Executive Master's Degree
Artificial Intelligence in Digital Marketing

M A I D M

tech global university

Executive Master's Degree
Artificial Intelligence in
Digital Marketing

» Modality: **online**
» Duration: **12 months**
» Certificate: **TECH Global University**
» Accreditation: **90 ECTS**
» Schedule: **at your own pace**
» Exams: **online**
» Target Group: **University graduates who have previously completed any degree in the fields of Communication Sciences, Sociology, Information Technology, Psychology and Economics.**

Website: **www.techtitute.com/us/school-of-business/executive-master-degree/master-artificial-intelligence-digital-marketing**

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01
Welcome

Industry 4.0 has had a significant impact on the business world, and Digital Marketing is an example of this. So much so that a recent study predicts that more than 80% of institutions will implement Artificial Intelligence applications over the next few years. This is due to its multiple benefits, among which stand out advanced data analysis and predictions, as well as ad optimization. Given this reality, professionals need to be up to date with the latest advances in this area to optimize their daily practice and provide excellent quality services. For this reason, TECH launches a pioneering 100% online program that will delve into the recent innovations that have taken place in this field.

Executive Master's Degree in Artificial Intelligence in Marketing Digital
TECH Global University

Thanks to this 100% online Executive Master's Degree, you will get the most out of Artificial Intelligence to optimize user experiences and personalize content"

Why Study at TECH?

TECH is the world's largest 100% online business school. It is an elite business school, with a model based on the highest academic standards. A world-class center for intensive managerial skills education.

TECH is a university at the forefront of technology, and puts all its resources at the student's disposal to help them achieve entrepreneurial success"

At TECH Global University

Innovation

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"Microsoft Europe Success Story", for integrating the innovative, interactive multi-video system.

The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

95% of TECH students successfully complete their studies

Networking

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

+100000 executives prepared each year

+200 different nationalities

Empowerment

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

+500 collaborative agreements with leading companies

Talent

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.

Multicultural Context

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.

Learn with the best

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.

At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:

Analysis

TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.

Academic Excellence

TECH offers students the best online learning methodology. The university combines the Relearning method (postgraduate learning methodology with the best international valuation) with the Case Study. Tradition and vanguard in a difficult balance, and in the context of the most demanding educational itinerary.

Economy of Scale

TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a ground-breaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.

03
Why Our Program?

Studying this TECH program means increasing the chances of achieving professional success in senior business management.

It is a challenge that demands effort and dedication, but it opens the door to a promising future. Students will learn from the best teaching staff and with the most flexible and innovative educational methodology.

We have highly qualified teachers and the most complete syllabus on the market, which allows us to offer you education of the highest academic level"

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:

01 A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

70% of students achieve positive career development in less than 2 years.

02 Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

Our global vision of companies will improve your strategic vision.

03 Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

You will work on more than 100 real senior management cases.

04 You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

45% of graduates are promoted internally.

05

Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

You will find a network of contacts that will be instrumental for professional development.

06

Thoroughly develop business projects.

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

20% of our students develop their own business idea.

07

Improve *soft skills* and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

Improve your communication and leadership skills and enhance your career.

08

You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Global University community.

We give you the opportunity to study with a team of world-renowned teachers.

04
Objectives

Through this university program, Marketing professionals will stand out for having a solid understanding of the main techniques of Artificial Intelligence, among which are Computer Vision or Natural Language Processing. This will allow them to apply these strategies to their projects to individualize content, segment audiences and optimize advertising campaigns. They will also analyze large data sets to make the most informed strategic decisions.

