Professional Master's Degree

Artificial Intelligence in Digital Marketing

tech global university

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Professional Master's Degree
Artificial Intelligence in Digital Marketing

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

Website: **www.techtitute.com/us/artificial-intelligence/professional-master-degree/master-artificial-intelligence-digital-marketing**

Index

01 Introduction to the Program — p. 4

02 Why Study at TECH? — p. 8

03 Syllabus — p. 12

04 Teaching Objectives — p. 30

05 Career Opportunities — p. 40

06 Study Methodology — p. 44

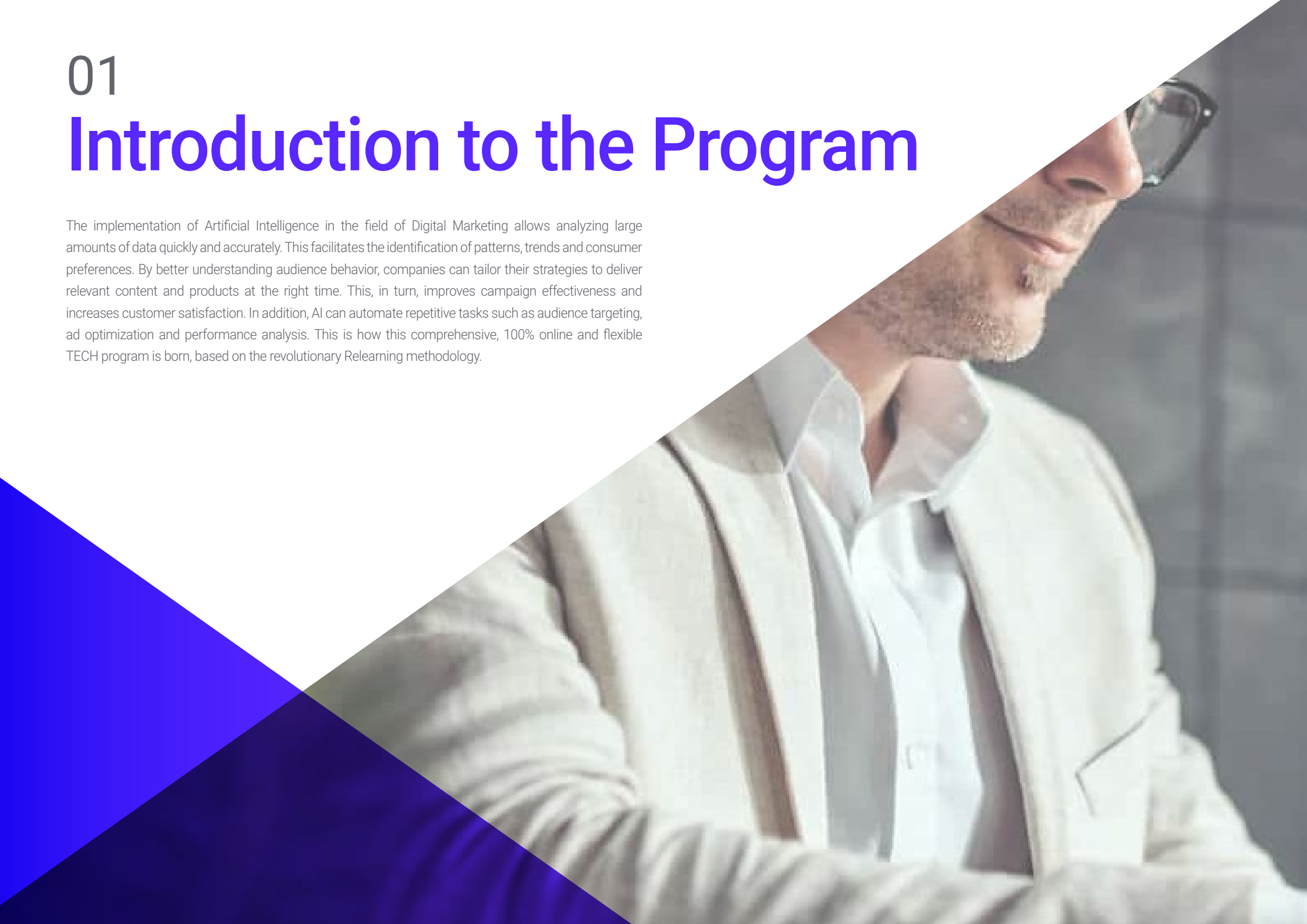
07 Teaching Staff — p. 54

08 Certificate — p. 58

01

Introduction to the Program

The implementation of Artificial Intelligence in the field of Digital Marketing allows analyzing large amounts of data quickly and accurately. This facilitates the identification of patterns, trends and consumer preferences. By better understanding audience behavior, companies can tailor their strategies to deliver relevant content and products at the right time. This, in turn, improves campaign effectiveness and increases customer satisfaction. In addition, AI can automate repetitive tasks such as audience targeting, ad optimization and performance analysis. This is how this comprehensive, 100% online and flexible TECH program is born, based on the revolutionary Relearning methodology.



Master the future of Digital Marketing and transformation with this 100% online program exclusively offered by TECH"

By better understanding user preferences and behaviors, AI optimizes segmentation, enhances customer experience, and boosts campaign effectiveness. However, integrating AI into Digital Marketing also presents various challenges.

In recent years, Artificial Intelligence has made significant advances that have transformed Digital Marketing. Machine learning algorithms and natural language processing now enable real-time data analysis, campaign optimization, and consumer behavior prediction. Digital marketing professionals have adopted these technologies to create personalized experiences, automate repetitive tasks, and make more informed decisions.

This evolution has created a constant need for marketing experts to update their skills with new tools and approaches, as AI and related technologies evolve rapidly. Today, professionals must not only understand traditional marketing strategies but also how to effectively integrate AI into their campaigns. This is the foundation of our Artificial Intelligence in Digital Marketing program, where students will explore content personalization and recommendations using tools like Adobe Sensei, audience segmentation, market analysis, trend prediction, and consumer behavior. The program also covers campaign optimization and AI applications in personalized advertising, advanced ad targeting, budget optimization, and predictive analytics for campaign performance.

This 100% online program allows graduates to learn comfortably from anywhere, at any time, with just an Internet-connected device. Based on the Relearning methodology, which reinforces key concepts to ensure optimal retention, it offers a flexible format tailored to today's demands. It prepares marketing professionals to excel in a fast-growing, high-demand industry.

This **Professional Master's Degree in Artificial Intelligence in Digital Marketing** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- The development of practical case studies presented by experts in Artificial Intelligence in Digital Marketing
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in Artificial Intelligence in Digital Marketing
- 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 acquire a deep mastery of AI and apply advanced strategies to optimize campaigns and personalize unique experiences"

Become a global benchmark by integrating Artificial Intelligence strategies in Digital Marketing in the most influential organizations in the world"

With a 100% program you can equip yourself with the tools and knowledge necessary to transform global challenges into competitive advantages.

