Executive Master's Degree

Artificial Intelligence in Marketing and Communication

Accreditation/Membership

The Society for the Study of Artificial Intelligence and Simulation of Behaviour

tech global university

tech global university

Executive Master's Degree
Artificial Intelligence in Marketing and Communication

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

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

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01

Introduction to the Program

Marketing and Communication have evolved through the integration of Artificial Intelligence, transforming the way brands interact with their audiences. In this regard, data analysis, strategy automation, and content personalization are essential to generating impact in the market. Therefore, experts need to develop advanced skills to efficiently manage these intelligent systems in order to optimize advertising campaigns. With this in mind, TECH has created a pioneering university program focused on the use of Artificial Intelligence to design strategies that increase consumer loyalty and enable personalized communication. At the same time, it is delivered in a convenient, fully online format.

A comprehensive and 100% online program, exclusive to TECH, with an international perspective supported by our membership with The Society for the Study of Artificial Intelligence and Simulation of Behaviour"

Artificial Intelligence has revolutionized the field of Marketing and Communication, enabling process automation, large-scale data analysis, and real-time personalization of strategies. Companies across all industries are now seeking professionals capable of integrating machine learning into their business models to optimize advertising campaigns, enhance customer experience, and strengthen strategic decision-making. To seize these opportunities, professionals must acquire a competitive edge that sets them apart from other candidates.

For this reason, TECH has launched an innovative Executive Master's Degree in Artificial Intelligence in Marketing and Communication. Designed by leading experts in the sector, this academic pathway explores a wide range of topics, from advanced big data techniques and deep neural network training to the implementation of automated chatbots. Furthermore, the syllabus provides strategies to optimize market segmentation, automate client interaction, and analyze consumer behavior in real time. Thanks to this comprehensive approach, students will develop the skills to design personalized campaigns based on intelligent systems that maximize communicative impact and return on investment.

In this line, TECH offers a 100% online educational setting, tailored to the needs of busy professionals looking to advance their careers. In addition, through its Relearning methodology, the program ensures an efficient and natural learning process. This way, professionals will not need to dedicate long hours to study or memorization. They will only require a device with internet access to enter the Virtual Campus.

Thanks to TECH's membership with the **Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB)**, students will have access to digital publications such as AISB and Discussions, as well as a weekly newsletter with news and job offers. Additionally, they will enjoy discounted rates for AISB and ECAI conferences, receive travel support, and training to create local groups.

This **Executive Master's Degree in Artificial Intelligence in Marketing and Communication** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in Artificial Intelligence in Marketing and Communication
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an internet connection

You will design high-performance advertising campaigns using cutting-edge predictive algorithms"

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

You will achieve your objectives thanks to TECH's didactic tools, including explanatory videos and interactive summaries.

You will develop automated strategies that maximize both conversion and impact on segmented audiences.

It includes in its teaching staff professionals belonging to the field of Artificial Intelligence in Marketing and Communication, who bring to this program their work experience, as well as recognized specialists from leading companies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive learning experience designed to prepare for real-life situations.

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

02

Why Study at TECH?

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

Study at the world's largest online university and guarantee your professional success. The future starts at TECH"

The world's best online university, according to FORBES

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

The best top international faculty

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

The world's largest online university

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

The most complete syllabuses on the university scene

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

A unique learning method

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

The official online university of the NBA

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

Leaders in employability

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

Google Premier Partner

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

The top-rated university by its students

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

03

Syllabus

The contents of this program have been designed by experts in Artificial Intelligence applied to Marketing and Communication. Throughout the curriculum, graduates will explore everything from the foundations of predictive analytics to its implementation in business strategies. The syllabus will also provide students with innovative machine learning techniques to enhance message personalization and optimize the customer experience across multiple digital channels. In addition, the degree will delve into the use of intelligent chatbots and automation systems to improve interaction with the target audience.

You will implement chatbots to respond to customer inquiries immediately and in real time, with a personalized approach"

Module 1. Fundamentals of Artificial Intelligence

1.1. History of Artificial Intelligence
- 1.1.1. When Do We Start Talking About Artificial Intelligence?
- 1.1.2. References in Film
- 1.1.3. Importance of Artificial Intelligence
- 1.1.4. Technologies that Enable and Support Artificial Intelligence

1.2. Artificial Intelligence in Games
- 1.2.1. Game Theory
- 1.2.2. Minimax and Alpha-Beta Pruning
- 1.2.3. Simulation: Monte Carlo

1.3. Neural Networks
- 1.3.1. Biological Fundamentals
- 1.3.2. Computational Model
- 1.3.3. Supervised and Unsupervised Neural Networks
- 1.3.4. Simple Perceptron
- 1.3.5. Multilayer Perceptron

1.4. Genetic Algorithms
- 1.4.1. History
- 1.4.2. Biological Basis
- 1.4.3. Problem Coding
- 1.4.4. Generation of the Initial Population
- 1.4.5. Main Algorithm and Genetic Operators
- 1.4.6. Evaluation of Individuals: *Fitness*

1.5. Thesauri, Vocabularies, Taxonomies
- 1.5.1. Vocabulary
- 1.5.2. Taxonomy
- 1.5.3. Thesauri
- 1.5.4. Ontologies
- 1.5.5. Knowledge Representation: Semantic Web

1.6. Semantic Web
- 1.6.1. Specifications: RDF, RDFS and OWL
- 1.6.2. Inference/ Reasoning
- 1.6.3. *Linked Data*

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

Module 2. Data Types and Life Cycle

2.1. Statistics
  2.1.1. Statistics: Descriptive Statistics, Statistical Inferences
  2.1.2. Population, Sample, Individual
  2.1.3. Variables: Definition, Measurement Scales
2.2. Types of Statistical Data
  2.2.1. By 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. By Form
    2.2.2.1. Numerical
    2.2.2.2. Text
    2.2.2.3. Logical
  2.2.3. By Source
    2.2.3.1. Primary
    2.2.3.2. Secondary

2.3. Data Lifecycle
- 2.3.1. Lifecycle Stages
- 2.3.2. Lifecycle Milestones
- 2.3.3. FAIR Principles

2.4. Initial Stages of the Cycle
- 2.4.1. Goal Definition
- 2.4.2. Determination of Required Resources
- 2.4.3. Gantt Chart
- 2.4.4. Data Structure

2.5. Data Collection
- 2.5.1. Data Collection Methodology
- 2.5.2. Data Collection Tools
- 2.5.3. Data Collection Channels