"You will develop innovative strategies that leverage AI capabilities to increase campaign efficiency and maximize ROI"

TECH makes the goals of their students their own goals too
Working together to achieve them
The **Executive Master's Degree in Artificial Intelligence in Digital Marketing** will enable students to:

01 Understand the theoretical foundations of Artificial Intelligence

04 Delve into algorithms and complexity to solve specific problems

02 Study the different types of data and understand the data lifecycle

03 Evaluate the crucial role of data in the development and implementation of AI solutions

05 Explore the theoretical basis of neural networks for Deep Learning development

06 Explore bio-inspired computing and its relevance in the development of intelligent systems

08 Improve user experience in Digital Marketing by using Artificial Intelligence for dynamic personalization of websites, applications and content

09 Implement Artificial Intelligence systems for the automation of e-Commerce processes, from inventory management to customer service

07 Implement Artificial Intelligence applications in Digital Marketing and e-commerce to improve the efficiency and effectiveness of strategies

10 Research and apply predictive AI models to identify emerging trends in the marketplace and anticipate customer needs

05
Skills

Through this university program, graduates will gain a solid understanding of the fundamentals of Artificial Intelligence. In this way, they will apply their techniques to the field of Marketing to personalize content, segment audiences and analyze sentiment in social networks, among others. In addition, they will develop skills to collect, clean, analyze and visualize large data sets using advanced techniques to acquire actionable insights. In tune with this, they will optimize customer experiences by offering more personalized interactions, relevant recommendations and quick responses to consumer queries.

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You will skillfully handle Adobe Sensei to automate tedious tasks such as image tagging or ad campaign optimization"

01 Master data mining techniques, including complex data selection, preprocessing and transformation

04 Employ Autoencoders, GANs and Diffusion Models to solve specific challenges in Artificial Intelligence

02 Design and develop intelligent systems capable of learning and adapting to changing environments

03 Control machine learning tools and their application in data mining for decision making

05 Implement an encoder-decoder network for neural machine translation

06 Apply the fundamental principles of neural networks in solving specific problems

08 Apply advanced data analytics using Artificial Intelligence to better understand consumer behavior and optimize Digital Marketing strategies

09 Develop skills in the use of machine learning and deep learning algorithms to analyze large volumes of data in the context of Digital Marketing

07 Use Artificial Intelligence techniques for the optimization of Digital Marketing campaigns, from audience segmentation to content personalization

10 Design Artificial Intelligence-based Digital Marketing strategies that enable companies to quickly adapt to market changes in digital environments
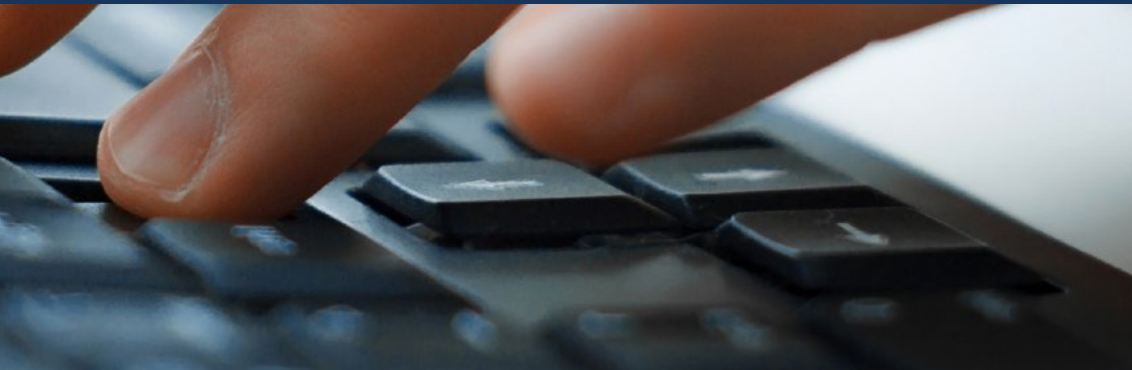
Structure and Content

The Executive Master's Degree in Artificial Intelligence in Digital Marketing is a program designed to guarantee flexibility, thanks to a convenient 100% online format that allows you to choose the time and place that best suits you to expand your knowledge. The program is developed over 12 months, in which you will live an academic experience that will raise your professional horizons to a higher level.

