

Máster online 100%

Master in Artificial Intelligence & Big Data + 60 ECTS Credits

Structuralia

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Master in Artificial Intelligence & Big Data + 60 ECTS Credits

Modality
Online

Languages
Español

Duration
1500 hours (60 ECTS)

No Limit
AI Assistant

Does it include practices?
NO

Educational Institutions

Structuralia Engineering eLearning

UNIVERSIDAD NEBRIJA

Summary

The Master in Artificial Intelligence & Big Data is an advanced specialization designed for professionals in the technological area who seek to update and expand their capabilities, overcoming the limitations of traditional data processing methods. This program equips you with innovative strategies and tools to develop computer architectures and applications capable of managing and processing large volumes of heterogeneous information, often in real time, addressing the challenges inherent to Big Data. You will delve into the evolution of Business Intelligence towards this new paradigm, exploring the most advanced technological architectures and large-scale data analytics methodologies, including machine learning techniques. You will master the fundamentals of relational databases with SQL, from advanced commands to the design of a robust Datawarehouse, and you will be introduced to NoSQL databases for the efficient management of unstructured data. With this training, you will transform your organization's ability to optimize operational processes and enhance customer attraction and retention through predictive

and prescriptive analysis, integrating software project management with a strategic vision of Artificial Intelligence applied to real and complex business scenarios.

Agenda

MODULE 1. INTRODUCTION TO BIG DATA

1. DIDACTIC UNIT 1. DATA IN COMPANIES

1. Data information
2. Knowledge wisdom
3. Data Management (I)
4. Data Management (II)
5. Corporate performance management
6. Databases

2. DIDACTIC UNIT 2. OF BUSINESS INTELLIGENCE TO BIG DATA

1. Business intelligence
2. Datawarehousing
3. big data
4. HadoopSpark

3. DIDACTIC UNIT 3. BIG DATA TECHNOLOGICAL ARCHITECTURES

1. Hadoop ecosystem (I)
2. Hadoop ecosystem (II)
3. Hadoop ecosystem (III)
4. Spark Ecosystem
5. Installation and configuration of Big Data architectures

4. DIDACTIC UNIT 4. BIG DATA ANALYTICS

1. Analytics
2. Main algorithms (I)
3. Main algorithms (II)
4. Machine Learning and Deep Learning
5. internet of things

MODULE 2. RELATIONAL DATABASES. SQL. DESIGN OF A DATAWAREHOUSE (BIG DATA)

1. DIDACTIC UNIT 1. FIRST STEPS IN SQL

1. Introduction to SQL
2. Database manipulation
3. Data types
4. Normalization
5. Creating tables in SQL

2. DIDACTIC UNIT 2. SQL COMMANDS

1. Table manipulation
2. Table query in SQL

3. Joining tables in SQL
4. Table and view combinations
5. Other commands in SQL

3. DIDACTIC UNIT 3. SQL FUNCTIONS

1. Functions for strings and numerical functions (I)
2. Numerical functions (II)
3. Date and time functions
4. Other functions
5. Loops, conditionals and triggers in SQL

4. DIDACTIC UNIT 4. DESIGN OF A DATAWAREHOUSE

1. Introduction to datawarehousing
2. Databases in a data warehouse. stage
3. Databases in a data warehouse. SDG (I)
4. Data in a data warehouse. SDG (II)
5. Databases in a data warehouse. DDS

MODULE 3. NOSQL DATABASES (BIG DATA)

1. DIDACTIC UNIT 1. INTRODUCTION TO NOSQL DATABASES

1. Concept of NoSQL Databases
2. Advantages and disadvantages of NoSQL Databases
3. Main characteristics of NoSQL Databases

2. DIDACTIC UNIT 2. TYPES OF NOSQL DATABASES

1. Documentary Databases
2. Column Databases
3. Key-Value Databases
4. Database in graphs

3. DIDACTIC UNIT 3. MONGODB: A DOCUMENTARY DATABASE

1. Introduction to MongoDB
2. MongoDB Features and Architecture
3. Data modeling in MongoDB
4. Queries and operations in MongoDB
5. Scalability and performance in MongoDB