2.6. Data Cleaning
- 2.6.1. Data Cleaning Phases
- 2.6.2. Data Quality
- 2.6.3. Data Manipulation (using R)

2.7. Data Analysis, Interpretation and Evaluation of Results
- 2.7.1. Statistical Measures
- 2.7.2. Relationship Indices
- 2.7.3. Data Mining

2.8. Data Warehouse
- 2.8.1. Components of a Data Warehouse
- 2.8.2. Design
- 2.8.3. Aspects to Consider

2.9. Data Availability
- 2.9.1. Access
- 2.9.2. Usefulness
- 2.9.3. Security

2.10. Regulatory Aspects
- 2.10.1. Data Protection Law
- 2.10.2. Best Practices
- 2.10.3. Other Regulatory Aspects

Module 3. Data in Artificial Intelligence

3.1. Data Science
- 3.1.1. Data Science
- 3.1.2. Advanced Tools for Data Scientists

3.2. Data, Information and Knowledge
- 3.2.1. Data, Information and Knowledge
- 3.2.2. Types of Data
- 3.2.3. Data Sources

3.3. From Data to Information
- 3.3.1. Data Analysis
- 3.3.2. Types of Analysis
- 3.3.3. Extraction of Information from a Dataset

3.4. Extraction of Information Through Visualization
- 3.4.1. Visualization as an Analysis Tool
- 3.4.2. Visualization Methods
- 3.4.3. Visualization of a Data Set

3.5. Data Quality
- 3.5.1. Quality Data
- 3.5.2. Data Cleaning
- 3.5.3. Basic Data Pre-Processing

3.6. *Dataset*
- 3.6.1. Dataset Enrichment
- 3.6.2. The Curse of Dimensionality
- 3.6.3. Modification of Our Data Set

3.7. Unbalance
- 3.7.1. Classes of Unbalance
- 3.7.2. Unbalance Mitigation Techniques
- 3.7.3. Balancing a Dataset

3.8. Unsupervised Models
- 3.8.1. Unsupervised Model
- 3.8.2. Methods
- 3.8.3. Classification with Unsupervised Models

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

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

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

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

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

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

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

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

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

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

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

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

4.10. Data Pre-Processing in Big Data Environments

Module 5. Algorithm and Complexity in Artificial Intelligence

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

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

5.3. Sorting Algorithms
- 5.3.1. Concept of Sorting
- 5.3.2. Bubble Sorting
- 5.3.3. Sorting by Selection
- 5.3.4. Sorting by Insertion
- 5.3.5. 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. Greedy Strategy Elements
- 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. Minimum Spanning 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 Algorithm
- 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. Creation of Expert Systems

Module 7. Machine Learning and Data Mining

7.1. Introduction to Knowledge Discovery Processes and Basic Concepts of Machine Learning
- 7.1.1. Key Concepts of Knowledge Discovery Processes
- 7.1.2. Historical Perspective of Knowledge Discovery Processes
- 7.1.3. Stages of the Knowledge Discovery Processes
- 7.1.4. Techniques Used in Knowledge Discovery Processes
- 7.1.5. Characteristics of Good Machine Learning Models
- 7.1.6. Types of Machine Learning Information
- 7.1.7. Basic Learning Concepts
- 7.1.8. Basic Concepts of Unsupervised Learning

7.2. Data Exploration and Pre-Processing
- 7.2.1. Data Processing
- 7.2.2. Data Processing in the Data Analysis Flow
- 7.2.3. Types of Data
- 7.2.4. Data Transformations
- 7.2.5. Visualization and Exploration of Continuous Variables
- 7.2.6. Visualization and Exploration of Categorical Variables
- 7.2.7. Correlation Measures
- 7.2.8. Most Common Graphic Representations
- 7.2.9. Introduction to Multivariate Analysis and Dimensionality Reduction

7.3. Decision Trees
- 7.3.1. ID Algorithm
- 7.3.2. Algorithm C
- 7.3.3. Overtraining and Pruning
- 7.3.4. Result Analysis

7.4. Evaluation of Classifiers
- 7.4.1. Confusion Matrices
- 7.4.2. Numerical Evaluation Matrices
- 7.4.3. Kappa Statistic
- 7.4.4. ROC Curves

7.5. Classification Rules
- 7.5.1. Rule Evaluation Measures
- 7.5.2. Introduction to Graphic Representation
- 7.5.3. Sequential Overlay Algorithm

7.6. Neural Networks
- 7.6.1. Basic Concepts
- 7.6.2. Simple Neural Networks
- 7.6.3. Backpropagation Algorithm
- 7.6.4. Introduction to Recurrent Neural Networks

7.7. Bayesian Methods
- 7.7.1. Basic Probability Concepts
- 7.7.2. Bayes' Theorem
- 7.7.3. Naive Bayes
- 7.7.4. Introduction to Bayesian Networks

7.8. Regression and Continuous Response Models
- 7.8.1. Simple Linear Regression
- 7.8.2. Multiple Linear Regression
- 7.8.3. Logistic Regression
- 7.8.4. Regression Trees
- 7.8.5. Introduction to Support Vector Machines (SVM)
- 7.8.6. Goodness-of-Fit Measures

7.9. *Clustering*
- 7.9.1. Basic Concepts
- 7.9.2. Hierarchical Clustering
- 7.9.3. Probabilistic Methods
- 7.9.4. EM Algorithm
- 7.9.5. B-Cubed Method
- 7.9.6. Implicit Methods

7.10. Text Mining and Natural Language Processing (NLP)
- 7.10.1. Basic Concepts
- 7.10.2. Corpus Creation
- 7.10.3. Descriptive Analysis
- 7.10.4. Introduction to Feelings Analysis

Module 8. Neural Networks, the Basis of Deep Learning

8.1. Deep Learning
- 8.1.1. Types of Deep Learning
- 8.1.2. Applications of Deep Learning
- 8.1.3. Advantages and Disadvantages of Deep Learning

8.2. Operations
- 8.2.1. Sum
- 8.2.2. Product
- 8.2.3. Transfer

8.3. Layers
- 8.3.1. Input Layer
- 8.3.2. Hidden Layer
- 8.3.3. Output Layer

8.4. Layer Bonding and Operations
- 8.4.1. Architecture Design
- 8.4.2. Connection between Layers
- 8.4.3. Forward Propagation

8.5. Construction of the First Neural Network
- 8.5.1. Network Design
- 8.5.2. Establish the Weights
- 8.5.3. Network Training

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

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

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

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

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

Module 9. Deep Neural Networks Training

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

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

9.3. Optimizers
- 9.3.1. Stochastic Gradient Descent Optimizers
- 9.3.2. Adam and RMSprop Optimizers
- 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. Using the TensorFlow Library
- 10.1.2. Model Education with TensorFlow
- 10.1.3. Operations with Graphs in TensorFlow