You will learn about the current situation of the labor market in Artificial Intelligence in Digital Marketing and multiply your chances of success thanks to TECH"

Syllabus

This program in Artificial Intelligence in Digital Marketing is an intensive program that will equip you with the necessary tools to make the most informed strategic decisions. In this way, graduates will use data and analytics to improve both the effectiveness and performance of advertising campaigns.

During 12 months of training, students will have access to top-quality teaching materials, developed by a faculty versed in Artificial Intelligence. In addition, the academic pathway will include a myriad of resources to reinforce key concepts, including case studies, specialized readings and interactive summaries.

This program will delve into the personalization of content using Adobe Sensei, as well as the prediction of trends and purchasing behavior. In this way, experts will stand out for having a comprehensive knowledge of Artificial Intelligence in Digital Marketing and will acquire a fully strategic perspective.

The curriculum will equip specialists with the necessary skills to successfully overcome the challenges that arise during the implementation of Artificial Intelligence in their various projects. To this end, the syllabus will provide state-of-the-art trends in areas such as Intelligent Systems, Machine Learning and Machine Learning. Therefore, graduates will be highly qualified to create innovative projects that stand out in the market.

This Executive Master's Degree takes place over 12 months and is divided into 20 modules:

Module 1	Fundamentals of Artificial Intelligence
Module 2	Data Types and Life Cycle
Module 3	Data in Artificial Intelligence
Module 4	Data Mining: Selection, Pre-Processing and Transformation
Module 5	Algorithm and Complexity in Artificial Intelligence
Module 6	Intelligent Systems
Module 7	Machine Learning and Data Mining
Module 8	Neural Networks, the Basis of *Deep Learning*
Module 9	Deep Neural Networks Training
Module 10	Model Customization and Training with TensorFlow

Module 11	Deep Computer Vision with Convolutional Neural Networks
Module 12	Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention
Module 13	Autoencoders, GANs and Diffusion Models
Module 14	Bio-Inspired Computing
Module 15	Artificial Intelligence: Strategies and Applications
Module 16	Artificial Intelligence Applications in Digital Marketing and E-Commerce
Module 17	Campaign Optimization and AI Application
Module 18	Artificial Intelligence and User Experience in Digital Marketing
Module 19	Analyzing Digital Marketing Data with Artificial Intelligence.
Module 20	Artificial Intelligence to Automate e-Commerce Processes

Where, When and How is it Taught?

TECH offers the possibility to develop this Executive Master's Degree in Artificial Intelligence in Digital Marketing completely online. Throughout the 12 months of the educational program, the students will be able to access all the contents of this program at any time, allowing them to self-manage their study time.

A unique, key, and decisive educational experience to boost your professional development and make the definitive leap.

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 Dialogue 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
2.3.2. 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 Result Evaluation
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

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.   Merge Sort
5.3.6.   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 Matrixes
7.4.2. Numerical Evaluation Matrixes
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. Surgery
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. Grap 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 API tfdata
10.6.1. Using the tfdataAPI for Data Processing
10.6.2. Construction of Data Streams with tfdata
10.6.3. Using the tfdata API for Model Training

10.7. The TFRecord Format
10.7.1. Using the TFRecord API for Data Serialization
10.7.2. Loading TFRecord Files with TensorFlow
10.7.3. Using TFRecord Files for Training Models

10.8. Keras Pre-Processing Layers
10.8.1. Using the Keras Pre-Processing API
10.8.2. Construction of Pre-Processing Pipelined 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. Preprocessing Data 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 Application
10.10.2. Building a Deep Learning App with TensorFlow
10.10.3. Training a model with TensorFlow
10.10.4. Use of the Application for the Prediction of Results

Module 11. Deep Computer Vision with Convolutional Neural Networks

11.1. The Cortex Visual 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. Classification and Localization in Deep Computer Vision
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
11.10.1. Edge Detection
11.10.1. Segmentation Methods Based on Rules

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 Preprocessing
12.7.3. Training a Transformers Model for Vision

12.8. Hugging Face Transformer 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. Trendy MNIST Image Generation
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 Computing 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 Computation 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 Uses
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 Uses

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 Uses
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 Uses

15.6. Potential Risks Related to the Use of Artificial Intelligence in the Industry

15.6.1. Case Uses
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 Uses
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 Uses
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 Uses
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 Uses
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 Autopilot
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 Itercom
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

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

TECH Business School uses the Case Study to contextualize all content

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

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

This program prepares you to face business challenges in uncertain environments and achieve business success.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and business reality is taken into account.

