Executive Master's Degree

Artificial Intelligence in Marketing and Communication

M A I M C

tech *technological university*

Executive Master's Degree
Artificial Intelligence in Marketing and Communication

- » Modality: **online**
- » Duration: **12 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**
- » Target Group: **University Graduates, Diploma and Bachelor's Degree Holders who have previously completed any of the programs in the field of Advertising, Computer Science and/or Business**

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

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01
Welcome

Artificial Intelligence (AI) has provided innovative tools and capabilities that optimize decision making and interaction with consumers. Its importance lies in its ability to analyze huge data sets, identify patterns, trends and consumer behaviors in real time, allowing companies to customize marketing and communication strategies accurately and effectively. In addition, through natural language processing, it allows the automation of interaction with customers, through chatbots and virtual assistants, which streamlines the attention and strengthens the relationship with the brand. For this reason, TECH has created this fully online educational program, based on the revolutionary Relearning methodology.

Executive Master's Degree in Artificial Intelligence in Marketing and Communication
TECH Technological University

" Artificial Intelligence has revolutionized the world of Marketing, optimizing the effectiveness of strategies and fostering a closer and more personalized relationship with customers"

02
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 Technological 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.

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

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"

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* methodology (the most internationally recognized postgraduate learning methodology) with Harvard Business School case studies. A complex balance of traditional and state-of-the-art methods, within the most demanding academic framework.

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 Technological University community.

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

04
Objectives

This program outlines ambitious goals: from equipping students with a deep understanding of how AI transforms the Marketing and Communication landscape, to enabling them to design innovative strategies based on accurate data and predictive analytics. In this way, professionals will be able to lead personalized campaigns, using AI to decipher trends, anticipate needs and cultivate strong relationships with diverse audiences.

This Executive Master's Degree will mark your path towards the creation of impactful and meaningful experiences for tomorrow's consumers"

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 Marketing and Communication** will enable students to:

01 Understand the principles of Digital Marketing transformation through the use of AI and master the use of tools to optimize SEO and SEM strategies

02 Apply AI techniques in the management and analysis of social networks to boost reach and interaction, as well as improve communication with customers on different platforms

03 Design and develop effective chatbots and Virtual Assistants for Digital Marketing strategies, also applying predictive analytics and Big Data techniques

04 Use AI and Email Marketing for advanced personalization and automation in campaigns

05 Master prompt engineering in ChatGPT and AI image generation to optimize the interaction of Marketing campaigns and the generation of content for blogs and social networks

06 Apply AI techniques in the creation of videos to enrich and diversify audiovisual content in Marketing

08 Develop evaluation and measurement methods to analyze the impact of AI-generated content in Marketing strategies

09 Implement strategies for Marketing process automation using AI, efficiently integrating diverse data and platforms

07 Strategically integrate AI-generated content into complete Digital Marketing strategies, researching and anticipating future trends to stay ahead of the curve

10 Apply AI techniques to optimize advertising campaigns, maximizing their effectiveness, and personalize audiences for accurate and effective targeting

11 Use AI in email marketing to automate processes and personalize campaigns in an advanced way

14 Use data visualization tools with AI to generate accurate and understandable campaign and communications reports

12 Perform AI sentiment analysis on social media and customer feedback to understand perceptions and opinions, optimize pricing and promotions for a more effective pricing strategy

13 Apply AI techniques in the analysis of large volumes of data to obtain relevant marketing insights

15 Apply AI in market research to identify relevant trends and patterns, segmenting it accurately and effectively

16 Implement predictive analytics in marketing to support strategic decision making

18 Master techniques and tools for lead scoring, identifying and prioritizing high-potential opportunities

19 Implement AI in customer relationship management to improve interaction and satisfaction, as well as to predict customer needs

17 Use AI in marketing return on investment (ROI) measurement to evaluate strategy effectiveness

20 Perform competitive analysis with AI to identify strengths, weaknesses, and opportunities in the marketplace

05
Skills

This Executive Master's Degree will prepare professionals to lead at the forefront of Digital Marketing, equipping them with specialized skills in Artificial Intelligence. As such, they will gain advanced knowledge in AI content generation, process automation, data analytics and AI-based decision making, as well as AI-driven sales. Graduates will not only be adept at implementing cutting-edge technologies, but will also be prepared to anticipate and leverage emerging trends, offering a competitive advantage in a dynamic and constantly evolving job market.

