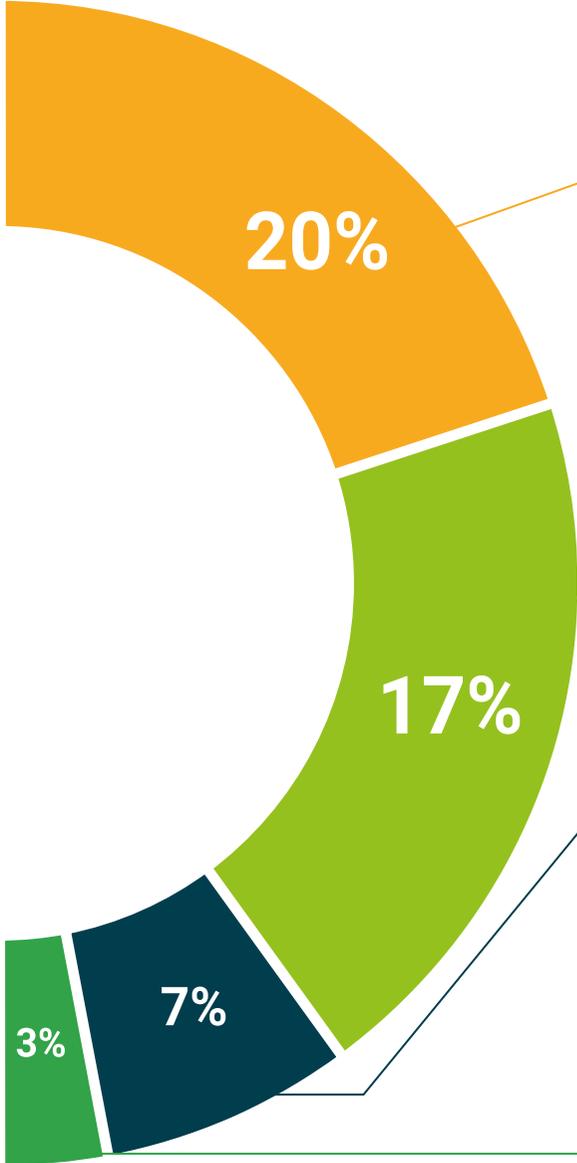
Case Studies

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.

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 for 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
Teaching Staff

The faculty of this TECH program is composed of internationally renowned experts in the fields of Artificial Intelligence and cybersecurity. With strong backgrounds in both research and the implementation of advanced technological solutions, these professionals bring a practical and strategic approach to the development of key competencies in the sector. Their experience ranges from leading innovative projects to collaborating with industry leaders, ensuring an up-to-date and applied view of the most challenging technology demands.

"

You will benefit from both the experience and academic background of recognized professionals with a solid reputation in Cybersecurity and Deep Learning"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI 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

Professors

Mr. Del Rey Sánchez, Alejandro
- Responsible for implementation of programs to improve tactical care in emergencies
- Degree in Industrial Organization Engineering
- Certification in Big Data and Business Analytics
- Certification in Microsoft Excel Advanced, VBA, KPI and DAX
- Certification in CIS Telecommunication and Information Systems

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

Certificate

The Professional Master's Degree in Artificial Intelligence in Cybersecurity guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree diploma 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 **Professional Master's Degree in Artificial Intelligence in Cybersecurity** 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.

TECH is a member of the Society for the Study of Artificial Intelligence and Simulation of Behavior (AISB), the largest organization dedicated to the research and development of Artificial Intelligence in Europe. As part of its membership, TECH provides students with access to a large number of doctoral-level research projects, online conferences, master classes, and a network of teachers and professionals who will continuously contribute to students' professional development through ongoing support and guidance.

TECH is a member of:

Title: **Professional Master's Degree in Artificial Intelligence in Cybersecurity**

Modality: **online**

Duration: **12 months**

Accreditation: **90 ECTS**

Professional Master's Degree
Artificial Intelligence in Cybersecurity

- » Modality: **online**
- » Duration: **12 months**
- » Certificate: **TECH Global University**
- » Accreditation: **90 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Professional Master's Degree
Artificial Intelligence
in Cybersecurity

TECH is a member of:

tech *global university*