> *You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments"*

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

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

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

Relearning Methodology

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

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

> *Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.*

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

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

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)

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. With this methodology we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

30%

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Management Skills Exercises

They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager needs to develop in the context of the globalization we live in.

10%

8%

3%

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.

30%

15%

4%
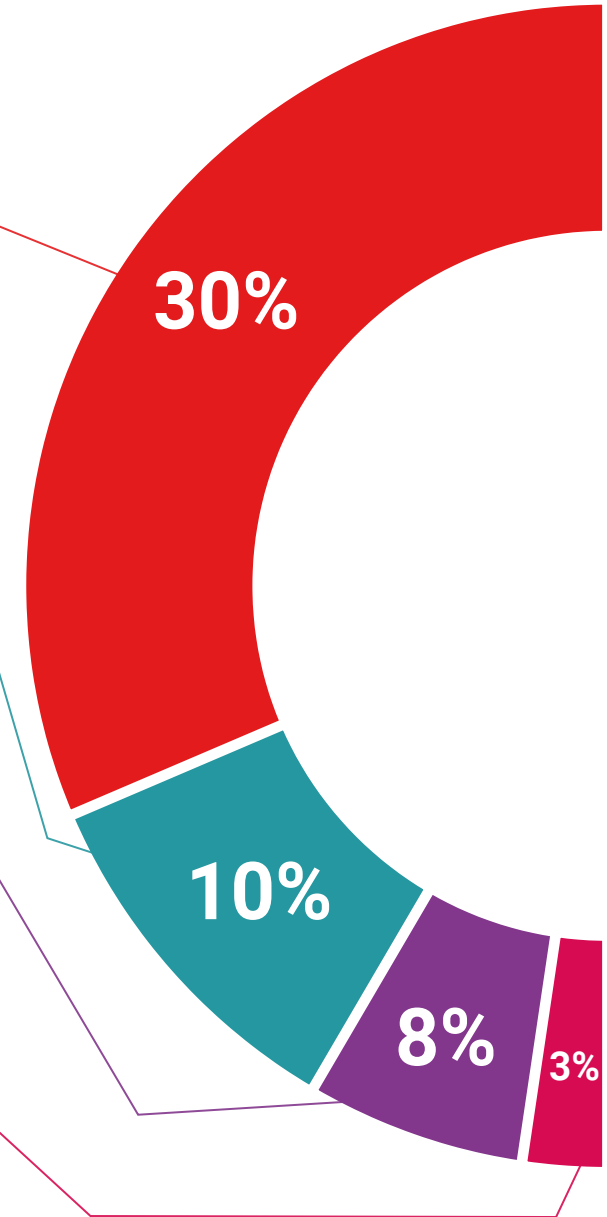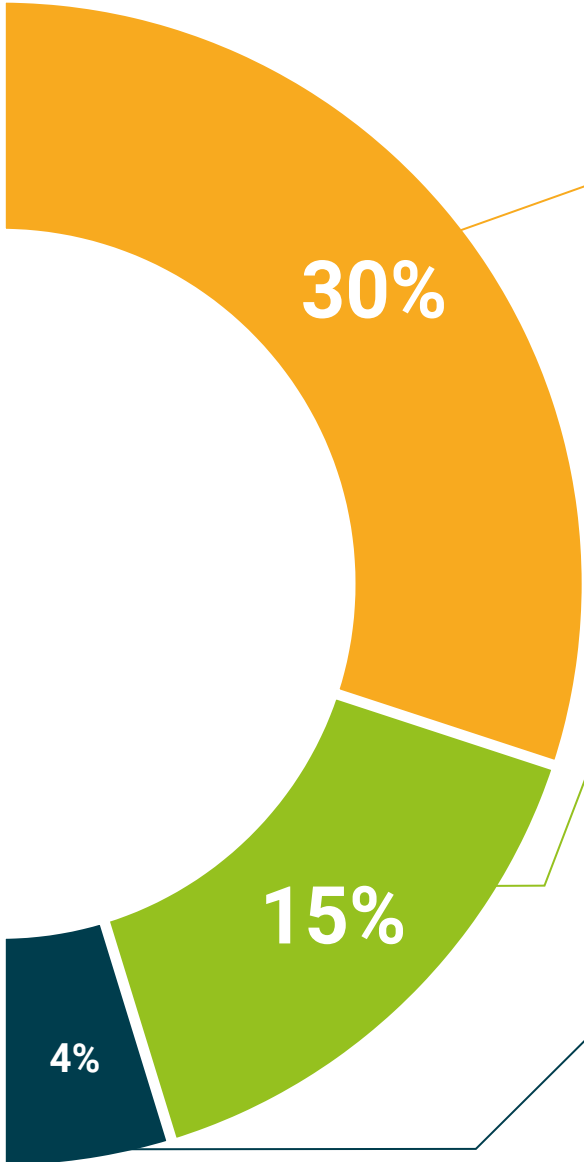
Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best senior management specialists in the world.