Access comprehensive and up-to-date syllabus designed to master AI in Digital Marketing and stand out in a competitive marketplace.

It includes in its teaching staff professionals belonging to the field of Artificial Intelligence in Digital Marketing, who bring their work experience to this program, as well as recognized specialists from prestigious companies and 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 an immersive learning experience designed to prepare for real-life situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs, available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it has a huge faculty of more than 6,000 professors of the highest international prestige.

Study at the largest online university in the world and ensure your professional success. The future begins at TECH"

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistuba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.

Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

03

Syllabus

The syllabus combines advanced theory with practical applications of AI in Marketing. Throughout the program, students will master advanced data analysis tools, develop personalized strategies using artificial intelligence, and optimize campaigns in real time. With key modules on audience segmentation, automation, predictive analytics, and insight generation, students will be prepared to meet market challenges. Additionally, the program addresses ethics and data privacy, ensuring a comprehensive education adaptable to current digital demands.

This program connects you with exclusive industry opportunities through practical projects and real-world case studies"

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 Aspects
- 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. Criteria for Mathematical Analysis of 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)

5.4. Algorithms with Trees
- 5.4.1. Tree Concept
- 5.4.2. Binary Trees
- 5.4.3. Tree Paths
- 5.4.4. Representing Expressions
- 5.4.5. Ordered Binary Trees
- 5.4.6. Balanced Binary Trees

5.5. Algorithms Using Heaps
- 5.5.1. Heaps
- 5.5.2. The Heapsort Algorithm
- 5.5.3. Priority Queues

5.6. Graph Algorithms
- 5.6.1. Representation
- 5.6.2. Traversal in Width
- 5.6.3. Depth Travel
- 5.6.4. Topological Sorting

5.7. Greedy Algorithms
- 5.7.1. Greedy Strategy
- 5.7.2. Elements of the Greedy Strategy
- 5.7.3. Currency Exchange
- 5.7.4. Traveler's Problem
- 5.7.5. Backpack Problem

5.8. Minimal Path Finding
- 5.8.1. The Minimum Path Problem
- 5.8.2. Negative Arcs and Cycles
- 5.8.3. Dijkstra's Algorithm

5.9. Greedy Algorithms on Graphs
- 5.9.1. The Minimum Covering Tree
- 5.9.2. Prim's Algorithm
- 5.9.3. Kruskal's Algorithm
- 5.9.4. Complexity Analysis

5.10. *Backtracking*
- 5.10.1. Backtracking
- 5.10.2. Alternative Techniques

Module 6. Intelligent Systems

6.1. Agent Theory
- 6.1.1. Concept History
- 6.1.2. Agent Definition
- 6.1.3. Agents in Artificial Intelligence
- 6.1.4. Agents in Software Engineering

6.2. Agent Architectures
- 6.2.1. The Reasoning Process of an Agent
- 6.2.2. Reactive Agents
- 6.2.3. Deductive Agents
- 6.2.4. Hybrid Agents
- 6.2.5. Comparison

6.3. Information and Knowledge
- 6.3.1. Difference between Data, Information and Knowledge
- 6.3.2. Data Quality Assessment
- 6.3.3. Data Collection Methods
- 6.3.4. Information Acquisition Methods
- 6.3.5. Knowledge Acquisition Methods

6.4. Knowledge Representation
- 6.4.1. The Importance of Knowledge Representation
- 6.4.2. Definition of Knowledge Representation According to Roles
- 6.4.3. Knowledge Representation Features

6.5. Ontologies
- 6.5.1. Introduction to Metadata
- 6.5.2. Philosophical Concept of Ontology
- 6.5.3. Computing Concept of Ontology
- 6.5.4. Domain Ontologies and Higher-Level Ontologies
- 6.5.5. How to Build an Ontology

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. Layer Bonding 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

8.9. Implementation of MLP (Multilayer Perceptron) with Keras
- 8.9.1. Definition of the Network Structure
- 8.9.2. Model Compilation
- 8.9.3. Model Training

8.10. Fine Tuning Hyperparameters of Neural Networks
- 8.10.1. Selection of the Activation Function
- 8.10.2. Set the Learning Rate
- 8.10.3. Adjustment of Weights

Module 9. Deep Neural Networks Training

9.1. Gradient Problems
- 9.1.1. Gradient Optimization Techniques
- 9.1.2. Stochastic Gradients
- 9.1.3. Weight Initialization Techniques

9.2. Reuse of Pre-Trained Layers
- 9.2.1. Transfer Learning Training
- 9.2.2. Feature Extraction
- 9.2.3. Deep Learning

9.3. Optimizers
- 9.3.1. Stochastic Gradient Descent Optimizers
- 9.3.2. Optimizers Adam and RMSprop
- 9.3.3. Moment Optimizers

9.4. Learning Rate Programming
- 9.4.1. Automatic Learning Rate Control
- 9.4.2. Learning Cycles
- 9.4.3. Smoothing Terms

9.5. Overfitting
- 9.5.1. Cross Validation
- 9.5.2. Regularization
- 9.5.3. Evaluation Metrics

9.6. Practical Guidelines
- 9.6.1. Model Design
- 9.6.2. Selection of Metrics and Evaluation Parameters
- 9.6.3. Hypothesis Testing

9.7. *Transfer Learning*
- 9.7.1. Transfer Learning Training
- 9.7.2. Feature Extraction
- 9.7.3. Deep Learning

9.8. *Data Augmentation*
- 9.8.1. Image Transformations
- 9.8.2. Synthetic Data Generation
- 9.8.3. Text Transformation

9.9. Practical Application of Transfer Learning
- 9.9.1. Transfer Learning Training
- 9.9.2. Feature Extraction
- 9.9.3. Deep Learning

9.10. Regularization
- 9.10.1. L and L
- 9.10.2. Regularization by Maximum Entropy
- 9.10.3. *Dropout*

Module 10. Model Customization and Training with TensorFlow

10.1. *TensorFlow*
- 10.1.1. Use of the TensorFlow Library
- 10.1.2. Model Training with TensorFlow
- 10.1.3. Operations with Graphs in TensorFlow

10.2. TensorFlow and NumPy
- 10.2.1. NumPy Computing Environment for TensorFlow
- 10.2.2. Using NumPy Arrays with TensorFlow
- 10.2.3. NumPy Operations for TensorFlow Graphs

10.3. Model Customization and Training Algorithms
- 10.3.1. Building Custom Models with TensorFlow
- 10.3.2. Management of Training Parameters
- 10.3.3. Use of Optimization Techniques for Training

10.4. TensorFlow Features and Graphs
- 10.4.1. Functions with TensorFlow
- 10.4.2. Use of Graphs for Model Training
- 10.4.3. Graph Optimization with TensorFlow Operations

10.5. Loading and Preprocessing Data with TensorFlow
- 10.5.1. Loading Data Sets with TensorFlow
- 10.5.2. Pre-Processing Data with TensorFlow
- 10.5.3. Using TensorFlow Tools for Data Manipulation