"

You will be fully qualified to implement Artificial Intelligence in business environments, generating tangible and rapid impact"

01 Apply AI tools to optimize SEO, SEM and improve search engine visibility

04 Apply tools such as Midjourney and DALL-E for image creation, and Fliki for video generation, developing practical skills in the creation of visual content with AI

02 Implement automation and predictive analytics in social media to boost online presence

03 Create effective ChatGPT prompts and get targeted results in content generation

05 Personalize user experiences on websites and applications using advanced AI techniques

06 Use key data analytics tools with AI, including Big Data techniques, data visualization, and predictive models

08 Apply AI sentiment analysis to social media and customer feedback, optimizing interaction and improving brand awareness

09 Master the automation and optimization of online ad buying through programmatic advertising with AI

07 Develop, integrate and manage chatbots and virtual assistants to improve customer interactions

10 Apply AI to email marketing strategies for campaign customization and automation

Structure and Content

The Executive Master's Degree in Artificial Intelligence in Marketing and Communication is designed to address unique and advanced topics. The inclusion of specific modules, such as "Content Generation with AI" and "Automation and Optimization of Marketing Processes with AI", will provide unparalleled depth in key areas. The focus on ethics, future trends and integration of success stories, will offer a comprehensive and practical understanding of how AI redefines today's Digital Marketing strategies.

"

You will acquire the fundamental skills and competencies to incorporate AI resources into sales management and lead generation"

Syllabus

This Executive Master's Degree in Artificial Intelligence in Marketing and Communication stands out for its comprehensive and advanced approach. The diversity of modules, which includes areas such as content generation; automation and process optimization; data analytics and AI-based decision making; as well as sales and lead generation, will provide professionals with a holistic perspective of how to integrate Artificial Intelligence into various facets of Digital Marketing.

Unlike other programs, this one distinguishes itself by offering comprehensive content that covers, from essential fundamentals to future trends, ensuring that students acquire in-depth and up-to-date knowledge. Furthermore, it will not only focus on theory, but will also offer practical application through case studies and success analysis, enabling graduates to develop practical and strategic skills.

Furthermore, special attention to ethical considerations and future trends will ensure that graduates are prepared to meet the challenges and take advantage of emerging opportunities in the dynamic field of Artificial Intelligence in Marketing. It is a syllabus focused on professional improvement for the achievement of work objectives that is offered through an innovative and flexible online learning system, allowing participants to combine teaching with their other tasks.

In this way, to facilitate the assimilation and retention of all concepts, TECH bases all its programs on the innovative and effective *Relearning* methodology. Under this approach, students will strengthen their understanding with the repetition of key concepts, presented in various audiovisual formats to achieve a natural and gradual acquisition of skills.

This Executive Master's Degree takes place over 24 months and is divided into 20 modules:

Module 1	Fundamentals of Artificial Intelligence
Module 2	Data Types and Data 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 in Digital Marketing Strategies
Module 17	Content Generation with AI
Module 18	Automation and Optimization of Marketing Processes with AI
Module 19	Analysis of Communication and Marketing Data for Decision Making
Module 20	Sales and Lead Generation with Artificial Intelligence

Where, When and How is it Taught?

TECH offers the possibility to develop this Executive Master's Degree in Artificial Intelligence in Marketing and Communication completely online. Throughout the 12 months of the educational program, you will be able to access all the contents of this program at any time, allowing you to self-manage your 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 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 Data 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 their 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 Result Evaluation
2.7.1. Statistical Measures
2.7.2. Relationship Indexes
2.7.3. Data Mining

2.8. Data Warehouse (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/Safety

2.10. Regulatory Aspects
2.10.1. Data Protection Law
2.10.2. Good Practices
2.10.3. Other Normative 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. 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. Analysis of Results

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. Cloak
8.3.3. Output layer

8.4. Union of Layers and Operations
8.4.1. Architecture Design
8.4.2. Connection between layers
8.4.3. Forward propagation

8.5. Construction of the first neural network
8.5.1. Network Design
8.5.2. Establish the weights
8.5.3. Network Training

8.6. Trainer and Optimizer
8.6.1. Optimizer Selection
8.6.2. Establishment of a Loss Function
8.6.3. Establishing a Metric