Interactive Summaries

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

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

Testing & Retesting

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

Our Students' Profiles

This program is intended for university graduates who have previously completed any of the following degrees in the field of Communication Sciences, Computer Engineering and Economics.

The diversity of participants with different academic profiles and from multiple nationalities makes up the multidisciplinary approach of this program.

The program is also open to professionals who, being university graduates in any area, have two years of work experience in the Field of Sociology.
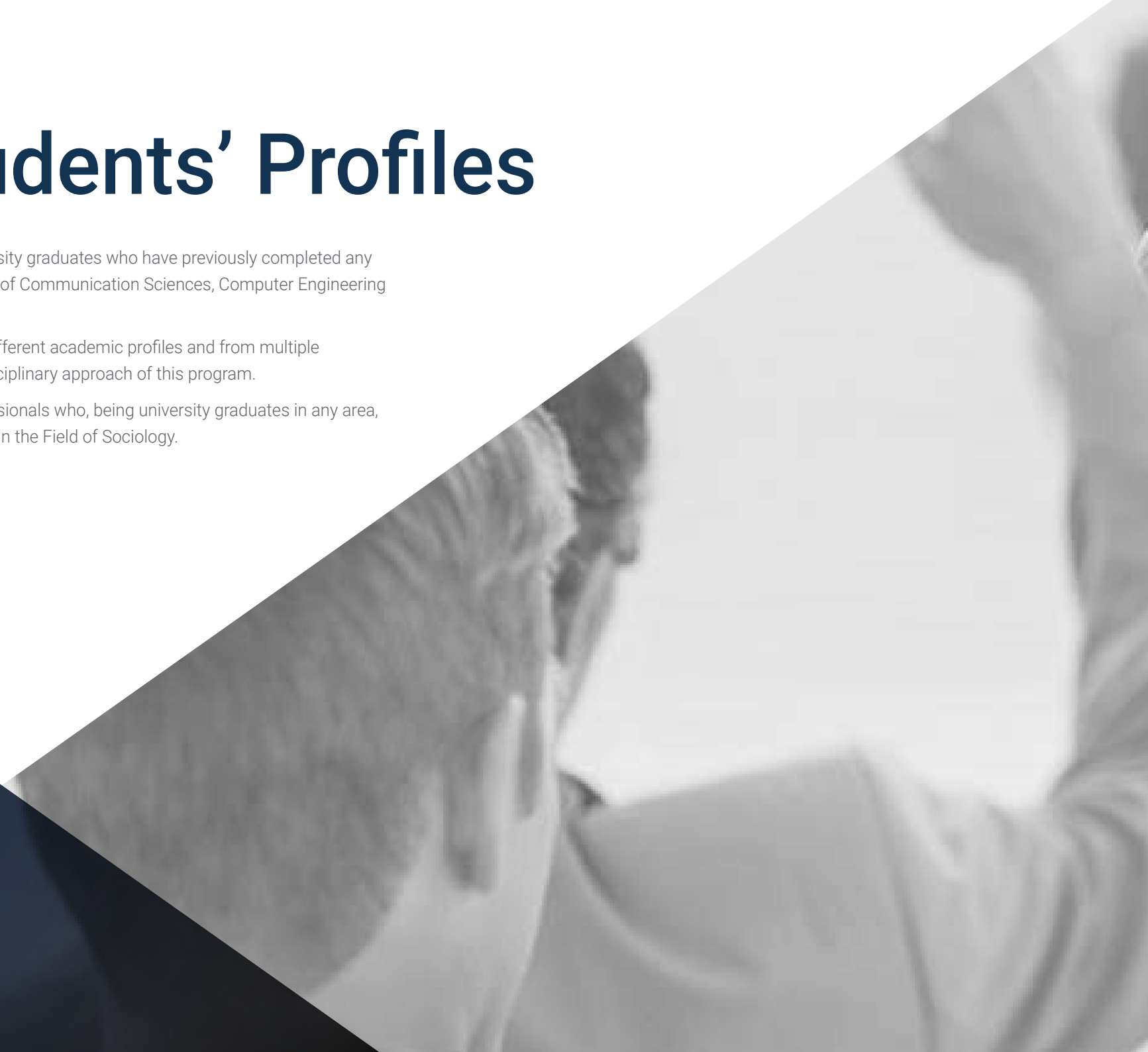
Don't miss the opportunity to boost your career through this innovative program"