10.6. The tf.data API
- 10.6.1. Using the tf.data API for Data Processing
- 10.6.2. Construction of Data Streams with tf.data
- 10.6.3. Using the tf.data API for Model Training

10.7. The TFRecord Format
- 10.7.1. Using the TFRecord API for Data Serialization
- 10.7.2. TFRecord File Upload with TensorFlow
- 10.7.3. Using TFRecord Files for Model Training

10.8. Keras Pre-Processing Layers
- 10.8.1. Using the Keras Pre-Processing API
- 10.8.2. Pre-Processing Pipelined Construction with Keras
- 10.8.3. Using the Keras Pre-Processing API for Model Training

10.9. The TensorFlow Datasets Project
- 10.9.1. Using TensorFlow Datasets for Data Loading
- 10.9.2. Data Pre-Processing with TensorFlow Datasets
- 10.9.3. Using TensorFlow Datasets for Model Training

10.10. Building a Deep Learning App with TensorFlow
- 10.10.1. Practical Applications
- 10.10.2. Building a Deep Learning App with TensorFlow
- 10.10.3. Model Training with TensorFlow
- 10.10.4. Using the Application for the Prediction of Results

Module 11. Deep Computer Vision with Convolutional Neural Networks

11.1. The Visual Cortex Architecture
- 11.1.1. Functions of the Visual Cortex
- 11.1.2. Theories of Computational Vision
- 11.1.3. Models of Image Processing

11.2. Convolutional Layers
- 11.2.1. Reuse of Weights in Convolution
- 11.2.2. Convolution D
- 11.2.3. Activation Functions

11.3. Grouping Layers and Implementation of Grouping Layers with Keras
- 11.3.1. Pooling and Striding
- 11.3.2. *Flattening*
- 11.3.3. Types of Pooling

11.4. CNN Architecture
- 11.4.1. VGG Architecture
- 11.4.2. AlexNet Architecture
- 11.4.3. ResNet Architecture

11.5. Implementing a CNN ResNet- Using Keras
- 11.5.1. Weight Initialization
- 11.5.2. Input Layer Definition
- 11.5.3. Output Definition

11.6. Use of Pre-Trained Keras Models
- 11.6.1. Characteristics of Pre-Trained Models
- 11.6.2. Uses of Pre-Trained Models
- 11.6.3. Advantages of Pre-Trained Models

11.7. Pre-Trained Models for Transfer Learning
- 11.7.1. Transfer Learning
- 11.7.2. Transfer Learning Process
- 11.7.3. Advantages of Transfer Learning

11.8. Deep Computer Vision Classification and Localization
- 11.8.1. Image Classification
- 11.8.2. Localization of Objects in Images
- 11.8.3. Object Detection

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
- 11.10.2. Edge Detection
- 11.10.3. 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 Applications
- 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

14.10. Neural Networks (II)
- 14.10.1. Use Cases of Neural Networks in Medical Research
- 14.10.2. Use Cases of Neural Networks in Economics
- 14.10.3. Use Cases of Neural Networks in Artificial Vision

Module 15. Artificial Intelligence. Strategies and Applications

15.1. Financial Services
- 15.1.1. The Implications of Artificial Intelligence in Financial Services. Opportunities and Challenges
- 15.1.2. Case Studies
- 15.1.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.1.4. Potential Future Developments / Uses of Artificial Intelligence

15.2. Implications of Artificial Intelligence in Healthcare Service
- 15.2.1. Implications of Artificial Intelligence in the Healthcare Sector. Opportunities and Challenges
- 15.2.2. Case Studies

15.3. Risks Related to the Use of Artificial Intelligence in Health Services
- 15.3.1. Potential Risks Related to the Use of Artificial Intelligence
- 15.3.2. Potential Future Developments / Uses of Artificial Intelligence

15.4. *Retail*
- 15.4.1. Implications of Artificial Intelligence in Retail. Opportunities and Challenges
- 15.4.2. Case Studies
- 15.4.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.4.4. Potential Future Developments / Uses of Artificial Intelligence

15.5. Industry
- 15.5.1. Implications of Artificial Intelligence in Industry. Opportunities and Challenges
- 15.5.2. Case Studies

15.6. Potential Risks Related to the Use of Artificial Intelligence in the Industry
- 15.6.1. Case Studies
- 15.6.2. Potential Risks Related to the Use of Artificial Intelligence
- 15.6.3. Potential Future Developments / Uses of Artificial Intelligence

15.7. Public Administration
- 15.7.1. Implications of Artificial Intelligence in Public Administration. Opportunities and Challenges
- 15.7.2. Case Studies
- 15.7.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.7.4. Potential Future Developments / Uses of Artificial Intelligence

15.8. Educational
- 15.8.1. Implications of Artificial Intelligence in Education. Opportunities and Challenges
- 15.8.2. Case Studies
- 15.8.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.8.4. Potential Future Developments / Uses of Artificial Intelligence

15.9. Forestry and Agriculture
- 15.9.1. Implications of Artificial Intelligence in Forestry and Agriculture. Opportunities and Challenges
- 15.9.2. Case Studies
- 15.9.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.9.4. Potential Future Developments / Uses of Artificial Intelligence

15.10. Human Resources
- 15.10.1. Implications of Artificial Intelligence in Human Resources. Opportunities and Challenges
- 15.10.2. Case Studies
- 15.10.3. Potential Risks Related to the Use of Artificial Intelligence
- 15.10.4. Potential Future Developments / Uses of Artificial Intelligence

Module 16. Artificial Intelligence Applications in Digital Marketing and E-Commerce

16.1. Artificial Intelligence in Digital Marketing and E-Commerce
- 16.1.1. Content Personalization and Recommendations with Adobe Sensei
- 16.1.2. Audience Segmentation and Market Analysis
- 16.1.3. Predicting Trends and Buying Behavior

16.2. Digital Strategy with Optimizely
- 16.2.1. Incorporation of AI in Strategic Planning
- 16.2.2. Process Automation
- 16.2.3. Strategic Decisions

16.3. Continuous Adaptation to Changes in the Digital Environment
- 16.3.1. Strategy for the Management of Change
- 16.3.2. Adaptation of Marketing Strategies
- 16.3.3. Innovation

16.4. Content Marketing and Artificial Intelligence with Hub Spot
- 16.4.1. Content Personalization
- 16.4.2. Title and Description Optimization
- 16.4.3. Advanced Audience Segmentation
- 16.4.4. Sentiment Analysis
- 16.4.5. Content Marketing Automation

16.5. Automatic Content Generation
- 16.5.1. Content Optimization for SEO
- 16.5.2. *Engagement*
- 16.5.3. Analysis of Feelings and Emotions in the Content

16.6. AI in Inbound Marketing Strategies with Evergage
- 16.6.1. Growth Strategies based on Artificial Intelligence
- 16.6.2. Identifying Content and Distribution Opportunities
- 16.6.3. Use of Artificial Intelligence in the Identification of Business Opportunities