8.7. Application of the Principles of Neural Networks
8.7.1. Activation Functions
8.7.2. Backward Propagation
8.7.3. Parameter Adjustment

8.8. From Biological to Artificial Neurons
8.8.1. Functioning of a Biological Neuron
8.8.2. Transfer of Knowledge to Artificial Neurons
8.8.3. Establish Relations Between the Two

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. Learning transfer 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. Programming of the learning rate
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. Learning transfer 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. Learning Transfer 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. Graphs Optimization with TensorFlow Operations

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

10.6. The tf.data API
10.6.1. Using the tf.dataAPI 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 TFRecordAPI for data serialization
10.7.2. TFRecord File Upload with TensorFlow
10.7.3. Using TFRecord files for Model Training

10.8. Layers of preprocessing of Keras
10.8.1. Using the Keras Preprocessing API
10.8.2. Preprocessing *Pipelined* Construction with Keras
10.8.3. Using the Keras Preprocessing 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. Model training with TensorFlow
10.10.4. Using the application to predict 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. Layers of grouping and implementation of layers of grouping 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. Architecture ResNet

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. 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 training data set
12.2.3. Data Cleaning and Transformation
12.2.4. Sentiment Analysis

12.3. Rating of reviews 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 NRN
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 TransformersModels 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's Transformers Bookstore
12.8.1. Using the Hugging Face's TransformersLibrary
12.8.2. Hugging Face's TransformersLibrary Application
12.8.3. Advantages of Hugging Face's TransformersLibrary

12.9. Other Transformers Libraries. Comparison
12.9.1. Comparison Between Different TransformersLibraries
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. Automatic Encoder Denoising
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 dissemination models
13.9.1. Content Generation from Images
13.9.2. Modeling of Data Distributions
13.9.3. Use of Adversarial Networks

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

Module 14. Bio-Inspired Computing

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

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

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

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

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

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

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

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

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

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 (AI) in financial services. Opportunities and challenges
15.1.2. Case Uses
15.1.3. Potential Risks Related to the Use of AI
15.1.4. Potential Future Developments/Uses of AI

15.2. Implications of Artificial Intelligence in the Healthcare Service

15.2.1. Implications of AI in the Healthcare Sector. Opportunities and Challenges
15.2.2. Case Uses

15.3. Risks Related to the Use of AI in the Health Service

15.3.1. Potential Risks Related to the Use of AI
15.3.2. Potential Future Developments/Uses of AI

15.4. Retail

15.4.1. Implications of AI in Retail. Opportunities and Challenges
15.4.2. Case Uses
15.4.3. Potential Risks Related to the Use of AI
15.4.4. Potential Future Developments/Uses of AI

15.5. Industry

15.5.1. Implications of AI in Industry. Opportunities and Challenges
15.5.2. Case Uses

15.6. Potential risks related to the use of AI in industry

15.6.1. Case Uses
15.6.2. Potential Risks Related to the Use of AI
15.6.3. Potential Future Developments/uses of AI

15.7. Public Administration

15.7.1. AI implications for public administration. Opportunities and Challenges
15.7.2. Case Uses
15.7.3. Potential Risks Related to the Use of AI
15.7.4. Potential Future Developments/uses of AI

15.8. Educational

15.8.1. AI implications for education. Opportunities and Challenges
15.8.2. Case Uses
15.8.3. Potential Risks Related to the Use of AI
15.8.4. Potential Future Developments/uses of AI

15.9. Forestry and Agriculture

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

15.10. Human Resources

15.10.1. Implications of AI for Human Resources Opportunities and Challenges
15.10.2. Case Uses
15.10.3. Potential Risks Related to the use of AI
15.10.4. Potential Future Developments/uses of AI

Module 16. Artificial Intelligence in Digital Marketing Strategies

16.1. Digital Marketing Transformation with AI

16.1.1. Introduction to Digital Transformation
16.1.2. Impact on Content Strategy
16.1.3. Automation of Marketing Processes
16.1.4. Development of Customer Experience

16.2. AI Tools for SEO and SEM

16.2.1. Keyword Optimization with AI
16.2.2. Competition Analysis
16.2.3. Search Trend Forecast
16.2.4. Intelligent Audience Segmentation

16.3. IA Application in Social Media

16.3.1. Sentiment Analysis
16.3.2. Social Trend Detection
16.3.3. Publication Automation
16.3.4. Automated Content Generation