Average Age

Between **35** and **45** years old

Years of Experience

More than 15 years **18%**

10 to 15 years **35%**

5 to 10 years **32%**

5 years **15%**

Training

Computer Engineering **28%**

Communication Sciences **45%**

Science Economics **20%**

Other **7%**

Educational Profile

Computer Science **30%**

Marketing and Advertising **40%**

Entrepreneurs **20%**

Other **10%**
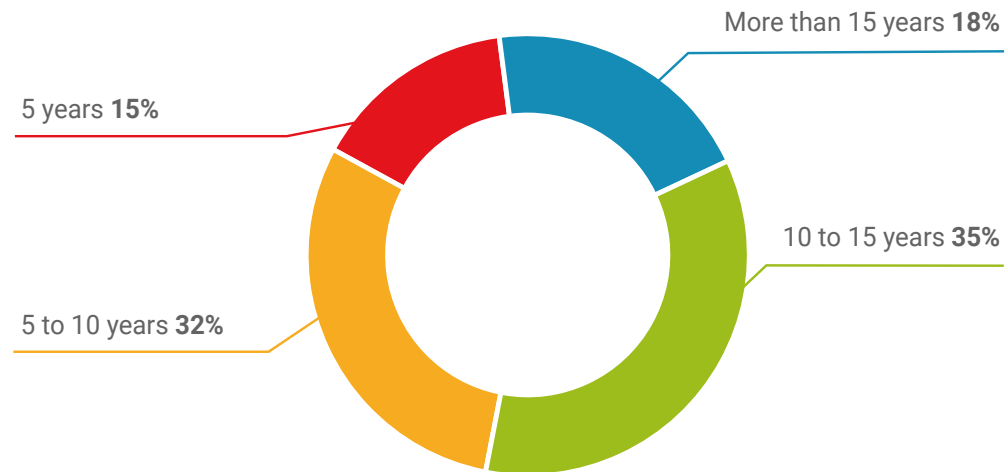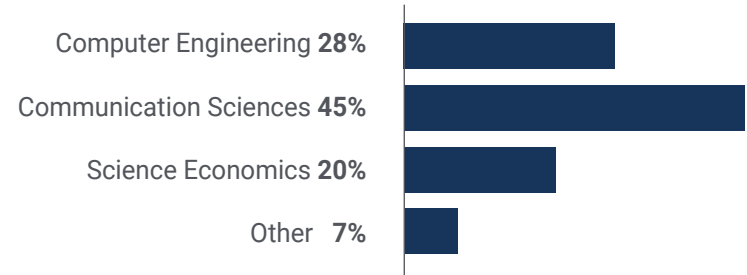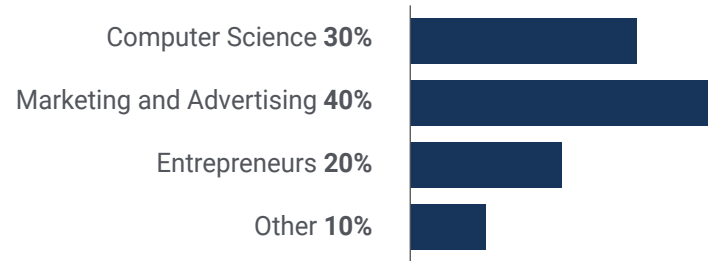
Geographical Distribution