4. DIDACTIC UNIT 4. OTHER NOSQL DBMS

1. Apache Cassandra
2. CouchDB
3. Redis
4. Amazon DynamoDB
5. NeoJS

5. DIDACTIC UNIT 5. INSTALLATION, CONFIGURATION AND USE OF MONGODB

1. Data structure design

2. Development environment configuration
3. MongoDB installation and configuration
4. Creating and manipulating collections in MongoDB
5. Import and export data in MongoDB

6. DIDACTIC UNIT 6. ADVANCED QUERIES AND OPERATIONS IN MONGODB

1. Indexes and query optimization in MongoDB
2. Data Aggregation in MongoDB
3. Transactions in MongoDB
4. Replication and high availability in MongoDB
5. Backup and recovery in MongoDB

7. DIDACTIC UNIT 7. USE CASES OF NOSQL DATABASES

1. Web and mobile applications
2. Big Data and data analysis
3. Internet of Things (IoT)
4. Recommendation systems
5. Social media and social networks

8. DIDACTIC UNIT 8. INTEGRATION OF NOSQL DATABASES WITH EXTERNAL TECHNOLOGIES

1. Introduction to data integration
2. Integration with programming languages (Python, Java, etc.)
3. Integration with tools Business Intelligence (BI)
4. Integration with cloud storage systems

9. DIDACTIC UNIT 9. SECURITY AND PRIVACY IN NOSQL DATABASES

1. Security Concepts in NoSQL Databases
2. Authentication and authorization in MongoDB
3. Data encryption in NoSQL Databases
4. Auditing and access control in NoSQL Databases

MODULE 4. ARTIFICIAL INTELLIGENCE

1. DIDACTIC UNIT 1. INTRODUCTION TO ARTIFICIAL INTELLIGENCE

1. State of the art of artificial intelligence
2. Philosophy of artificial intelligence
3. Future of artificial intelligence
4. Project development processes with artificial intelligence
5. Data, your greatest asset

2. DIDACTIC UNIT 2. TYPES OF ARTIFICIAL INTELLIGENCE

1. Machine learning
2. Deep learning
3. Transformers
4. Synthetic data generation
5. Hyperparameters in artificial intelligence models

3. DIDACTIC UNIT 3. INTRODUCTION TO MACHINE LEARNING ALGORITHMS

1. Linear regression
2. Nonlinear Regression and Support Vector Machine (SVM)
3. Decision trees and random forests
4. Fuzzy logic and gradient descent
5. Recommendation systems

4. DIDACTIC UNIT 4. TURNKEY PROJECT WITH ARTIFICIAL INTELLIGENCE

1. Preparation of the work environment. Anaconda, Visual Studio Code and Python
2. Data entry and data processing dataset
3. TensorHub, TensorFlow and Keras
4. Image processing
5. Generation of artificial intelligence models

MODULE 5. DATA MINING, MACHINE LEARNING AND DEEP LEARNING (BIG DATA)

1. DIDACTIC UNIT 1. SUPERVISED LEARNING (I)

1. Introduction
2. Linear, multiple and logistic regression (I)
3. Linear, multiple and logistic regression (II)
4. Support Vector Machine (SVM)
5. Decision trees

2. DIDACTIC UNIT 2. SUPERVISED LEARNING (II)

1. KNN (K-Nearest Neighbors)
2. naïve bayes
3. Evaluation of supervised models
4. Example exercise
5. Proposed exercise

3. DIDACTIC UNIT 3. UNSUPERVISED LEARNING

1. Introduction to clustering: purpose and metrics
2. K-means clustering
3. Hierarchical clustering, other techniques and examples
4. Principal Component Analysis (PCA)
5. PCA Example Exercise

4. DIDACTIC UNIT 4. DEEP LEARNING

1. Artificial Neural Networks (ANN) (I)
2. Artificial Neural Networks (ANN) (II)
3. Artificial neural networks (ANN) (III)
4. Example exercise
5. Proposed exercise