10.2. TensorFlow and NumPy
- 10.2.1. NumPy Computational 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 Functions and Graphs
- 10.4.1. Functions with TensorFlow
- 10.4.2. Use of Graphs for Model Training
- 10.4.3. Optimization of Graphs with TensorFlow Operations

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

10.6. The tfdata API
- 10.6.1. Using the tfdata API 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. Data Preprocessing 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. Using the Application for the Prediction of Results

Module 11. Deep Computer Vision with Convolutional Neural Networks

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

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

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

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

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

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

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

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

11.9. Object Detection and Object Tracking
- 11.9.1. Object Detection Methods
- 11.9.2. Object Tracking Algorithms
- 11.9.3. Tracking and Localization Techniques

11.10. Semantic Segmentation
- 11.10.1. Deep Learning for Semantic Segmentation
- 11.10.2. Edge Detection
- 11.10.3. Rule-Based Segmentation Methods

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

12.1. Text Generation Using RNN
- 12.1.1. Training an RNN for Text Generation
- 12.1.2. Natural Language Generation with RNN
- 12.1.3. Text Generation Applications with RNN

12.2. Training Data Set Creation
- 12.2.1. Preparation of the Data for Training an RNN
- 12.2.2. Storage of the Training Dataset
- 12.2.3. Data Cleaning and Transformation
- 12.2.4. Sentiment Analysis

12.3. Classification of Opinions with RNN
- 12.3.1. Detection of Themes in Comments
- 12.3.2. Sentiment Analysis with Deep Learning Algorithms

12.4. Encoder-Decoder Network for Neural Machine Translation
- 12.4.1. Training an RNN for Machine Translation
- 12.4.2. Use of an Encoder-Decoder Network for Machine Translation
- 12.4.3. Improving the Accuracy of Machine Translation with RNNs

12.5. Attention Mechanisms
- 12.5.1. Application of Care Mechanisms in RNN
- 12.5.2. Use of Care Mechanisms to Improve the Accuracy of the Models
- 12.5.3. Advantages of Attention Mechanisms in Neural Networks

12.6. Transformer Models
- 12.6.1. Using Transformers Models for Natural Language Processing
- 12.6.2. Application of Transformers Models for Vision
- 12.6.3. Advantages of Transformers Models

12.7. Transformers for Vision
- 12.7.1. Use of Transformers Models for Vision
- 12.7.2. Image Data Pre-Processing
- 12.7.3. Training a Transformers Model for Vision

12.8. Hugging Face Transformer Library
- 12.8.1. Using the Hugging Face Transformers Library
- 12.8.2. Application of the Hugging Face Transformers Library
- 12.8.3. Advantages of the Hugging Face Transformers Library

12.9. Other Transformers Libraries. Comparison
- 12.9.1. Comparison Between Different Transformers Libraries
- 12.9.2. Use of the Other Transformers Libraries
- 12.9.3. Advantages of the Other Transformers Libraries

12.10. Development of an NLP Application with RNN and Attention. Practical Application
- 12.10.1. Development of a Natural Language Processing Application with RNN and Attention
- 12.10.2. Use of RNN, Attention Mechanisms and Transformers Models in the Application
- 12.10.3. Evaluation of the Practical Application

Module 13. Autoencoders, GANs and Diffusion Models

13.1. Representation of Efficient Data
- 13.1.1. Dimensionality Reduction
- 13.1.2. Deep Learning
- 13.1.3. Compact Representations

13.2. PCA Realization with an Incomplete Linear Automatic Encoder
- 13.2.1. Training Process
- 13.2.2. Implementation in Python
- 13.2.3. Use of Test Data

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

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

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

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

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

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

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

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

Module 14. Bio-Inspired Computing

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

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

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

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

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

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

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

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

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

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. Use Cases
- 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 Healthcare Service
- 15.2.1. Implications of AI in the Healthcare Sector. Opportunities and Challenges
- 15.2.2. Use Cases

15.3. Risks Related to the Use of AI in Healthcare 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. Use Cases
- 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. Use Cases

15.6. Potential Risks Related to the Use of AI in Industry
- 15.6.1. Use Cases
- 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. Use Cases
- 15.7.3. Potential Risks Related to the Use of AI
- 15.7.4. Potential Future Developments/Uses of AI

15.8. Education
- 15.8.1. AI Implications for Education. Opportunities and Challenges
- 15.8.2. Use Cases
- 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. Use Cases
- 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 in Human Resources. Opportunities and Challenges
- 15.10.2. Use Cases
- 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 and ChatGPT
- 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: Keyword Insights and DiiB
- 16.2.1. Keyword Optimization with AI
- 16.2.2. Competitive 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 with MonkeyLearn
- 16.3.2. Social Trend Detection
- 16.3.3. Publication Automation with Metricool
- 16.3.4. Automated Content Generation with Predis

16.4. AI Tools for Customer Communication
- 16.4.1. Custom Chatbots Using Dialogflow
- 16.4.2. Automated Email Response Systems Using Mailchimp
- 16.4.3. Real-Time Response Optimization Using Freshchat
- 16.4.4. Customer Feedback Analysis Using SurveyMonkey

16.5. User Experience Personalization with AI
- 16.5.1. Personalized Recommendations
- 16.5.2. User Interface Adaptation
- 16.5.3. Dynamic Audience Segmentation
- 16.5.4. Intelligent A/B Testing with VWO (Visual Website Optimizer)

16.6. Chatbots and Virtual Assistants in Marketing Digital
- 16.6.1. Proactive Interaction with Customers.ai
- 16.6.2. Multichannel Integration Using Tars
- 16.6.3. Contextual Responses with Chatfuel
- 16.6.4. Conversation Analytics Using Botpress

16.7. Programmatic Advertising with AI
- 16.7.1. Advanced Segmentation with Adroll
- 16.7.2. Real-Time Optimization Using WordStream
- 16.7.3. Automatic Bidding Using BidIQ
- 16.7.4. Result Analysis

16.8. Predictive Analytics and Big Data in Digital Marketing
- 16.8.1. Prediction of Market Trends
- 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 with Brevo
- 16.9.4. Optimizing Open Rate with Benchmark Email

16.10. Future Trends in AI for Digital Marketing
- 16.10.1. Advanced Conversational AI
- 16.10.2. Augmented Reality Integration Using ZapWorks
- 16.10.3. Emphasis on AI Ethics
- 16.10.4. AI in Content Creation