USA **30%**
Spain **38%**
Mexico **21%**
Colombia **11%**
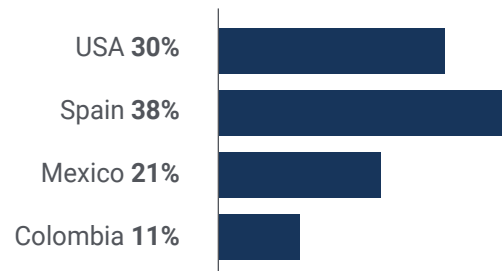
Manuel Hernández Santana

Social Media and Content Manager

"I want to express my gratitude for having had the opportunity to take the program in Artificial Intelligence in Digital Marketing. This program has provided me with a solid foundation in the principles and practices of AI applied to Digital Marketing, which has been invaluable to my professional development"

Course Management

TECH's main premise is to provide students with the most complete and updated university programs in the academic market. For this Executive Master's Degree, TECH brings together a teaching staff highly specialized in Artificial Intelligence. These professionals stand out for their extensive work experience in this field, where they have contributed innovative and creative proposals to enrich Digital Marketing campaigns. In this way, they pour into the teaching materials their solid understanding in this area to ensure students an effective and quality learning.

An experienced teaching team will guide you during your learning process and solve any doubts you may have"

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

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

Ms. Del Rey Sánchez, Cristina

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

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
- Professional Master's Degree in Big Data and Data Science at the International University of Valencia
- Industrial Engineer from San Francisco de Quito University

Impact on Your Career

This academic itinerary is designed to meet the needs of students who wish to specialize in Artificial Intelligence in Digital Marketing, but also taking into account everything they will bring to their respective companies. Professionals will acquire skills to make informed and data-driven strategic decisions, which will lead to greater effectiveness in Marketing strategies. In addition, they will use the most advanced tools of Artificial Intelligence to optimize advertising campaigns. This will include content personalization, audience targeting and process automation. This will improve the efficiency and ROI of the initiatives.

"

TECH is a cutting-edge technological university, which puts all its resources at your disposal to help you achieve business success"

Are you ready to take the leap?
Excellent professional development awaits you

TECH's Artificial Intelligence in Digital Marketing program is an intensive program that prepares you to face challenges and business decisions in the field of Digital Marketing. Its main objective is to promote your personal and professional growth. Helping you achieve success.

If you want to improve yourself, make a positive change at a professional level and interact with the best, this is the place for you.

Looking to experience a leap in quality in your profession? This program in Artificial Intelligence in Digital Marketing will help you achieve it.

Trust your academic progress to TECH and elevate your career as a marketing professional to the top.