MODULE 6. ADVANCED DEEP LEARNING

1. DIDACTIC UNIT 1. INTRODUCTION TO MACHINE LEARNING

1. Introduction
2. Machine learning algorithm classification
3. Machine Learning Examples
4. Differences between machine learning and deep learning
5. Types of machine learning algorithms
6. The future of machine learning

2. DIDACTIC UNIT 2. DATA STRUCTURE EXTRACTION: CLUSTERING

1. Introduction
2. Algorithms

3. DIDACTIC UNIT 3. RECOMMENDATION SYSTEMS

1. Introduction
2. Collaborative filtering
3. Clustering
4. Hybrid recommender systems

4. DIDACTIC UNIT 4. CLASSIFICATION

1. Classifiers
2. Algorithms

5. DIDACTIC UNIT 5. NEURAL NETWORKS AND DEEP LEARNING

1. Components
2. Learning

6. DIDACTIC UNIT 6. ELECTION SYSTEMS

1. Introduction
2. The process of moving from DSS to IDSS
3. Application cases

7. DIDACTIC UNIT 7. DEEP LEARNING WITH PYTHON, KERAS AND TENSORFLOW

1. Deep learning
2. Deep Learning Environment with Python
3. Machine and deep learning

8. DIDACTIC UNIT 8. NEURAL SYSTEMS

1. Neural networks
2. Deep networks and shallow networks

9. DIDACTIC UNIT 9. SINGLE LAYER NETWORKS

1. Single-layer and multi-layer perceptron
2. Perceptron example

10. DIDACTIC UNIT 10. MULTILAYER NETWORKS

1. Types of deep networks

11. DIDACTIC UNIT 11. LEARNING STRATEGIES

1. Data input and output
2. Train a neural network
3. Computational graphics
4. Deploying a deep network
5. The forward propagation algorithm
6. Multilayer deep neural networks

MODULE 7. IDEA AND MANAGEMENT METHODOLOGIES OF ARTIFICIAL INTELLIGENCE PROJECTS

1. DIDACTIC UNIT 1. INTRODUCTION

1. Introduction
2. Key Elements for AI Project Management
3. Characteristics of AI projects
4. Introduction to the main agile and ideation methodologies
5. Integration of different methodologies

2. DIDACTIC UNIT 2. DESIGN THINKING

1. Introduction
2. Phase I: Empathize
3. Phase II: Define
4. Phase III: Ideate
5. Phase IV: prototyping

3. DIDACTIC UNIT 3. LEAN START-UP AND SCRUM

1. Read start-up. Basics
2. Lean Start-up. Tools
3. Scrum. Introduction
4. Scrum. Roles
5. Scrum. Ceremonies and artifacts

4. DIDACTIC UNIT 4. APPLICATION TO AI PROJECTS

1. Introduction
2. Devising the project
3. Running the project
4. Some tips when implementing the methodologies
5. Summary and conclusions

MODULE 8. MODULE ON IMPACT OF ARTIFICIAL INTELLIGENCE IN THE COMPANY

1. DIDACTIC UNIT 1. ARTIFICIAL INTELLIGENCE APPLIED TO DIFFERENT SECTORS

1. Financial sector
2. Retail sector
3. Industry sector
4. Agriculture sector

5. Health sector

2. DIDACTIC UNIT 2. APPLICATIONS IN DIFFERENT AREAS OF A COMPANY

1. Logistics and operations
2. Marketing
3. Sales and customer service
4. Finance and control
5. People analytics

3. DIDACTIC UNIT 3. ARTIFICIAL INTELLIGENCE APPLIED TO DIFFERENT SECTORS

1. Current scenario of a booming sector
2. Financing
3. Featured Startups
4. Future of the AI ecosystem
5. Starting an AI company

4. DIDACTIC UNIT 4. ETHICS. COMPANY AND SOCIETY

1. Ethics. General notes
2. Examples of biases
3. Global initiatives
4. Public organizations and regulation
5. AI in the SDGs

MODULE 9. TECHNOLOGY ECOSYSTEMS. INTRODUCTION TO NEW DISRUPTIVE TECHNOLOGIES

1. DIDACTIC UNIT 1. INTRODUCTION TO THE ECOSYSTEM OF TECHNOLOGIES

1. Fourth industrial revolution
2. Digital transformation in companies
3. Fundamentals and key points
4. Benefits
5. Enabling technologies