16.7. Automation of Workflows and Lead Tracking with Segment
- 16.7.1. Data Collection
- 16.7.2. Lead Segmentation and Lead Scoring
- 16.7.3. Multichannel Follow-up
- 16.7.4. Analysis and Optimization

16.8. Personalizing User Experiences Based on the Buying Cycle with Ortto
- 16.8.1. Personalized Content
- 16.8.2. User Experience Automation and Optimization
- 16.8.3. *Retargeting*

16.9. Artificial Intelligence and Digital Entrepreneurship
- 16.9.1. Growth Strategies based on Artificial Intelligence
- 16.9.2. Advanced Data Analysis
- 16.9.3. Price Optimization
- 16.9.4. Sector-specific Applications

16.10. Artificial Intelligence Applications for Startups and Emerging Companies
- 16.10.1. Challenges and Opportunities
- 16.10.2. Sector-specific Applications
- 16.10.3. Integration of Artificial Intelligence into Existing Products

Module 17. Campaign Optimization and AI Application

17.1. Artificial Intelligence and Personalized Advertising with Emarsys
- 17.1.1. Accurate Audience Targeting Using Algorithms
- 17.1.2. Product and Service Recommender
- 17.1.3. Conversion Funnel Optimization

17.2. Advanced Ad Targeting and Segmentation with Eloqua
- 17.2.1. Segmentation by Custom Audience Segments
- 17.2.2. Targeting by Devices and Platforms
- 17.2.3. Segmentation by Customer Lifecycle Stages

17.3. Optimization of Advertising Budgets by means of Artificial Intelligence
- 17.3.1. Continuous Optimization based on Data
- 17.3.2. Use of Real-time Ad Performance Data
- 17.3.3. Segmentation and Targeting

17.4. Automated Creation and Distribution of Personalized Advertisements with Cortex
- 17.4.1. Generation of Dynamic Creativities
- 17.4.2. Content Personalization
- 17.4.3. Optimization of Creative Design

17.5. Artificial Intelligence and Optimization of Marketing Campaigns with Adobe Target
- 17.5.1. Multiplatform Distribution
- 17.5.2. Frequency Optimization
- 17.5.3. Automated Tracking and Analysis

17.6. Predictive Analytics for Campaign Optimization
- 17.6.1. Prediction of Market Trends
- 17.6.2. Estimating Campaign Performance
- 17.6.3. Budget Optimization

17.7. Automated and Adaptive A/B Testing
- 17.7.1. Automated A/B Testing
- 17.7.2. Identification of High Value Audiences
- 17.7.3. Optimization of Creative Content

17.8. Real-time Data-driven Optimization with Evergage
- 17.8.1. Real-time Tuning
- 17.8.2. Customer Life Cycle Forecasting
- 17.8.3. Detection of Behavioral Patterns

17.9. Artificial Intelligence in SEO and SEM with BrightEdge
- 17.9.1. Keyword Analysis using Artificial Intelligence
- 17.9.2. Advanced Audience Targeting with Artificial Intelligence Tools
- 17.9.3. Ad Personalization using Artificial Intelligence

17.10. Automating Technical SEO Tasks and Keyword Analysis with Spyfu
- 17.10.1. Multichannel Attribution Analysis
- 17.10.2. Campaign Automation using Artificial Intelligence
- 17.10.3. Automatic Optimization of the Web Site Structure thanks to Artificial Intelligence

Module 18. Artificial Intelligence and User Experience in Digital Marketing

18.1. Personalization of the User Experience based on Behavior and Referrals
- 18.1.1. Personalization of Content thanks to Artificial Intelligence
- 18.1.2. Virtual Assistants and Chatbots with Cognigy
- 18.1.3. Intelligent Recommendations

18.2. Optimization of Web Site Navigation and Usability using Artificial Intelligence
- 18.2.1. Optimization of the User Interface
- 18.2.2. Predictive Analysis of User Behavior
- 18.2.3. Automation of Repetitive Processes

18.3. Virtual Assistance and Automated Customer Support with Dialogflow
- 18.3.1. Artificial Intelligence Sentiment and Emotion Analysis
- 18.3.2. Problem Detection and Prevention
- 18.3.3. Automation of Customer Support with Artificial Intelligence

18.4. Artificial Intelligence and Personalization of the Customer Experience with Zendesk Chat
- 18.4.1. Personalized Product Recommender
- 18.4.2. Personalized Content and Artificial Intelligence
- 18.4.3. Personalized communication

18.5. Real-time Customer Profiling
- 18.5.1. Personalized Offers and Promotions
- 18.5.2. User Experience Optimization
- 18.5.3. Advanced Audience Segmentation

18.6. Personalized Offers and Product Recommendations
- 18.6.1. Tracking and Retargeting Automation
- 18.6.2. Personalized Feedback and Surveys
- 18.6.3. Customer Service Optimization

18.7. Customer Satisfaction Tracking and Forecasting
- 18.7.1. Sentiment Analysis with Artificial Intelligence Tools
- 18.7.2. Tracking of Key Customer Satisfaction Metrics
- 18.7.3. Feedback Analysis with Artificial Intelligence Tools

18.8. Artificial Intelligence and Chatbots in Customer Service with Ada Support
- 18.8.1. Detection of Dissatisfied Customers
- 18.8.2. Predicting Customer Satisfaction
- 18.8.3. Personalization of Customer Service with Artificial Intelligence

18.9. Development and Training of Chatbots for Customer Service with Intercom
- 18.9.1. Automation of Surveys and Satisfaction Questionnaires
- 18.9.2. Analysis of Customer Interaction with the Product/Service
- 18.9.3. Real-time Feedback Integration with Artificial Intelligence

18.10. Automation of Responses to Frequent Inquiries with Chatfuel
- 18.10.1. Competitive Analysis
- 18.10.2. Feedbacks and Responses
- 18.10.3. Generation of Queries/Responses with Artificial Intelligence Tools

Module 19. Analyzing Digital Marketing Data with Artificial Intelligence

19.1. Artificial Intelligence in Data Analysis for Marketing with Google Analytics
- 19.1.1. Advanced Audience Segmentation
- 19.1.2. Predictive Trend Analysis using Artificial Intelligence
- 19.1.3. Price Optimization using Artificial Intelligence Tools

19.2. Automated Processing and Analysis of Large Data Volumes with RapidMiner
- 19.2.1. Brand Sentiment Analysis
- 19.2.2. Marketing Campaign Optimization
- 19.2.3. Personalization of Content and Messages with Artificial Intelligence Tools

19.3. Detection of Hidden Patterns and Trends in Marketing Data
- 19.3.1. Detection of Behavioral Patterns
- 19.3.2. Trend Detection using Artificial Intelligence
- 19.3.3. Marketing Attribution Analysis