16.4. AI tools for Customer Communication

16.4.1. Personalized Chatbots
16.4.2. Automated E-mail Response Systems
16.4.3. Real-Time Response Optimization
16.4.4. Customer Feedback Analysis

16.5. Personalization of the User Experience of AI-enabled Tools and Websites

16.5.1. Personalized Recommendations
16.5.2. User Interface Adaptation
16.5.3. Dynamic Audience Segmentation
16.5.4. Intelligent A/B Testing

16.6. Chatbots and Virtual Assistants in Marketing Digital

16.6.1. Proactive Interaction
16.6.2. Multichannel Integration
16.6.3. Contextual Responses
16.6.4. Conversation Analytics

16.7. Programmatic Advertising with AI

16.7.1. Advanced Segmentation
16.7.2. Real-Time Optimization
16.7.3. Automatic Bidding
16.7.4. Analysis of Results

16.8. Predictive Analytics and Big Data in Digital Marketing

16.8.1. Market Trends Forecast
16.8.2. Advanced Attribution Models
16.8.3. Predictive Audience Segmentation
16.8.4. Sentiment Analysis in Big Data

16.9. AI and Email Marketing for Campaign Customization and Automation

16.9.1. Dynamic List Segmentation
16.9.2. Dynamic Content in Emails
16.9.3. Workflow Automation
16.9.4. Open Rate Optimization

16.10. Future Trends in AI for Digital Marketing

16.10.1. Advanced Conversational AI
16.10.2. Augmented Reality Integration
16.10.3. Emphasis on AI Ethics
16.10.4. AI in Content Creation

Module 17. Content Generation with IA

17.1. Prompt Engineering in ChatGPT
17.1.1. Quality Improvement of the Generated Content
17.1.2. Model Performance Optimization Strategies
17.1.3. Effective Prompts Design

17.2. AI Image Generation Tools
17.2.1. Object Recognition and Generation
17.2.2. Applying Custom Styles and Filters to Images
17.2.3. Methods to Improve the Visual Quality of Images

17.3. Video Creation with AI
17.3.1. Tools to Automate Video Editing
17.3.2. Voice Synthesis and Automatic Dubbing
17.3.3. Techniques for Object Tracking and Animation

17.4. Text Generation with AI for Blogging and Social Media Creation
17.4.1. Strategies for Improving SEO Positioning in Generated Content
17.4.2. Using AI to Predict and Generate Content Trends
17.4.3. Creating Attractive Headlines

17.5. Personalization of Content with AI for Different Audiences
17.5.1. Identification and Analysis of Audience Profiles
17.5.2. Dynamic Adaptation of Content according to User Profiles
17.5.3. Predictive Audience Segmentation

17.6. Ethical Considerations for the Responsible Use of AI in Content Generation
17.6.1. Transparency in Content Generation
17.6.2. Preventing Bias and Discrimination in Content Generation
17.6.3. Control and Human Supervision in Generative Processes

17.7. Analysis of Successful Cases in Content Generation with AI
17.7.1. Identification of Key Strategies in Successful Cases
17.7.2. Adaptation to Different Sectors
17.7.3. Importance of Collaboration between AI Specialists and Industry Practitioners

17.8. Integration of AI-generated Content in Digital Marketing Strategies
17.8.1. Optimization of Advertising Campaigns with Content Generation
17.8.2. Personalization of User Experience
17.8.3. Automation of Marketing Processes

17.9. Future Trends in Content Generation with AI
17.9.1. Advanced and Seamless Text, Image and Audio Integration
17.9.2. Hyper-personalized Content Generation
17.9.3. Improved AI Development in Emotion Detection

17.10. Evaluation and Measurement of the Impact of AI-generated Content
17.10.1. Appropriate Metrics to Evaluate the Performance of Generated Content
17.10.2. Measurement of Audience Engagement
17.10.3. Continuous Improvement of Content through Analytics

Module 18. Automation and Optimization of Marketing Processes with AI

18.1. Marketing Automation with AI
18.1.1. Audience Segmentation Based on AI
18.1.2. Workflow Automation
18.1.3. Continuous Optimization of Online Campaigns