2. DIDACTIC UNIT 2. ENABLING TECHNOLOGIES I

1. Big Data
2. Cloud Computing
3. Blockchain
4. Artificial intelligence
5. Virtual and augmented reality

3. DIDACTIC UNIT 3. ENABLING TECHNOLOGIES II

1. BIM
2. Collaborative robots
3. Additive manufacturing
4. Hyperconnectivity
5. IOT

4. DIDACTIC UNIT 4. ENABLING TECHNOLOGIES III

1. Manufacturing Execution System (MES)
2. Process integration and efficiency
3. Use cases
4. New methodologies: agile, lean startup or design thinking
5. Change management

MODULE 10. TFM. MASTER BIG DATA + ARTIFICIAL INTELLIGENCE

Qualification

University Degree in Master of Lifelong Training in Artificial Intelligence & Big Data issued by the Antonio de Nebrija University with 60 ECTS University Credits. Teachings not leading to obtaining an official qualification

Objectives

- • You will design advanced data architectures for the management of large volumes of information, integrating massive processing solutions and intelligent systems. • You will implement large-scale data analysis strategies to extract predictive and prescriptive value, optimizing business decision making. • You will manage the complete life cycle of software projects aimed at the implementation of intelligent systems, from conception to impact evaluation. • You will make strategic decisions based on deep knowledge of data exploitation and technological innovation, boosting competitiveness. • You will design and optimize Datawarehouses, mastering relational (SQL) and non-relational (NoSQL) databases for efficient information management. • You will evaluate the impact of advanced analytics solutions on the improvement of operational processes and the customer attraction and retention strategy. • You will apply data governance and security principles in Big Data architectures, ensuring the integrity and regulatory compliance of the information. • You will integrate Machine Learning algorithms into Artificial Intelligence solutions to automate and improve analysis and prediction capacity.

What does it prepare you for?

This program prepares you to lead the digital transformation of your organization, providing you with the necessary skills to design and implement large-scale data architectures. You will learn to manage complex software projects, integrating intelligent systems solutions and Big Data to optimize strategic and operational decision making. The Master in Artificial Intelligence & Big Data trains professionals in the advanced exploitation of large data sets for the optimization of operational processes and continuous improvement. You will develop a comprehensive vision of data management, from the conceptualization of a robust Datawarehouse to the implementation of NoSQL databases, overcoming the inefficiencies of traditional systems and adopting innovative approaches. You will be able to evaluate the impact of advanced analytics on operational processes and business strategy, driving innovation and business competitiveness. You will make informed and proactive decisions, based on deep and predictive analysis of information.

Who is it addressed to?

Aimed at professionals in the technology sector, this program focuses on those involved in the development, processing and management of data, as well as the creation of software projects. If you are looking to update your knowledge and overcome the limitations of traditional methods of processing large volumes of information, and want a deep specialization in data architecture and advanced data analytics, this program is for you. It is ideal for those who work with data exploitation and want to optimize operational processes, improve the management of Artificial Intelligence projects and enhance customer attraction and retention through advanced strategies. You are looking for a strategic vision to integrate intelligent systems into your organization and consolidate your professional career in a high-demand field.

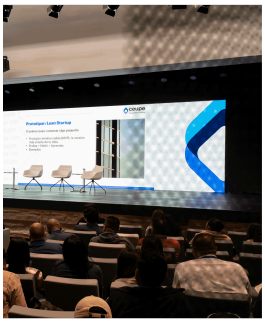
Official Character

This training is not included within the scope of official regulated training (Early Childhood Education, Primary Education, Secondary Education, Official Vocational Training FP, Baccalaureate, University Degree, Master University Officer and Doctorate). It is therefore a complementary and/or specialization training, aimed at the acquisition of certain competencies, skills or aptitudes of a professional nature, which can be assessed as merit in job boards and/or competitive examinations, always within the section of Complementary Training and/or Continuous Training. It is always essential to review the specific grading requirements of the specific public job boards to which we wish to apply.