Module 17. Content Generation with Artificial Intelligence

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 Prompt Design

17.2. AI Image Generation Tools through ChatGPT
- 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. AI Text Generation for Blogging and Social Media Creation through ChatGPT
- 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 AI Content to Different Audiences Using Optimizely
- 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. User Experience Personalization
- 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 Artificial Intelligence

18.1. Marketing Automation with AI Using Hubspot
- 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 through Google Ads
- 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. Social Media Sentiment Analysis with AI and Customer Feedback through Lexalytics
- 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 Promotions Optimization with AI through Vendavo
- 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 and Marketing Data for Decision Making

19.1. Specific Technologies and Tools for Communication and Marketing Data Analysis using Google Analytics 4
- 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. AI Applications in Marketing Big Data Analytics such as Google BigQuery
- 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. Tools for Data Visualization and Reporting of 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 through Quid
- 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 Forecasting
- 19.5.3. Automatic Adjustment of Strategic Optimization

19.6. Market Segmentation with AI using Meta
- 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 with GA4
- 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. Application of AI in the Sales Process through Salesforce
- 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. Lead Generation Techniques and Tools with AI through Hubspot
- 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 using Hubspot
- 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 Tracking 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. Predicting Customer Needs with AI
- 20.6.1. Purchase Behavior Analysis
- 20.6.2. Dynamic Offer Segmentation
- 20.6.3. Personalized Recommendation Systems

20.7. Personalization of the Sales Offer 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. Competitive Analysis with AI
- 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

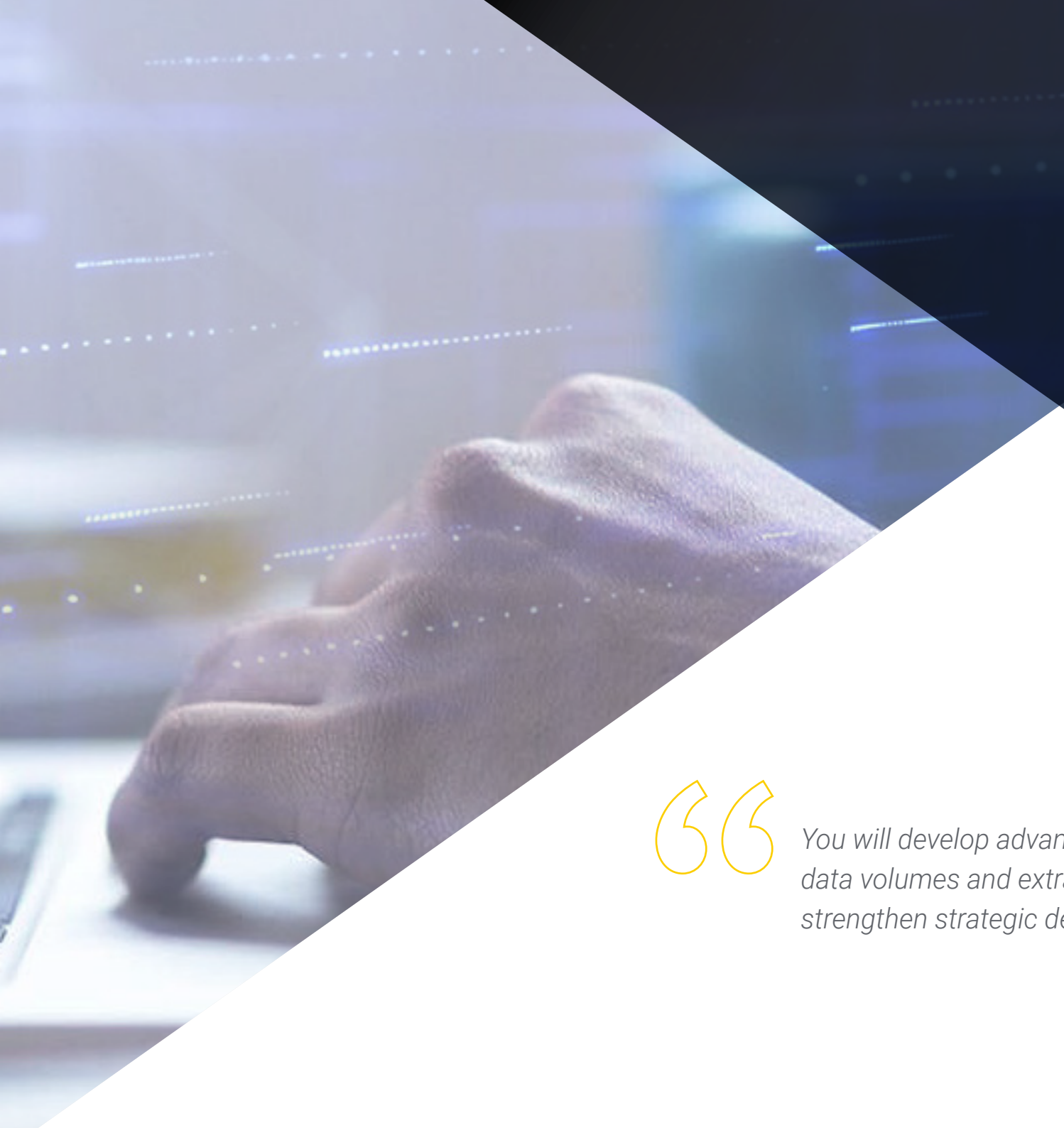
20.10. Innovations and Predictions in the Sales Environment
- 20.10.1. Augmented Reality in Shopping Experience
- 20.10.2. Advanced Automation in Sales
- 20.10.3. Emotional intelligence in Sales Interactions

You will master sophisticated predictive analysis and data mining techniques to deepen understanding of consumer behavior”

04

Teaching Objectives

This TECH program is designed to provide Marketing and Communication professionals with the necessary tools to integrate Artificial Intelligence into their strategies. Throughout the program, graduates will learn to optimize campaigns through advanced SEO and SEM, analyze social media data to enhance interaction, and develop chatbots that drive automation. These skills will allow them to anticipate trends and maximize the impact of their digital strategies.