18.2. Integration of Data and Platforms in Automated Marketing Strategies
18.2.1. Analysis and Unification of Multichannel Data
18.2.2. Interconnection between Different Marketing Platforms
18.2.3. Real-Time Data Updating

18.3. Optimization of Advertising Campaigns with AI
18.3.1. Predictive Analysis of Advertising Performance
18.3.2. Automatic Advertisement Personalization According to Target Audience
18.3.3. Automatic Budget Adjustment Based on Results

18.4. Audience Personalization with AI
18.4.1. Content Segmentation and Personalization
18.4.2. Personalized Content Recommendations
18.4.3. Automatic Identification of Audiences or Homogeneous Groups

18.5. Automation of Responses to Customers through AI
18.5.1. Chatbots and Machine Learning
18.5.2. Automatic Response Generation
18.5.3. Automatic Problem Solving

18.6. AI in Email Marketing for Automation and Customization
18.6.1. Automation of Email Sequences
18.6.2. Dynamic Customization of Content According to Preferences
18.6.3. Intelligent Segmentation of Mailing Lists

18.7. Sentiment Analysis with AI in Social Media and Customer Feedback
18.7.1. Automatic Sentiment Monitoring in Comments
18.7.2. Personalized Responses to Emotions
18.7.3. Predictive Reputation Analysis

18.8. Price and Promotion Optimization with AI
18.8.1. Automatic Price Adjustment Based on Predictive Analysis
18.8.2. Automatic Generation of Offers Adapted to User Behavior
18.8.3. Real-Time Competitive and Price Analysis

18.9. Integration of AI into Existing Marketing Tools
18.9.1. Integration of AI Capabilities with Existing Marketing Platforms
18.9.2. Optimization of Existing Functionalities
18.9.3. Integration with CRM Systems

18.10. Trends and Future of Marketing Automation with AI
18.10.1. AI to Improve User Experience
18.10.2. Predictive Approach to Marketing Decisions
18.10.3. Conversational Advertising

Module 19. Analysis of Communication

Module 19. Analysis of Communication and Marketing Data for Decision Making

19.1. Specific Technologies and Tools for Communication and Marketing Data Analysis
19.1.1. Tools for Analyzing Conversations and Trends in Social Media
19.1.2. Systems to Identify and Evaluate Emotions in Communications
19.1.3. Use of Big Data to Analyze Communications

19.2. Applications of AI in the Analysis of Large Volumes of Marketing Data
19.2.1. Automatic Processing of Massive Data
19.2.2. Identification of Behavioral Patterns
19.2.3. Optimization of Algorithms for Data Analysis

19.3. Data Visualization and Reporting Tools for Campaigns and Communications with AI
19.3.1. Creation of Interactive Dashboards
19.3.2. Automatic Report Generation
19.3.3. Predictive Visualization of Campaign Results

19.4. Application of AI in Market Research
19.4.1. Automatic Survey Data Processing
19.4.2. Automatic Identification of Audience Segments
19.4.3. Market Trend Prediction

19.5. Predictive Analytics in Marketing for Decision Making
19.5.1. Predictive Models of Consumer Behavior
19.5.2. Campaign Performance Prediction
19.5.3. Automatic Adjustment of Strategic Optimization

19.6. Market Segmentation with AI
19.6.1. Automated Analysis of Demographic Data
19.6.2. Identification of Interest Groups
19.6.3. Dynamic Personalization of Offers

19.7. Marketing Strategy Optimization with AI
19.7.1. Use of AI to Measure Channel Effectiveness
19.7.2. Strategic Automatic Adjustment to Maximize Results
19.7.3. Scenario Simulation

19.8. AI in Marketing ROI Measurement
19.8.1. Conversion Attribution Models
19.8.2. ROI Analysis using AI
19.8.3. Customer Lifetime Value Estimation

19.9. Success Stories in Data Analytics with AI
19.9.1. Demonstration by Practical Cases in which AI has Improved Results
19.9.2. Cost and Resource Optimization
19.9.3. Competitive Advantages and Innovation

19.10. Challenges and Ethical Considerations in AI Data Analysis
19.10.1. Biases in Data and Results
19.10.2. Ethical Considerations in Handling and Analyzing Sensitive Data
19.10.3. Challenges and Solutions for Making AI Models Transparent