Professional Outings

- Specialization in the field of Artificial Intelligence and Big Data prepares you to assume leadership and strategic consulting roles in the technology sector. You will be able to serve as Director of Data Strategy, leading the digital transformation of organizations through the design and implementation of robust architectures that support information-based decision making. You will manage advanced data analytics teams, optimizing operational processes and interaction with clients through the exploitation of large volumes of information. You will acquire the skills to work as a Big Data Solutions Architect, capable of designing and supervising the implementation of complex data processing and storage systems, from SQL relational bases to NoSQL environments. In addition, your strategic vision will allow you to direct the integration of these technologies in key areas such as marketing, finance and operations, promoting innovation and business competitiveness in a global framework.







Live Madrid

Live the International Week

As an additional complement to your training, you can be part of the SIM: Week International in Madrid. A unique meeting that brings together students from all over the world. For seven days you can live an academic and cultural experience in the heart of Europe, culminating with the graduation ceremony in Madrid.

- Conferences and workshops with international experts
- Visits to companies and reference organizations
- Networking with students from different countries
- Cultural activities and discovery of Madrid
- graduation ceremony

Structural

Structuralia is a leading educational institution in postgraduate and highly specialized online training, focused on the fields of engineering, architecture, construction, energy, technology and digital transformation.

Founded in 2001 with a strong industrial DNA, the result of collaboration between large companies in the sector and the Universitat Politècnica de Catalunya (UPC), for more than 25 years we have accompanied technical professionals in their academic and professional development through practical, flexible training aligned with the reality of the labor market.

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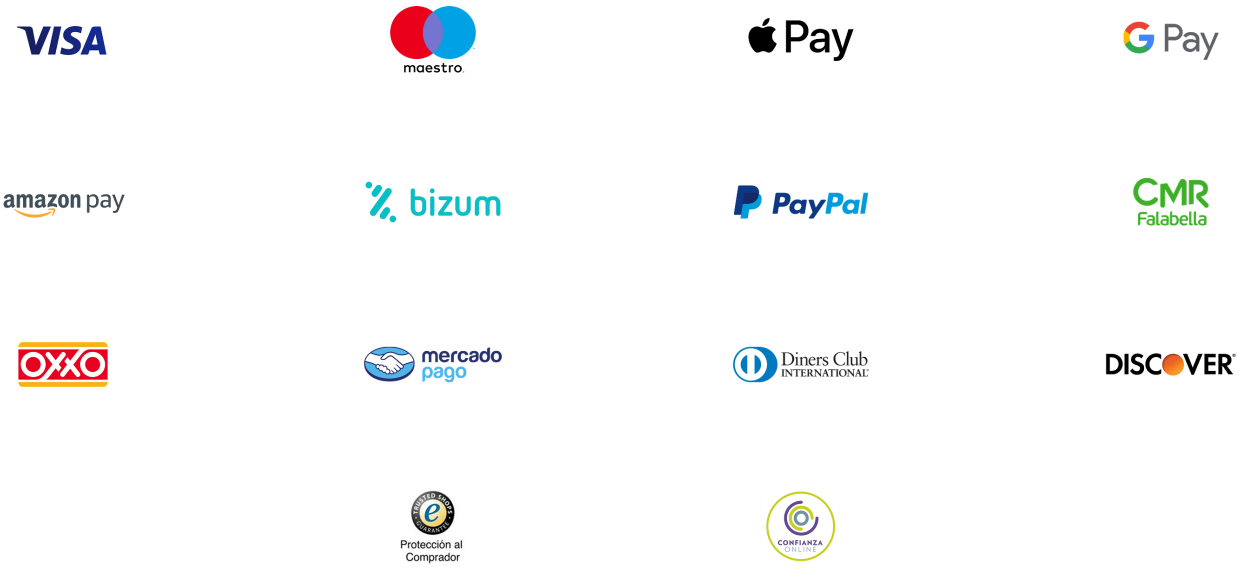
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development and research.

With the experience accumulated over more than 20 years, we have perfected our learning platform EDUCA LXP (Learning Experience Platform), the basis of our educational methodology, which provides students with online training practical and meaningful.



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