Time of Change

During the program	During the first year	After 2 years
11%	**63%**	**26%**

Type of change

Internal Promotion **50%**

Change of Company **30%**

Entrepreneurship **20%**

tech
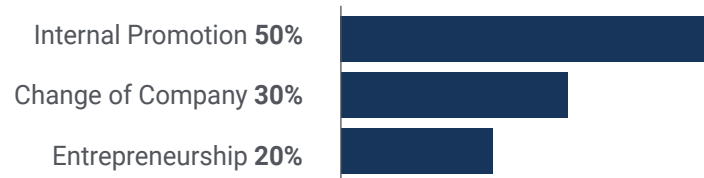
Salary increase

This program represents a salary increase of more than **26.24%** for our students

Salary before	A salary increase of	Salary after
$ 52,000	**26.24%**	**$ 65,644**

11

Benefits for Your Company

This program contributes to elevating the organization's talent to its maximum potential through the instruction of high-level leaders.

In addition, participating in this university option is a unique opportunity to access a powerful network of contacts in which to find future professional partners, customers or suppliers.

"

In the digital era, managers must integrate new processes and strategies that bring about significant changes and organizational development. This is only possible through university training and updating"

Developing and retaining talent in companies is the best long-term investment.

01

Growth of talent and intellectual capital
The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization.

02

Retaining high-potential executives to avoid talent drain
This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company.

03

Building agents of change
You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles.

04

Increased international expansion possibilities
Thanks to this program, the company will come into contact with the main markets in the world economy.

05

Project Development
The professional can work on a real project or develop new projects in the field of R & D or business development of your company.

06

Increased competitiveness
This program will equip students with the skills to take on new challenges and drive the organization forward.

Certificate

The Executive Master's Degree in Artificial Intelligence in Marketing Digital guarantees students, in addition to the most rigorous and up-to-date education, access to an Executive Master's Degree 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 an **Executive Master's Degree 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.
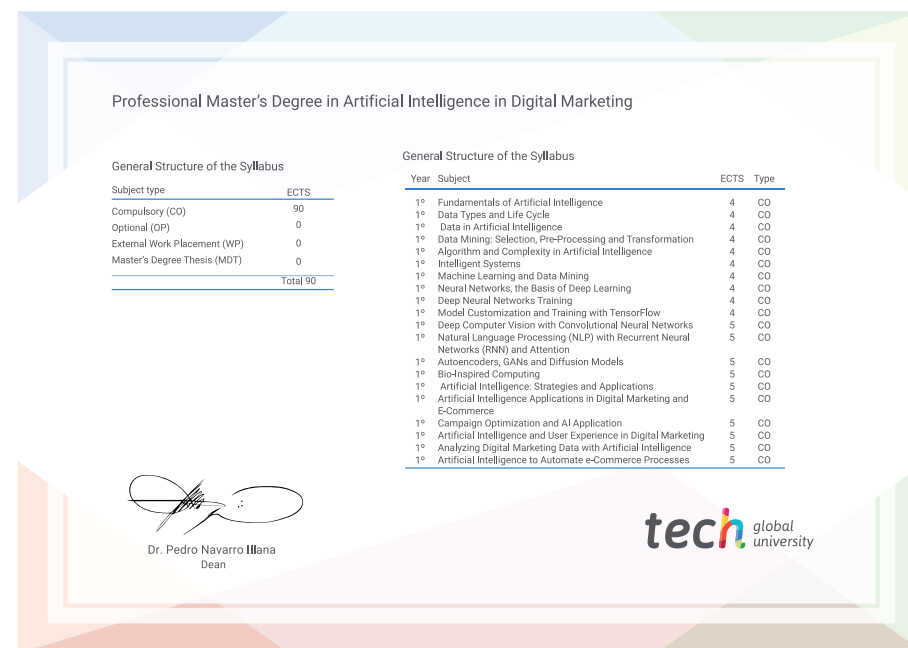
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

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

Dr. Pedro Navarro Illana
Dean

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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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Executive Master's Degree
Artificial Intelligence in Digital Marketing

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

Executive Master's Degree
Artificial Intelligence in Digital Marketing

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