You will develop advanced skills to analyze large data volumes and extract relevant insights that strengthen strategic decision-making"

General Objectives

- Develop skills for advanced data analysis and decision-making based on insights derived from Artificial Intelligence
- Promote mastery of machine learning and deep learning techniques applied to Marketing personalization
- Train participants in the implementation of intelligent technologies such as chatbots and recommendation systems to optimize customer interaction
- Evaluate and manage the ethical and social impact of intelligent systems in corporate Communication
- Acquire competencies to design effective multichannel campaigns supported by machine learning solutions
- Master emerging technological tools in Artificial Intelligence applied to Communication and advertising

Specific Objectives

Module 1. Fundamentals of Artificial Intelligence

- Understand the biological and operational basis of genetic algorithms and their utility in Artificial Intelligence
- Differentiate between vocabularies, taxonomies, thesauri, and ontologies as knowledge representation resources
- Design basic structures for chatbots and virtual assistants using specialized tools

Module 2. Data Types and Life Cycle

- Design basic structures for chatbots and virtual assistants using specialized tools
- Classify types of statistical data according to their nature, form, and source
- Analyze each stage of the data lifecycle and its alignment with FAIR principles
- Evaluate methodologies, tools, and channels for effective data collection
- Apply data cleaning and manipulation methods, including the use of R

Module 3. Data in Artificial Intelligence

- Understand the fundamentals of Data Science and the key tools for its application
- Transform datasets into useful information through analysis and visualization
- Apply visualization techniques to extract patterns and relationships in data
- Manage the modification and processing of datasets, optimally addressing dimensionality

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

- Apply advanced statistical inference techniques, differentiating parametric and non-parametric methods
- Develop exploratory analyses with an emphasis on data visualization and preparation
- Implement processes for data cleaning, normalization, and attribute transformation
- Analyze the impact of noise in data and apply corrective filters

Module 5. Algorithm and Complexity in Artificial Intelligence

- Examine the main algorithm design strategies and their efficient application
- Compare sorting algorithms according to their complexity and context of use
- Apply algorithms with tree and heap structures in problem-solving
- Implement graph-based algorithms for searching, traversal, and sorting

Module 6. Intelligent Systems

- Understand the concept of an intelligent agent and its application in Artificial Intelligence and software engineering
- Distinguish between data, information, and knowledge, evaluating methods of capture and acquisition
- Apply languages such as RDF, OWL, and SPARQL in the construction of functional ontologies
- Assess the current state of the semantic web and its applications in healthcare environments

Module 7. Machine Learning and Data Mining

- Apply preprocessing and exploratory data processes, including visualization and dimensionality reduction
- Evaluate classifiers using confusion matrices, ROC curves, and other performance indicators
- Establish classification rules based on evaluation measures and graphical interpretation
- Implement neural networks, including backpropagation and recurrent architectures

Module 8. Neural Networks, the Basis of Deep Learning

- Understand the fundamentals of deep learning and its advantages over traditional models
- Perform fundamental operations used in neural networks such as summation, products, and transformations
- Build a basic neural network by establishing weights and configuring training
- Analyze the similarities between biological and artificial neurons to enhance model understanding

Module 9. Deep Neural Networks Training

- Solve gradient-related problems and select appropriate initialization and optimization techniques
- Apply transfer learning by reusing pre-trained layers and extracting features
- Program learning rates by adjusting cycles, smoothing, and adaptive control
- Diagnose and mitigate overfitting through regularization, cross-validation, and specific metrics

Module 10. Model Customization and Training with TensorFlow

- Integrate NumPy operations within TensorFlow environments for efficient calculations
- Design customized models by managing parameters and optimization techniques
- Create TensorFlow functions and graphs optimized for efficient training

Module 11. Deep Computer Vision with Convolutional Neural Networks

- Understand the architecture and functioning of the visual cortex as the biological basis of computer vision
- Apply convolutional layers for extracting relevant features in clinical images
- Implement pooling, flattening, and grouping techniques with Keras for dimensionality reduction
- Develop a ResNet-based CNN using Keras by defining input and output layers

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

- Develop text generation models using trained recurrent neural networks
- Prepare and structure textual datasets for effective NLP model training
- Implement opinion classification and sentiment analysis systems through RNNs
- Develop a practical application combining RNNs, attention mechanisms, and transformers

Module 13. Autoencoders, GANs and Diffusion Models

- Implement efficient data representations through autoencoders and diffusion models
- Design deep architectures with stacked autoencoders applying regularization techniques
- Implement denoising techniques in autoencoders to enhance data quality

Module 14. Bio-Inspired Computing

- Examine the fundamental concepts and approaches of bio-inspired computing
- Apply social adaptation algorithms such as ant colonies or particle swarm optimization to real-world problems
- Design and analyze exploration-exploitation strategies in genetic algorithms
- Study evolutionary computing models and their utility in optimization
- Implement models based on differential evolution and distribution estimation
- Apply evolutionary programming to classification, regression, or instance selection problems

Module 15. Artificial Intelligence: Strategies and Applications

- Deepen knowledge of the impact of Artificial Intelligence on financial services, risks, and future developments
- Analyze risks associated with the use of AI in clinical and hospital environments
- Explore the application of AI in industrial sectors to improve efficiency and innovation

Module 16. Artificial Intelligence in Digital Marketing Strategies

- Analyze how AI can optimize audience segmentation and personalization in digital campaigns
- Design digital marketing strategies integrating machine learning techniques to improve advertising effectiveness
- Apply predictive models to anticipate consumer trends and customer behavior in digital environments

Module 17. Content Generation with Artificial Intelligence

- Understand the fundamentals and techniques of content generation through Artificial Intelligence
- Develop skills to design text, images, and videos generated by intelligent systems for marketing and communication strategies
- Apply automatic content generation techniques to optimize advertising campaigns and increase audience engagement

Module 18. Automation and Optimization of Marketing Processes with Artificial Intelligence

- Develop skills to design and execute automated strategies that optimize digital marketing performance
- Apply predictive analytics and machine learning techniques to improve audience segmentation and personalization
- Evaluate the impact of automation on operational efficiency and customer experience
- Analyze key metrics and use automated dashboards for data-driven decision-making

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

- Understand the importance of data analysis in strategic decision-making in marketing and communication
- Use modern visualization tools to communicate results and trends to multidisciplinary teams
- Evaluate the impact of marketing actions through key performance indicators
- Develop the ability to make evidence-based decisions to optimize communication strategies

Module 20. Sales and Lead Generation with Artificial Intelligence

- Implement machine learning techniques to segment and personalize contact with potential clients
- Develop effective strategies for lead conversion through predictive analytics
- Optimize the sales cycle using chatbots, virtual assistants, and other intelligent system solutions

You will develop competencies to measure the impact of machine learning–based strategies using key indicators and relevant metrics"

05

Career Opportunities

This university program at TECH is an exceptional opportunity for Marketing and Communication professionals seeking to enhance their strategies with Artificial Intelligence. This university program at TECH is an exceptional opportunity for Marketing and Communication professionals seeking to enhance their strategies with Artificial Intelligence. In addition, experts will develop the ability to interpret large volumes of data to anticipate market trends, design innovative content, and measure the impact of their actions through precise metrics.