19.4. Data-driven Insights and Recommendations Generation with Data Robot
- 19.4.1. Predictive Analytics Thanks to Artificial Intelligence
- 19.4.2. Advanced Audience Segmentation
- 19.4.3. Personalized Recommendations

19.5. Artificial Intelligence in Predictive Analytics for Marketing with Sisense
- 19.5.1. Price and Offer Optimization
- 19.5.2. Artificial Intelligence Sentiment and Opinion Analysis
- 19.5.3. Automation of Reports and Analysis

19.6. Prediction of Campaign Results and Conversions
- 19.6.1. Anomaly Detection
- 19.6.2. Customer Experience Optimization
- 19.6.3. Impact Analysis and Attribution

19.7. Risk and Opportunity Analysis in Marketing Strategies
- 19.7.1. Predictive Analysis in Market Trends
- 19.7.2. Evaluation of Competence
- 19.7.3. Reputational Risk Analysis

19.8. Sales and Product Demand Forecasting with ThoughtSpot
- 19.8.1. Return on Investment (ROI) Optimization
- 19.8.2. Compliance Risk Analysis
- 19.8.3. Innovation Opportunities

19.9. Artificial Intelligence and Social Media Analytics with Brandwatch
- 19.9.1. Market Niches and their Analysis with Artificial Intelligence
- 19.9.2. Monitoring Emerging Trends

19.10. Sentiment and Emotion Analysis on Social Media with Clarabridge
- 19.10.1. Identification of Influencers and Opinion Leaders
- 19.10.2. Brand Reputation Monitoring and Crisis Detection

Module 20. Artificial Intelligence to Automate E-Commerce Processes

20.1. E-Commerce Automation with Algolia
- 20.1.1. Customer Service Automation
- 20.1.2. Price Optimization
- 20.1.3. Personalization of Product Recommendations

20.2. Automation of Purchasing and Inventory Management Processes with Shopify Flow
- 20.2.1. Inventory and Logistics Management
- 20.2.2. Fraud Detection and Fraud Prevention
- 20.2.3. Sentiment Analysis

20.3. Integration of Artificial Intelligence in the Conversion Funnel
- 20.3.1. Sales and Performance Data Analysis
- 20.3.2. Data Analysis at the Awareness Stage
- 20.3.3. Data Analysis at the Conversion Stage

20.4. Chatbots and Virtual Assistants for Customer Service
- 20.4.1. Artificial Intelligence and 24/7 Assistance
- 20.4.2. Feedbacks and Responses
- 20.4.3. Generation of Queries/Responses with Artificial Intelligence Tools

20.5. Real-time Price Optimization and Product Recommender thanks to Artificial Intelligence with the Google Cloud AI Platform
- 20.5.1. Competitive Price Analysis and Segmentation
- 20.5.2. Dynamic Price Optimization
- 20.5.3. Price Sensitivity Forecasting

20.6. Fraud Detection and Prevention in e-Commerce Transactions with Sift
- 20.6.1. Anomaly Detection with the Help of Artificial Intelligence
- 20.6.2. Identity Verification
- 20.6.3. Real-time Monitoring with Artificial Intelligence
- 20.6.4. Implementation of Automated Rules and Policies

20.7. Artificial Intelligence Analysis to Detect Suspicious Behavior
- 20.7.1. Analysis of Suspicious Patterns
- 20.7.2. Behavioral Modeling with Artificial Intelligence Tools
- 20.7.3. Real-time Fraud Detection

20.8. Ethics and Responsibility in the Use of Artificial Intelligence in E-Commerce
- 20.8.1. Transparency in the Collection and Use of Data Using Artificial Intelligence Tools with Watson
- 20.8.2. Data Security
- 20.8.3. Responsibility for Design and Development with Artificial Intelligence

20.9. Automated Decision Making with Artificial Intelligence with Watson Studio
- 20.9.1. Transparency in the Decision-Making Process
- 20.9.2. Accountability for Results
- 20.9.3. Social Impact

20.10. Future Trends in Artificial Intelligence in the Field of Marketing and E-Commerce with REkko
- 20.10.1. Marketing and Advertising Automation
- 20.10.2. Predictive and Prescriptive Analytics
- 20.10.3. Visual e-Commerce and Search
- 20.10.4. Virtual Shopping Assistants

Make the most of this opportunity to surround yourself with expert professionals and learn from their work methodology"

04

Teaching Objectives

This program is designed to train students to become experts in using artificial intelligence to optimize marketing strategies. They will learn to apply advanced algorithms to analyze large data sets, segment audiences, and personalize user experiences. Additionally, they will master the automation of key processes such as managing advertising campaigns and predicting outcomes, maximizing digital campaign effectiveness. With a focus on emerging AI-driven trends, graduates will be fully prepared to face challenges and seize opportunities in today's competitive digital market.

Master advanced algorithms that enable you to analyze data and make strategic decisions in Digital Marketing"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data lifecycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for Deep Learning development
- Explore bio-inspired computing and its relevance in the development of intelligent systems
- Implement Artificial Intelligence applications in Digital Marketing and e-commerce to improve the efficiency and effectiveness of strategies
- Improve user experience in Digital Marketing by using Artificial Intelligence for dynamic personalization of websites, applications and content
- Implement Artificial Intelligence systems for the automation of e-commerce processes, from inventory management to customer service
- Research and apply predictive AI models to identify emerging trends in the marketplace and anticipate customer needs

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 Data Life Cycle

- Understand the fundamental concepts of statistics and their application in data analysis
- 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

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, Pre-Processing 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 preprocessing 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
- Analyze the efficiency and complexity of algorithms, applying analysis techniques to evaluate performance in terms of time and space
- Study and apply sorting algorithms, understanding their performance and comparing their efficiency in different contexts
- Explore tree-based algorithms, understanding their structure and applications
- 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
- Study the representation of knowledge, including the analysis of ontologies and their application in the organization of structured information
- 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

Module 7. Machine Learning and Data Mining

- Introduce the processes of knowledge discovery and the fundamental concepts of machine learning
- Study decision trees as supervised learning models, understanding their structure and applications
- 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 Bayesian networks and Bayesian classifiers
- Analyze regression and continuous response models for predicting numerical values from data

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
- Use trainers and optimizers to tune and improve the performance of neural networks
- Explore the connection between biological and artificial neurons for a deeper understanding of model design

Module 9. Deep Neural Networks Training

- Solve gradient-related problems in deep neural network training
- Explore and apply different optimizers to improve the efficiency and convergence of models
- Program the learning rate to dynamically adjust the convergence speed of the model
- Understand and address overfitting through specific strategies during 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

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
- Explore the tfdata API to efficiently manage and manipulate datasets
- 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
- Apply in a practical way all the concepts learned in building and training custom models with TensorFlow in real-world situations

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
- Apply classification and localization techniques in Deep Computer Vision environments
- Explore object detection and object tracking strategies using Convolutional Neural Networks