Module 20. Sales and Lead Generation with Artificial Intelligence

20.1. AI Application in the Sales Process
20.1.1. Automation of Sales Tasks
20.1.2. Predictive Analysis of the Sales Cycle
20.1.3. Optimization of Pricing Strategies

20.2. Techniques and Tools for Lead Generation with AI
20.2.1. Automated Prospect Identification
20.2.2. User Behavior Analysis
20.2.3. Personalization of Content for Engagement

20.3. Lead Scoring with AI
20.3.1. Automated Evaluation of Lead Qualification
20.3.2. Lead Analysis Based on Interactions
20.3.3. Lead Scoring Model Optimization

20.4. AI in Customer Relationship Management
20.4.1. Automated Follow-up to Improve Customer Relationships
20.4.2. Personalized Customer Recommendations
20.4.3. Automation of Personalized Communications

20.5. Implementation and Success Cases of Virtual Assistants in Sales
20.5.1. Virtual Assistants for Sales Support
20.5.2. Customer Experience Improvement
20.5.3. Conversion Rate Optimization and Sales Closing

20.6. Customer Needs Prediction with AI
20.6.1. Purchase Behavior Analysis
20.6.2. Dynamic Offer Segmentation
20.6.3. Personalized Recommendation Systems

20.7. Sales Offer Personalization with AI
20.7.1. Dynamic Adaptation of Sales Proposals
20.7.2. Behavior-Based Exclusive Offers
20.7.3. Creation of Customized Packs

20.8. Competition Analysis with IA
20.8.1. Automated Competitor Monitoring
20.8.2. Automated Comparative Price Analysis
20.8.3. Predictive Competitive Surveillance

20.9. Integration of AI in Sales Tools
20.9.1. Compatibility with CRM Systems
20.9.2. Empowerment of Sales Tools
20.9.3. Predictive Analysis in Sales Platforms

20.10. Innovations and Predictions in the Sales Environment
20.10.1. Augmented Reality in Shopping Experience
20.10.2. Advanced Automation in Sales
20.10.3. Emotional intelligence in Sales Interactions

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.

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.

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%

10%

8%

3%

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.

08

Our Students' Profiles

The Executive Master's Degree is aimed at University Graduates, Diploma and Bachelor's Degree Holders who have previously completed any of the programs in the field of Advertising, Computer Science and/or Business.

This program uses a multidisciplinary approach as the students have a diverse set of academic profiles and represent multiple nationalities.

The Executive Master's Degree may also be taken by professionals who, being university graduates in any area, have two years of work experience in the of marketing and communication field.

" *You will access the latest developments in Artificial Intelligence, applied to Marketing and Communication, in no less than 3,000 hours of exclusive resources"*

Average Age

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

Years of Experience

5 years **25%**

10 to 15 years **35%**

5 to 10 years **34%**

More than 15 years **6%**

Training

Computer Science **28%**

Engineering **38%**

Business **30%**

Other **4%**

Educational Profile

Industry **35 %**

Services **19%**

Entrepreneurs **36 %**

Other **10 %**
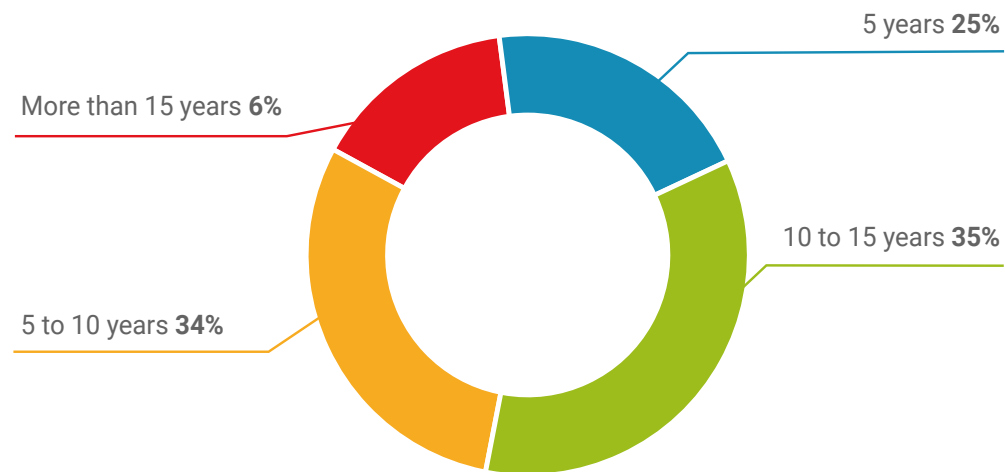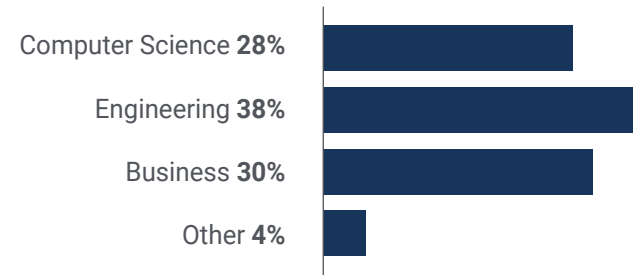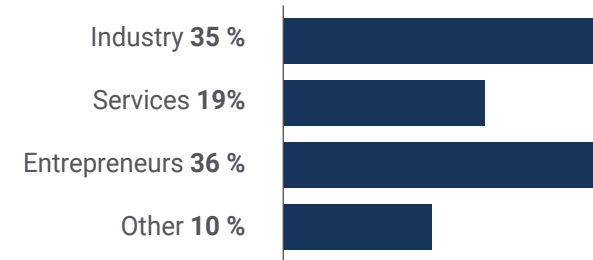
Geographical Distribution