You will apply Artificial Intelligence in marketing strategies, fostering data-driven decision-making and improving the effectiveness of digital campaigns"

Graduate Profile

Graduates of this program will become highly specialized professionals in the integration of Artificial Intelligence into Marketing and Communication strategies. They will be capable of designing automated campaigns, personalizing the customer experience, and analyzing data in real time to improve strategic decision-making. Furthermore, they will acquire advanced knowledge in the use of intelligent systems for content generation, programmatic advertising, and predictive analytics. They will also be prepared to anticipate trends, improve audience segmentation, and maximize the effectiveness of digital campaigns in a dynamic business environment.

You will master the most effective strategies for lead conversion through predictive analytics.

- **Technological Adaptation in Marketing and Communication:** Ability to integrate Artificial Intelligence technologies into Marketing and Communication strategies, enhancing efficiency and personalization in campaigns
- **Critical Data Analysis:** Skill in interpreting large volumes of data and extracting relevant insights to support strategic decision-making in digital environments
- **Ethics and Privacy in Intelligent Systems:** Commitment to the responsible application of Artificial Intelligence, ensuring respect for privacy and compliance with ethical standards in data management
- **Collaborative Interdisciplinary Work:** Aptitude to communicate and collaborate effectively with multidisciplinary teams, facilitating the successful implementation of AI-driven solutions in both Marketing and Communication

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

1. **Advisor in Digital Transformation with Artificial Intelligence:** Professional who guides companies in adopting Artificial Intelligence technologies to improve marketing processes and customer experience.
2. **Specialist in Implementation of Intelligent Systems:** Responsible for the integration, configuration, and maintenance of Artificial Intelligence tools for digital marketing and communication.
3. **Consultant in Machine Learning Strategies for Marketing:** Specialist in the design and implementation of AI-based solutions to optimize campaigns and improve return on investment.
4. **Project Manager in AI-Driven Communication:** In charge of planning, coordinating, and supervising projects that incorporate Artificial Intelligence into communication and sales strategies, ensuring efficient results.

You will lead digital transformation in marketing and communication companies, optimizing relationships with audiences"

06

Software Licenses Included

TECH is a leading reference in the academic world for combining the latest technology with teaching methodologies to enhance the teaching-learning process. To achieve this, it has established a network of alliances that allows it to access the most advanced software tools used in the professional world.

Upon enrolling, you will receive, completely free of charge, academic credentials for the following professional software applications"

TECH has established a network of professional alliances with the leading providers of software applied to various professional fields. These alliances allow TECH to access hundreds of software applications and licenses, making them available to its students.

The academic software licenses will allow students to use the most advanced applications in their professional field, so they can become familiar with them and master their use without incurring additional costs. TECH will handle the hiring process so that students can use them without limits during the time they are studying the Executives Degree in Artificial Intelligence in Marketing and Communication, and they will be able to do so completely free of charge.

TECH will provide free access to the following software applications:

Visual Web Optimizer

Thanks to TECH's agreement, graduates will have **free access** to **VWO**, an advanced solution for web conversion optimization valued at 1,260 dollars. This tool enables the implementation, analysis, and scaling of digital improvements based on real user behavior, in a practical and direct way.

This platform facilitates dynamic testing without requiring technical knowledge. Its comprehensive approach allows users to observe interactions, adapt content, and execute personalized strategies on live websites. The collaborative environment and intelligent reporting strengthen digital performance across multiple channels, maximizing the impact of every decision made.

Google Career Launchpad

Google Career Launchpad is a solution for developing digital skills in technology and data analysis. With an estimated value of **5,000 dollars**, it is included **for free** in TECH's university program, providing access to interactive labs and certifications recognized in the industry.

This platform combines technical training with practical cases, using technologies such as BigQuery and Google AI. It offers simulated environments to work with real data, along with a network of experts for personalized guidance.

Chatfuel

In an environment increasingly driven by technological advances, TECH provides free access during the program to Chatfuel, a platform valued at 600 dollars, ideal for creating intelligent virtual assistants. This advanced tool enables the automation, personalization, and scaling of client communication. Its **free use** during training strengthens key competencies in the professional market, providing a real competitive advantage.

Chatfuel allows users to build bots without technical knowledge through an intuitive visual interface. Powered by AI, it automates responses, captures leads, and improves conversions. It integrates seamlessly with CRMs and email marketing systems and provides real-time metrics. It is a robust and secure solution for marketing, sales, and customer service across various industries.

Metricool

Metricool is much more than a tool—it is the central hub from which graduates can plan, manage, and analyze their entire online presence. During the program, participants will have **free access** to this professional solution, valued at approximately **40 dollars**, designed to optimize every aspect of their digital strategy. This benefit enables learners to apply their knowledge in real-world digital environments.

Its visual approach, combined with precise real-time data, makes it an indispensable resource for achieving clarity and organization in the digital landscape. Moreover, its automation and analytics system enhances audience interaction. This solution is essential for managing multiple channels efficiently, reducing errors, and expanding the reach of publications.

07

Study Methodology

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

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

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

The student: the priority of all TECH programs

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

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

"At TECH you will NOT have live classes (which you might not be able to attend)"