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
- Explore 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
- Implement and understand the operation of stacked autoencoders
- Explore and apply convolutional autoencoders for efficient visual data representations
- Analyze and apply the effectiveness of sparse automatic encoders in data representation
- 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 space exploration-exploitation strategies in genetic algorithms
- Examine models of evolutionary computation in the context of optimization
- Continue detailed analysis of evolutionary computation models
- Apply evolutionary programming to specific learning problems
- Address the complexity of multi-objective problems in the framework of bio-inspired computing

Module 15. Artificial Intelligence: Strategies and Applications

- Develop strategies for the implementation of artificial intelligence in financial 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

Module 16. Artificial Intelligence Applications in Digital Marketing and E-Commerce

- Analyze how to implement content personalization and recommendations using Adobe Sensei in Digital Marketing and e-commerce strategies
- Automate strategic decision-making processes with Optimizely to optimize the performance of Digital Marketing campaigns
- Analyze sentiment and emotions in Marketing content using Hub Spot to adapt strategies and improve effectiveness
- Identify content and distribution opportunities using Evergage to improve the effectiveness of Inbound Marketing strategies
- Automate workflows and lead tracking with Segment to improve operational efficiency and effectiveness of Marketing strategies
- Personalize user experiences based on the buying cycle using Ortto to improve customer retention and loyalty

Module 17. Campaign Optimization and AI Application

- Implement AI and personalized advertising with Emarsys to create highly personalized and targeted ads to specific audiences
- Apply advanced ad targeting and segmentation techniques with Eloqua to reach specific audiences at different stages of the customer lifecycle
- Optimize ad budgets using Artificial Intelligence to maximize ROI and campaign effectiveness
- Perform automated tracking and analysis of campaign results to make real-time adjustments and improve performance
- Implement automated and adaptive A/B testing to identify high-value audiences and optimize campaign creative content
- Automate technical SEO and keyword analysis tasks with Spyfu, using Artificial Intelligence to perform multi-channel attribution analysis

Module 18. Artificial Intelligence and User Experience in Digital Marketing

- Personalize user experience based on user behavior and preferences using Artificial Intelligence
- Optimize website navigation and usability using Artificial Intelligence, including predictive analytics of user behavior and process automation
- Implement personalized offers and product recommendations, automating tracking and retargeting, as well as customer service optimization
- Track and predict customer satisfaction using sentiment analysis with AI tools and tracking of key metrics
- Develop and train chatbots for customer service with Itercom, automating satisfaction surveys and questionnaires, as well as integrating real-time feedback
- Automating responses to frequent queries with Chatfuel, including competitive analysis and AI query/response generation

Module 19. Analyzing Digital Marketing Data with Artificial Intelligence

- Detect hidden patterns and trends in Marketing data and perform brand sentiment analysis
- Predict campaign and conversion results, detect anomalies and optimize customer experience using predictive analytics
- Perform risk and opportunity analysis on marketing strategies, including predictive analytics on market trends and competitor assessment
- Use AI and social media analytics with Brandwatch to identify market niches, monitor emerging trends and perform sentiment analysis

Module 20. Artificial Intelligence to Automate E-Commerce Processes

- Integrate Artificial Intelligence in the conversion funnel to analyze sales data and performance at all stages of the buying process
- Implement chatbots and virtual assistants for 24/7 customer service, using Artificial Intelligence to generate automatic responses and gather feedback
- Detect and prevent fraud in e-commerce transactions with Sift, using Artificial Intelligence to detect anomalies and verify identities
- Perform Artificial Intelligence analysis to detect suspicious behavior and fraudulent patterns in real-time
- Promote ethics and accountability in the use of Artificial Intelligence in e-Commerce, ensuring transparency in the collection and use of data
- Explore future trends of Artificial Intelligence in Marketing and e-commerce with REkko

Master process automation in digital Marketing, optimizing ad campaigns and enhancing user experience personalization"

05

Career Opportunities

Upon completing the Artificial Intelligence in Digital Marketing program, graduates will be prepared for a wide range of strategic roles within the digital marketing field. Career paths include positions such as Digital Marketing consultant specializing in AI, automated campaign manager, Marketing specialist in experience personalization. In addition, graduates will also be qualified for leadership roles in areas such as process automation, predictive analytics, and advanced audience segmentation. Thanks to the program's practical approach, they will be highly valued candidates for global companies.

Are you ready? Take on strategic roles in Digital Marketing, specializing in Artificial Intelligence. Enroll now"

Graduate Profile

Graduates of the Artificial Intelligence in Digital Marketing program will be professionals with a strong grasp of AI-powered digital tools and strategies. They will be equipped to analyze large volumes of data, generate valuable insights, and apply advanced segmentation and personalization techniques to optimize campaigns. In addition, they will possess skills in process automation, digital project management, and the development of personalized marketing strategies aimed at maximizing user experience. Graduates will be prepared to lead teams and develop innovative solutions in a highly competitive environment.

Unlock a wide range of leadership opportunities in Digital Marketing focused on technological innovation.

- **Proficiency in AI tools:** Ability to apply AI algorithms and techniques to data analysis and the optimization of digital marketing strategies
- **Big data analysis:** Skilled in processing and extracting valuable insights from large datasets to support better decision-making
- **Campaign optimization:** Expertise in managing and automating digital marketing campaigns to increase effectiveness and return on investment
- **User experience personalization:** Capability to design and implement strategies that deliver content and products tailored to individual user preferences

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

1. **Digital Marketing Strategy Consultant with AI:** Responsible for developing and implementing personalized digital marketing strategies using artificial intelligence tools to optimize campaigns and enhance user experience
2. **Automated Advertising Campaign Manager:** Leads the creation, implementation, and optimization of automated advertising campaigns, using AI to improve ad targeting and performance
3. **Predictive Marketing Analytics Specialist:** Implements AI-based predictive models to forecast campaign outcomes and maximize conversions through data-driven decision-making
4. **Digital Marketing Data Scientist:** Analyzes large data sets to extract key insights and generate marketing strategy recommendations, leveraging AI for data processing and visualization
5. **User Experience Personalization Specialist:** Designs and executes personalization strategies, using AI to tailor content, products, and services to individual user preferences
6. **Director of AI Innovation in Digital Marketing:** Drives the adoption of new technologies and AI-powered solutions within digital marketing strategies, fostering innovation across the organization
7. **Digital Marketing Transformation Project Manager:** Leads projects focused on integrating AI into digital marketing, coordinating multidisciplinary teams to ensure successful implementation of innovative technologies
8. **Data-Driven Digital Marketing Strategist:** Designs digital marketing strategies based on data analysis and AI use, optimizing decision-making and maximizing performance
9. **Chief Marketing Officer (CMO) – Digital Companies:** Oversees corporate digital marketing strategies, integrating AI to improve targeting, automation, and campaign personalization
10. **Digital Transformation Consultant for Businesses:** Advises organizations on integrating AI into their digital marketing strategies, guiding technology adoption to enhance performance and market competitiveness

You will become a highly sought-after candidate for global companies looking for talent specialized in Artificial Intelligence"

06

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.