U.S. **18%**

Spain **39%**

Mexico **27%**

Colombia **16%**
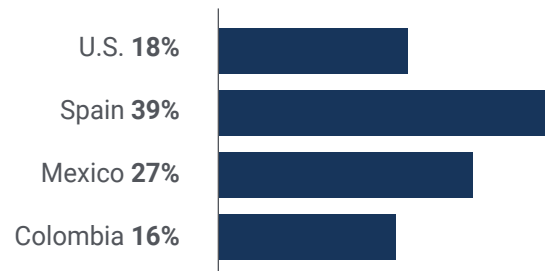
Lucía Sánchez Perdomo

CEO

"The Executive Master's Degree has been incredibly useful for me. This experience has allowed me to learn about the many improvements I can apply using innovative Artificial Intelligence tools. I am eager to apply them in my company and start developing creative strategies together with my Marketing Department"

Course Management

The faculty of this Executive Master's Degree has been meticulously selected for their experience and expertise at the intersection of AI and the world of Marketing and Communication. With a unique combination of theory and practical application, these experts will guide graduates' path to a deep understanding of how AI redefines market strategies, empowering them to confidently lead and shape the future of Marketing and Communication.

Learn from the best! You will take your training to the maximum with the support of recognized professionals in Artificial Intelligence"

Management

Dr. Arturo Peralta Martín-Palomino

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

Impact on Your Career

We are aware that studying a program like this entails great economic, professional and, of course, personal investment.

The ultimate goal of this great effort should be to achieve professional growth.

"

Become an innovation leader and achieve business success by graduating from the best Executive Master's Degree in the online educational field"

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

The Executive Master's Degree in Artificial Intelligence in Marketing and Communication from TECH is an intensive program that prepares you to face challenges and business decisions in the field of Artificial Intelligence in Marketing and Communication. The 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 network with the best, then this is the place for you.

Raise your professional profile by efficiently mastering the technologies of the future with this exclusive university program that only TECH puts at your fingertips.

TECH has 99% employability among its graduates. Register now and excel in the labor market.

When the change occurs

During the program **19%**	During the first year **61%**	After 2 years **20%**

Type of change

Internal Promotion **37%**

Change of Company **35%**

Entrepreneurship **28%**
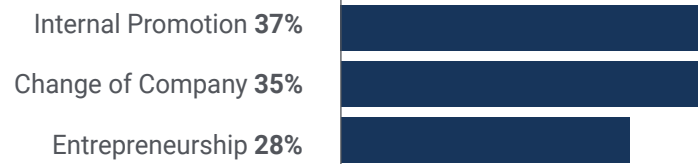
Salary increase

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

Salary before	A salary increase of	Salary after
$ 53,000	**26.24%**	**€ 68,644**

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 training and university and university 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.