The most comprehensive study plans at the international level

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

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

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

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

Case Studies and Case Method

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

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

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

Relearning Methodology

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

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

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

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

A 100% online Virtual Campus with the best teaching resources

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

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

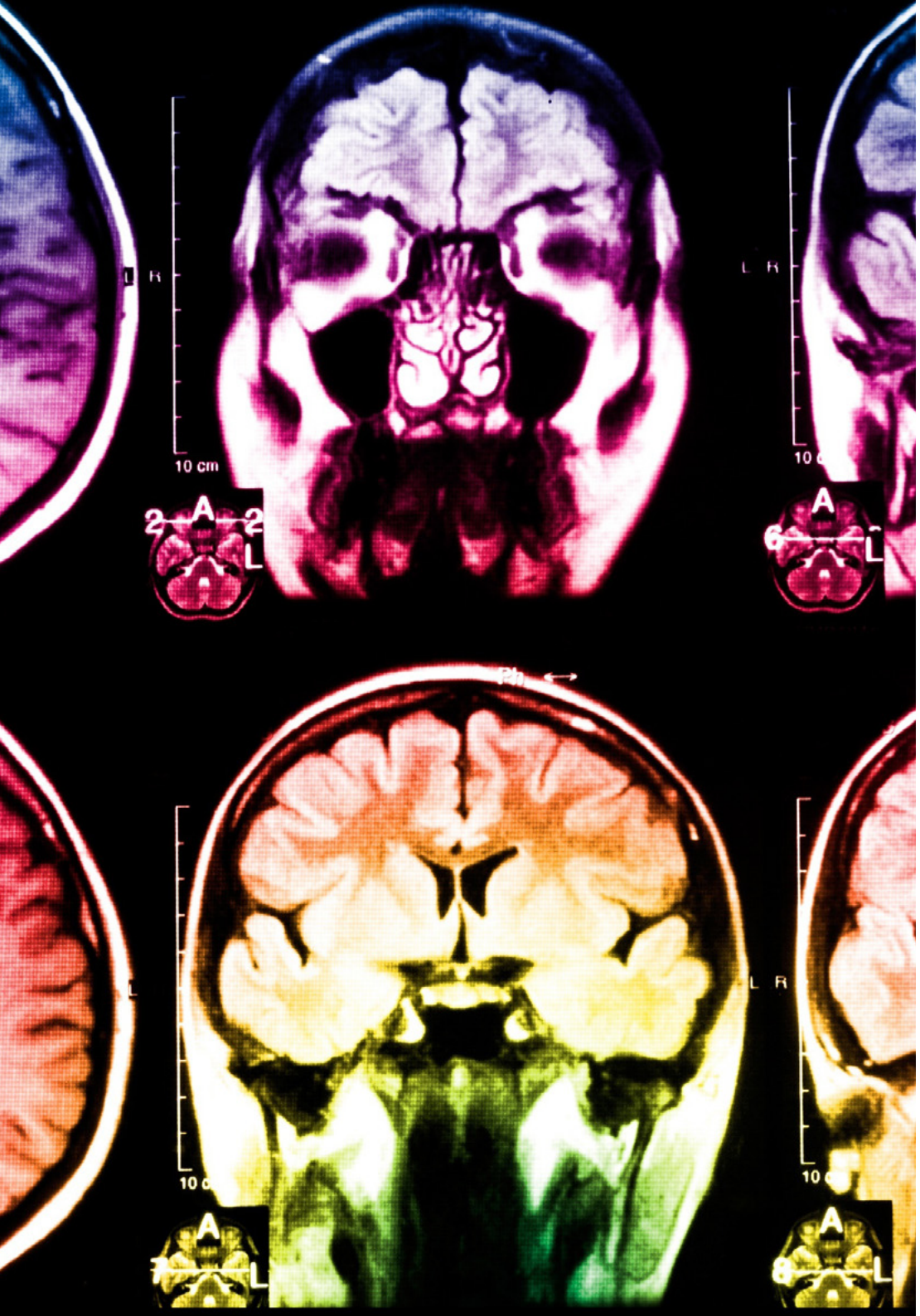
In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

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

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

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



The university methodology top-rated by its students

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

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

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

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

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

Study Material

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

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

Practicing Skills and Abilities

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

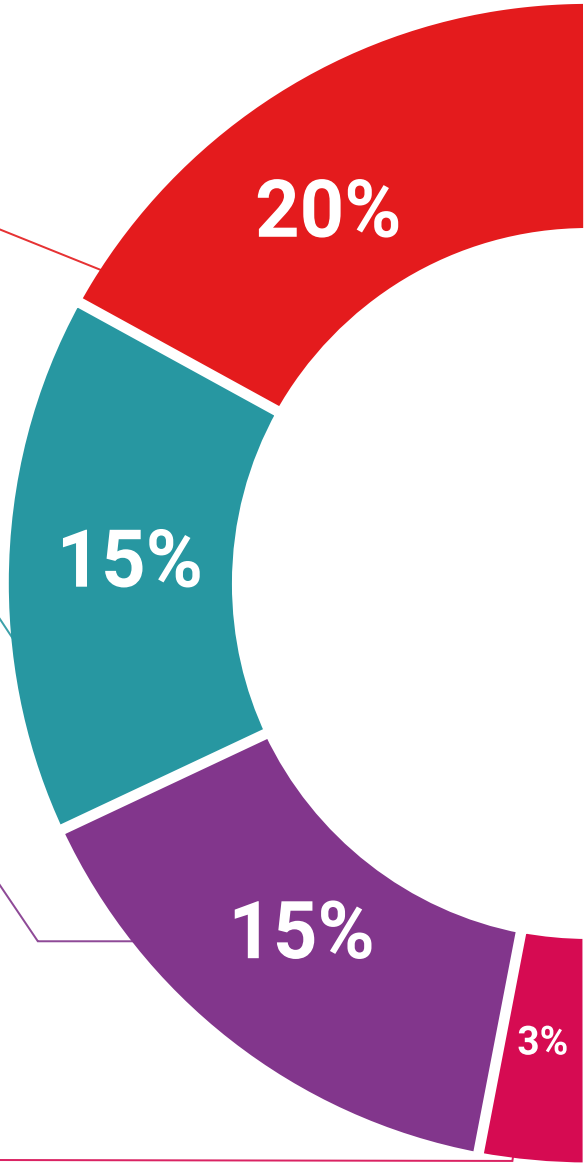
Interactive Summaries

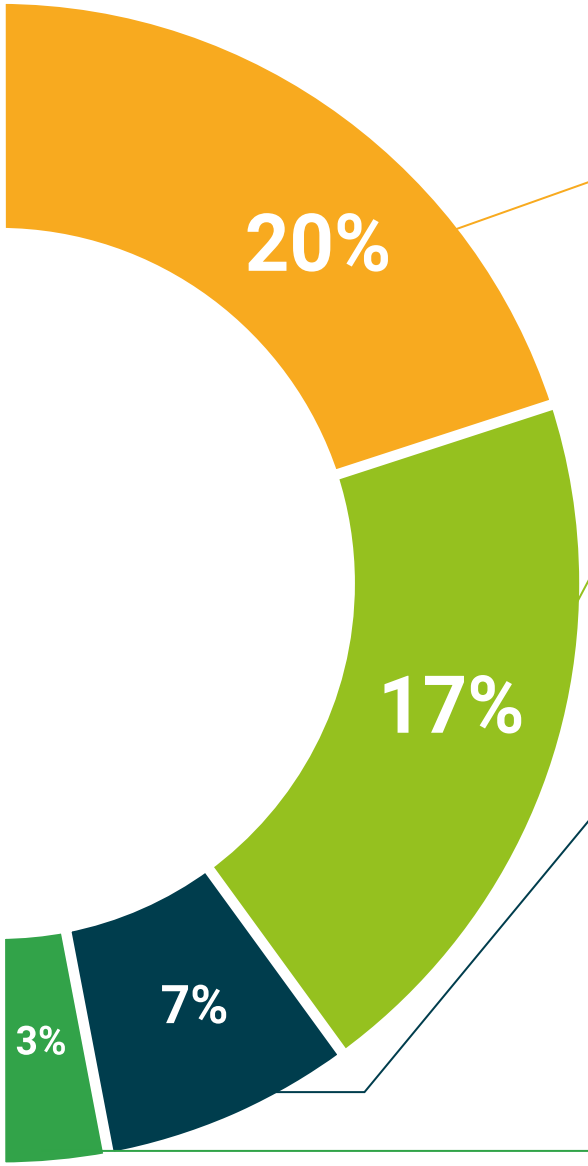
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





Case Studies

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

Testing & Retesting

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

Classes

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

Learning from an expert strengthens knowledge and memory, and generates confidence for future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.