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.

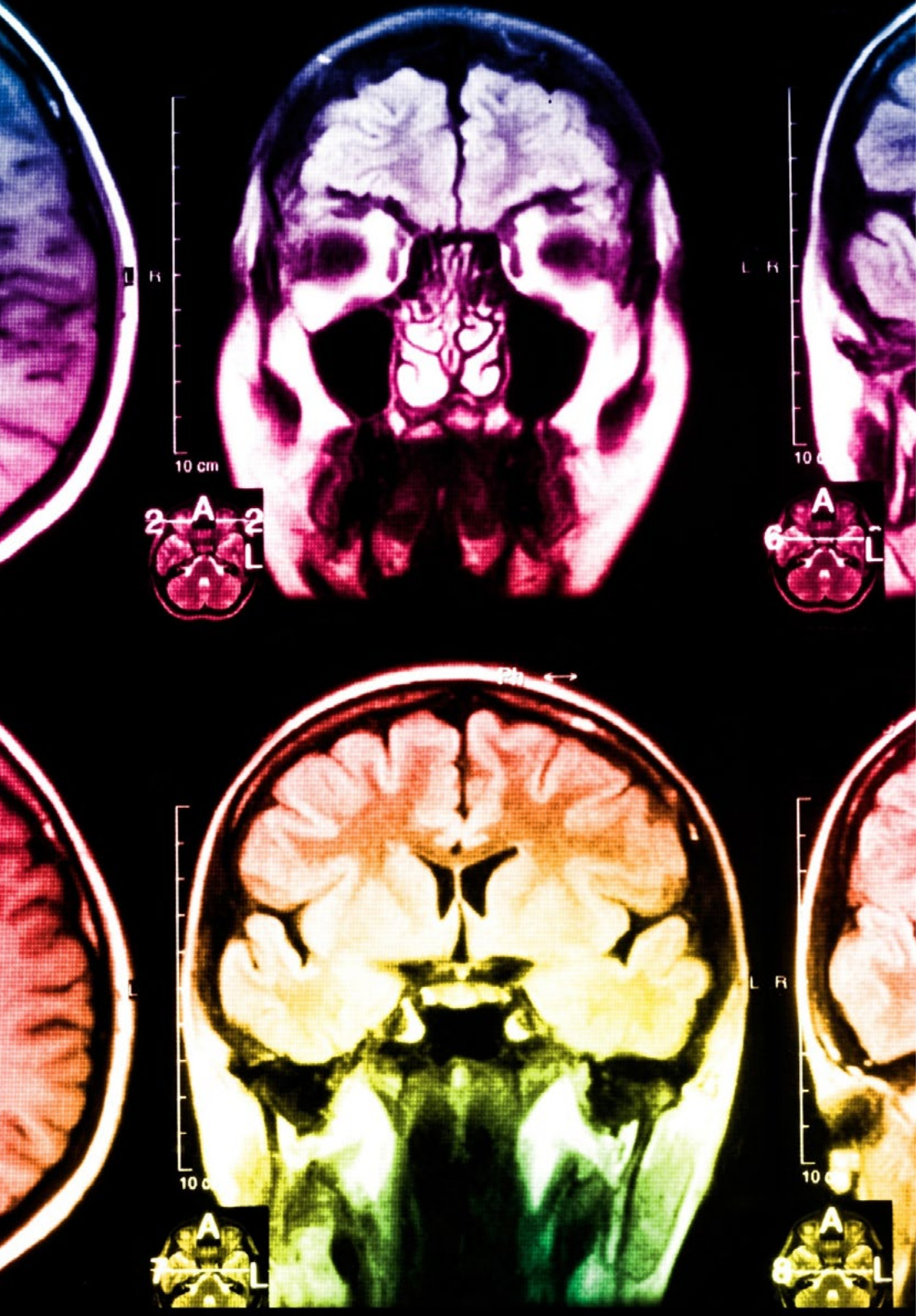
In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

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 teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, 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

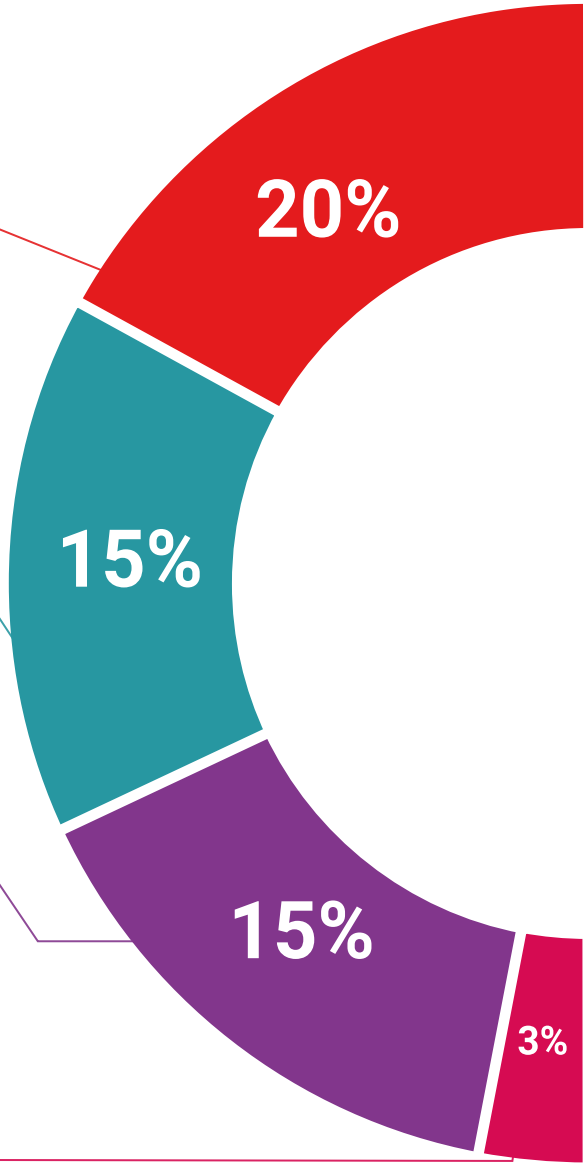
You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