12 Certificate

The Executive Master's Degree in Artificial Intelligence in Marketing and Communication guarantees students, in addition to the most rigorous and up-to-date education, access to a Executive Master's Degree diploma issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"
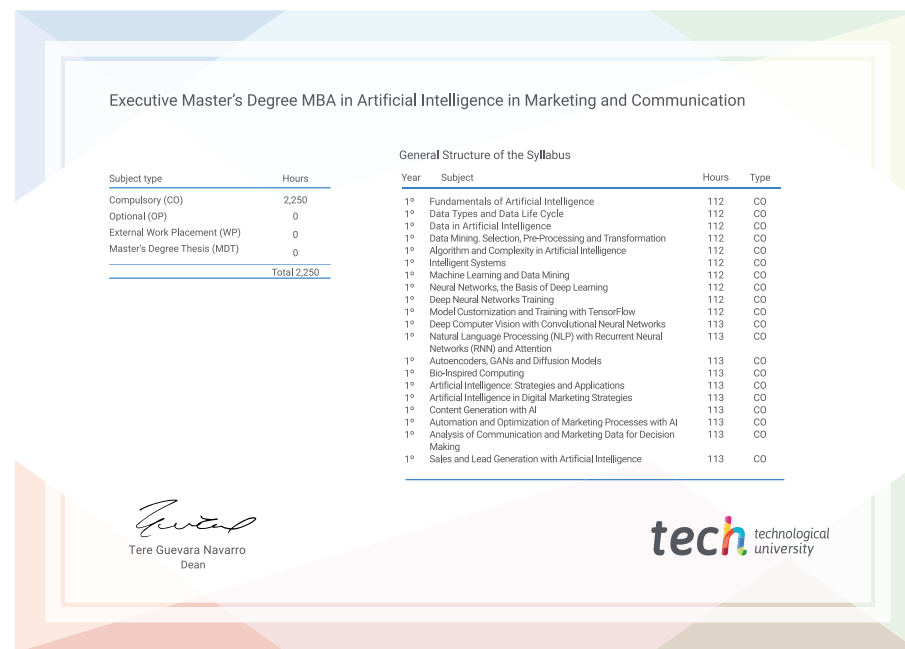
This **Executive Master's Degree in Artificial Intelligence in Marketing and Communication** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Executive Master's Degree diploma** issued by **TECH Technological University** via tracked delivery*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Executive Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Executive Master's Degree in Artificial Intelligence in Marketing and Communication**

Official Nº of Hours: **2,250 h.**

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tech technological university

Awards the following
CERTIFICATE
to

Mr./Ms. _____ with identification number _____.
For having successfully passed and accredited the following program

EXECUTIVE MASTER'S DEGREE

in

Artificial Intelligence in Marketing and Communication

This is a qualification awarded by this University, equivalent to 2,250 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

Executive Master's Degree MBA in Artificial Intelligence in Marketing and Communication

General Structure of the Syllabus

Subject type	Hours
Compulsory (CO)	2,250
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
Total 2,250	

Year	Subject	Hours	Type
1º	Fundamentals of Artificial Intelligence	112	CO
1º	Data Types and Data Life Cycle	112	CO
1º	Data in Artificial Intelligence	112	CO
1º	Data Mining. Selection, Pre-Processing and Transformation	112	CO
1º	Algorithm and Complexity in Artificial Intelligence	112	CO
1º	Intelligent Systems	112	CO
1º	Machine Learning and Data Mining	112	CO
1º	Neural Networks, the Basis of Deep Learning	112	CO
1º	Deep Neural Networks Training	112	CO
1º	Model Customization and Training with TensorFlow	112	CO
1º	Deep Computer Vision with Convolutional Neural Networks	113	CO
1º	Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention	113	CO
1º	Autoencoders, GANs and Diffusion Models	113	CO
1º	Bio-Inspired Computing	113	CO
1º	Artificial Intelligence: Strategies and Applications	113	CO
1º	Artificial Intelligence in Digital Marketing Strategies	113	CO
1º	Content Generation with AI	113	CO
1º	Automation and Optimization of Marketing Processes with AI	113	CO
1º	Analysis of Communication and Marketing Data for Decision Making	113	CO
1º	Sales and Lead Generation with Artificial Intelligence	113	CO

Tere Guevara Navarro
Dean

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

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Executive Master's Degree
Artificial Intelligence in Marketing and Communication

- » Modality: **online**
- » Duration: **12 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Executive Master's Degree
Artificial Intelligence in Marketing and Communication

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