08

Teaching Staff

The faculty of this Executive Master's Degree has been meticulously selected for their expertise and knowledge at the intersection of Artificial Intelligence and the fields of Marketing and Communication. With a unique combination of theory and practical application, these experts will guide graduates toward a deep understanding of how intelligent systems are redefining market strategies, preparing them to lead with confidence and shape the future of Marketing and Communication.

You will have the support of a teaching team composed of leading experts in the application of Artificial Intelligence to Marketing and Communication"

Management

Dr. Peralta Martín-Palomino, Arturo

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

Mr. Sánchez Mansilla, Rodrigo

- Digital Advisor at AI Shepherds GmbH
- Digital Account Manager at Kill Draper
- Head of Digital at Kuarere
- Digital Marketing Manager at Arconi Solutions, Deltoid Energy and Brinergy Tech
- *Founder and National Sales and Marketing Manager*
- Master's Degree in Digital Marketing (MDM) by The Power Business School
- Bachelor's Degree in Business Administration (BBA) from the University of Buenos Aires

Teachers

Ms. González Risco, Verónica

- Freelance Digital Marketing Consultant
- Product Marketing/International Business Development at UNIR - The University on the Internet
- *Digital Marketing Specialist* at Código Kreativo Comunicación SL
- Master's Degree in Online Marketing and Advertising Management by Indisoft - Upgrade
- Diploma in Business Studies from the University of Almería

Ms. Parreño Rodríguez, Adelaida

- *Technical Developer & Energy Communities Engineer* at projects *PHOENIX* and *FLEXUM*
- Technical Developer & Energy Communities Engineer at the University of Murcia
- *Manager in Research & Innovation in European Projects* at the University of Murcia
- Content Creator in Global UC3M Challenge
- Ginés Huertas Martínez Award (2023)
- Master's Degree in Renewable Energies by the Polytechnic University of Cartagena
- Degree in Electrical Engineering (bilingual) from the Carlos III University of Madrid

09

Certificate

This 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 diploma for the 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 a diploma for the **Executive Master's Degree in Artificial Intelligence in Marketing and Communication** 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 private qualification from **TECH Global University** is a European continuing education and professional development program that guarantees the acquisition of competencies in its area of expertise, providing significant curricular value to the student who successfully completes the program.

TECH is a member of the **Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB)**, the largest European organization dedicated to the development of Artificial Intelligence. This membership reaffirms its active role in scientific advancements related to new technologies.

Accreditation/Membership

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

Modality: **online**

Duration: **12 months**

Accreditation: **90 ECTS**

tech global university

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

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

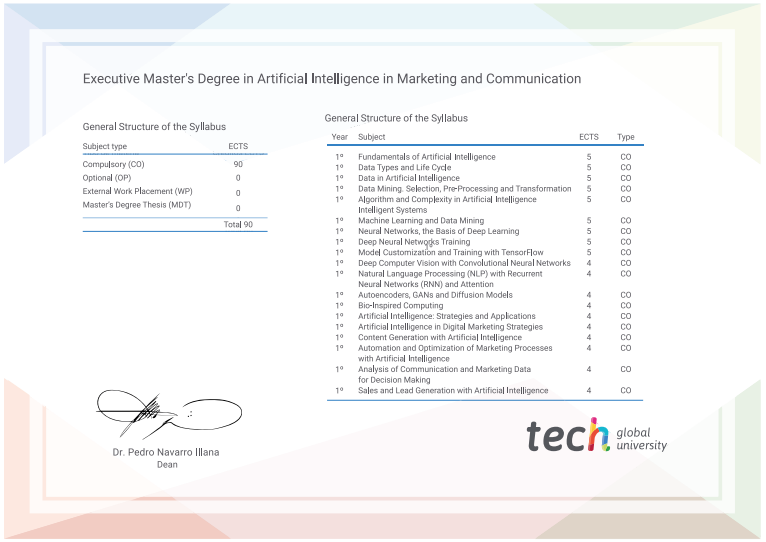
This is a private qualification of 2,700 hours of duration equivalent to 90 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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: AFWOR023S techtitute.com/certificates



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

General Structure of the Syllabus

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

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Fundamentals of Artificial Intelligence	5	CO
1º	Data Types and Life Cycle	5	CO
1º	Data in Artificial Intelligence	5	CO
1º	Data Mining. Selection, Pre-Processing and Transformation	5	CO
1º	Algorithm and Complexity in Artificial Intelligence	5	CO
1º	Intelligent Systems		
1º	Machine Learning and Data Mining	5	CO
1º	Neural Networks, the Basis of Deep Learning	5	CO
1º	Deep Neural Networks Training	5	CO
1º	Model Customization and Training with TensorFlow	5	CO
1º	Deep Computer Vision with Convolutional Neural Networks	4	CO
1º	Natural Language Processing (NLP) with Recurrent	4	CO
	Neural Networks (RNN) and Attention		
1º	Autoencoders, GANs and Diffusion Models	4	CO
1º	Bio-Inspired Computing	4	CO
1º	Artificial Intelligence: Strategies and Applications	4	CO
1º	Artificial Intelligence in Digital Marketing Strategies	4	CO
1º	Content Generation with Artificial Intelligence	4	CO
1º	Automation and Optimization of Marketing Processes	4	CO
	with Artificial Intelligence		
1º	Analysis of Communication and Marketing Data	4	CO
	for Decision Making		
1º	Sales and Lead Generation with Artificial Intelligence	4	CO

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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 Marketing and Communication

- 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 Marketing and Communication

Accreditation/Membership

The Society for the Study of Artificial Intelligence and Simulation of Behaviour

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