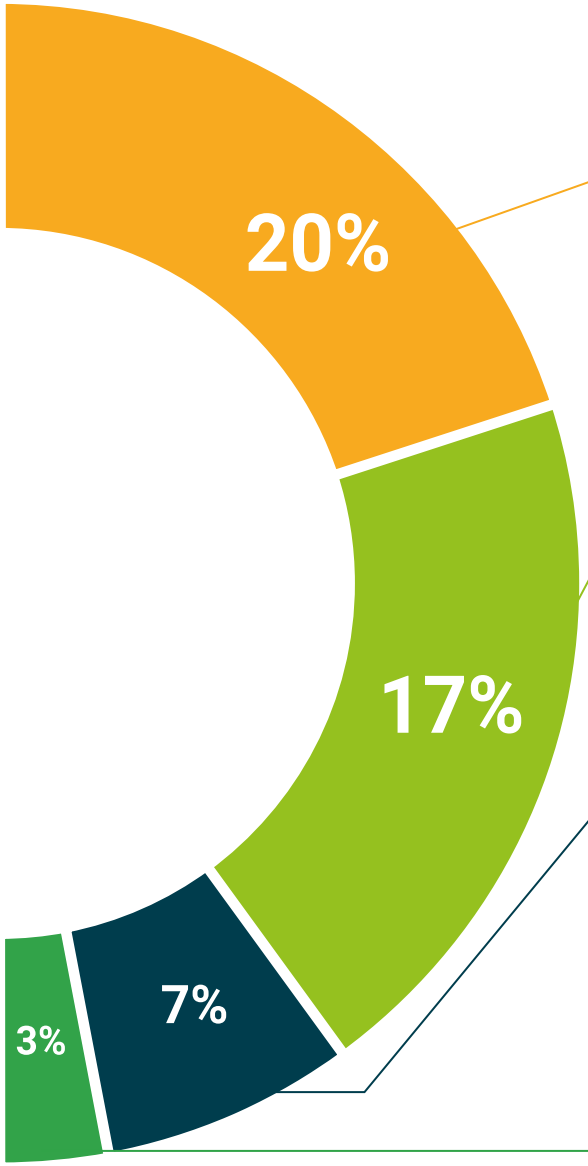
Interactive Summaries

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.





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.

07

Teaching Staff

The faculty of this university program is made up of leading experts in the field, combining strong academic backgrounds with extensive professional experience in applying Artificial Intelligence to Digital Marketing. Their in-depth knowledge and hands-on expertise will provide graduates with insights into the latest trends, tools, and techniques in the industry. With a teaching approach focused on critical thinking, problem-solving, and collaboration, they foster a dynamic and engaging learning environment—preparing students to face real-world challenges with confidence and skill.

The faculty is composed of seasoned professionals with extensive experience in AI applied to Digital Marketing, equipping graduates to succeed in a competitive and evolving sector"

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
- Doctorate in Psychology from the University of Castilla La Mancha
- Doctorate in Economics, Business and Finance from the Camilo José Cela University
- Doctorate 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 from the 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

Ms. Martínez Cerrato, Yésica

- Responsible for Technical Training at Securitas Seguridad España
- Education, Business and Marketing Specialist
- Product Manager in Electronic Security at Securitas Direct
- 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

Professors

Mr. Nájera Puente, Juan Felipe

- Director of Studies and Research at the Council for Quality Assurance in Higher Education
- Data Analyst and Data Scientist
- Production Programmer at Confiteca C.A
- Processes Consultant at Esefex Consulting
- Academic Planning Analyst at San Francisco de Quito University
- Master's Degree in Big Data and Data Science from the International University of Valencia
- Industrial Engineer from San Francisco de Quito University

Ms. Del Rey Sánchez, Cristina

- Talent Management Administrator 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

08

Certificate

The Professional Master's Degree in Artificial Intelligence in Digital Marketing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University..

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This private qualification will allow you to obtain a**Professional Master's Degree diploma in Artificial Intelligence in Digital Marketing** 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: **Professional Master's Degree in Artificial Intelligence in Digital Marketing**

Modality: **online**

Duration: **12 months**

Accreditation: **90 ECTS**

tech global university

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

Professional Master's Degree in Artificial Intelligence in Digital Marketing

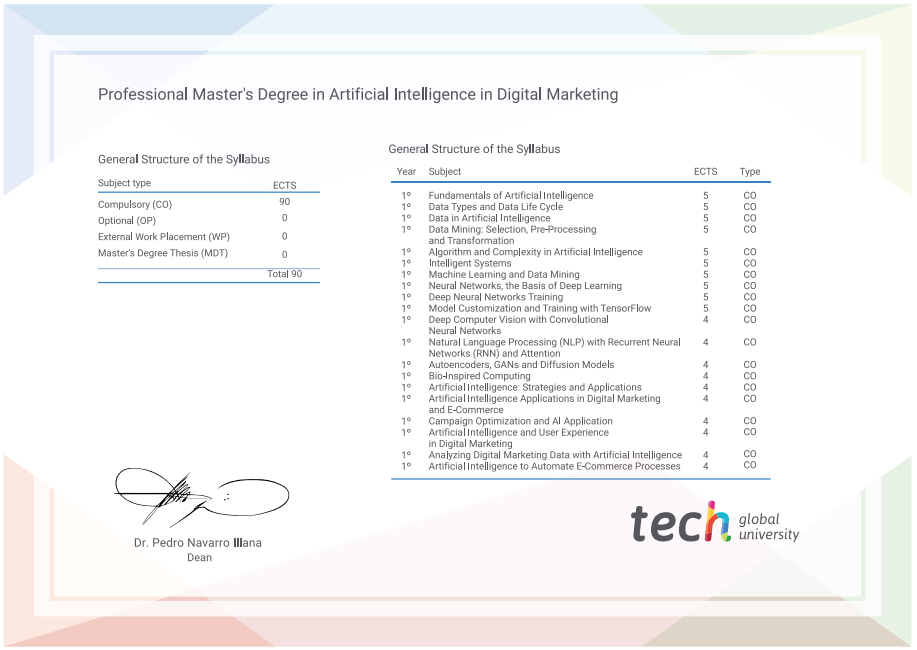
This is a private qualification of 2,700 hours of duration equivalent to 90 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates


Professional Master's Degree in Artificial Intelligence in Digital Marketing

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	90
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 90

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Fundamentals of Artificial Intelligence	5	CO
1º	Data Types and Data Life Cycle	5	CO
1º	Data in Artificial Intelligence	5	CO
1º	Data Mining: Selection, Pre-Processing and Transformation	5	CO
1º	Algorithm and Complexity in Artificial Intelligence	5	CO
1º	Intelligent Systems	5	CO
1º	Machine Learning and Data Mining	5	CO
1º	Neural Networks, the Basis of Deep Learning	5	CO
1º	Deep Neural Networks Training	5	CO
1º	Model Customization and Training with TensorFlow	5	CO
1º	Deep Computer Vision with Convolutional Neural Networks	4	CO
1º	Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention	4	CO
1º	Autoencoders, GANs and Diffusion Models	4	CO
1º	Bio-Inspired Computing	4	CO
1º	Artificial Intelligence: Strategies and Applications	4	CO
1º	Artificial Intelligence Applications in Digital Marketing and E-Commerce	4	CO
1º	Campaign Optimization and AI Application	4	CO
1º	Artificial Intelligence and User Experience in Digital Marketing	4	CO
1º	Analyzing Digital Marketing Data with Artificial Intelligence	4	CO
1º	Artificial Intelligence to Automate E-Commerce Processes	4	CO

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

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Professional Master's Degree
Artificial Intelligence in Digital Marketing

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

Professional Master's Degree

Artificial Intelligence in Digital Marketing

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