DMBI Consultants

Get More Value out of Your Data

2025

We Have The Best Team

Our company is composed of a large group of young consultants from STEM faculties, with PhD, international experience and professional certifications. The team is led by an experienced management team that is always passionate and visionary.

DMBI
consultants

Who we are

Company Profile

DMBI Consultants is an innovative consulting company, founded in 2008 and active in the field of Data Science.
Our goal is to support customers in an innovation process and to increase their value through the expertise of our resources, specialized in techniques of:

- **ARTIFICIAL INTELLIGENCE**
- **DATA MINING**

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Our Mission

We put data at the service of businesses to transform data into information, information into knowledge, and knowledge into a competitive advantage. All of this translates into:

- **Improved decision-making**. Data science can help businesses make better decisions, based on hard data and not on intuition or subjective opinion.
- **Process optimization.** Data science can help businesses optimize processes, identifying areas of inefficiency and improving productivity.
- **New product and service development.** Data science can help businesses develop new products and services that better meet customer needs.
- **Acquisition of new customers.** Data science can help businesses acquire new customers by identifying the most profitable market segments and segmenting customers based on their characteristics and interests.
- **Improved customer experience.** Data science can help businesses improve the customer experience by providing them with more personalized service and responding quickly to their requests.

Services

Business Intelligence

Reporting activity aimed at the interactive and dynamic presentation of company data

Big Data

Management and analysis of large data flows that cannot be managed with traditional tools and techniques

Cloud Platform

Development of applications on the cloud platforms for interaction with the various services

Predictive Analytics

Development of tools capable of predicting the behavior of the various corporate assets

Internet of Things

Development of links between machines for a hyper-connected reality

Digital Academy

Training and refresher courses dedicated to internal consultants and companies that want to train their employees on the top trends of the AI and BI sector.

Our Mission

We aim to be the drivers of continual innovation and enhancement by leveraging our expertise in Artificial Intelligence and Data Science sectors.

Engagement Models

- Task
- Time & Material Services
- Turnkey Consultancy
- Operational Support

DMBI consultants

Customer Summary

- Energy
- Banking
- Insurance
- Telecommunications
- New Space Economy
- Public Administration
- Agritech
- Life Science
- Research Institutions

DMBI consultants

Technical skills Summary

BIG DATA TOOLS

ML TOOLS

BI TOOLS

Company Profile Business

Case Histories

Roundup of projects aimed at presenting the practical application of our skills

www.dmbi.org

Machine Learning

PROJECTS CATALOGUE

Machine learning is a field of artificial intelligence that allows systems to learn and improve from experience without being explicitly programmed.

Credit Decision Engine using Text Mining

Natural Language Processing - Banking

Project Target

Development of a text mining engine based on **Natural Language Processing (NLP)** for the analysis of credit reports. The engine, implemented in Python, will use a multi-class classification model to automatically classify reports based on the customer's credit risk.

Performed activity

Creation of a dataset of credit reports labeled by managers with the risk classification ("**Unlikely To Pay**" or "**Likely To Pay**").
Analyze and optimize the text mining engine.
Improve performance and reliability.
Enhance accuracy in credit report classification.
Integrate with other systems for credit risk analysis.

Natural Language Processing - Entertainment

Sentiment Analysis

Project Target

Automatic sentiment rating of tweets related to TV programs, through a **Sentiment Analysis** activity, carried out in the context of Natural Language Processing (NLP), using Python (open source).

Performed activity

Collection of texts for training the **NLP pipeline** to understand the desired linguistic context.
Implementation of a deep learning model (Keras, Scikit Learn, Tensorflow) for sentiment prediction.The project showcases a deep learning approach to sentiment analysis, leveraging open-source tools for wider accessibility and potential contributions.

Day-ahead price forecast in the electricity market

Predictive Analytics - Energy

Project Target

Creation of a forecast model of the daily **PUN (Unic National Price)**;
creation of an optimization and distribution model for resources to offer on the financial markets.

Performed activity

Simulation of stochastic models for price dynamics; use of Data Science techniques; use of Business Intelligence tools for evaluation of the effectiveness of the model in the financial trading market.

Object detection using Satellite Imagery

Predictive Analytics - Image Processing

Project Target

With the intent of combating abusive phenomena of occupation of the territory: detection of geographical areas in which landfills could be present using high-resolution s**atellite images**.

Performed activity

Development of machine learning models, using methodologies based on pixels and tiles, capable of recognizing the characteristics that signal the presence of illegal landfills in the observed area.

Predictive Analytics - Image Processing

Object detection using Satellite Imagery

Project Target

Biodiversity is declining rapidly due to climate change, invasive species, and human activities, including in protected areas. To monitor these changes more efficiently, local authorities have implemented a new approach using free satellite imagery from the **Sentinel-2 mission.**

Performed activity

Machine Learning algorithms were employed to analyze this data and create detailed maps of vegetation types. By comparing these maps with ground-based surveys, researchers were able to accurately identify areas with high biodiversity (hotspots). This project demonstrates the potential of **remote sensing** to reduce the costs and improve the effectiveness of biodiversity conservation efforts.

Weather risk forecasting using Satellite Imagery

Predictive Analytics - Agritech

Project Target

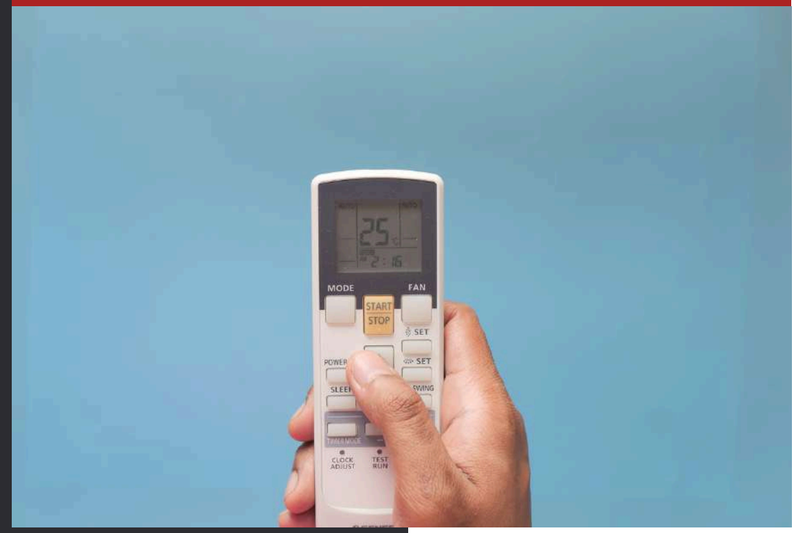
Climate change is causing a rise in the frequency of extreme weather events. For this reason, it becomes crucial to know how to estimate how many days a year will present a high **meteorological risk**.

Performed activity

Creation of a database using the dataset of the **NASA MERRA** mission, to calibrate forecasting Machine Learning models capable of estimating future days at risk. The model was used to optimize the price of an insurance policy for catastrophic damage to crops.

Energy Consumption Analysis and Customer Profiling

Cloud Platforms - Energy



Project Target

Creation of a **cloud infrastructure** and an ML custom library for the analysis of energy consumption and business customer profiling, as support for the operational and sales department.

Performed activity

Design and implementation of serverless infrastructure with **Amazon Web Services** and industrialization of ML algorithms, such as linear regression, gradient boosting, isolation forest, and K-means.

Energy Customer Consumption data integration

Cloud Platforms - Energy

Project Target

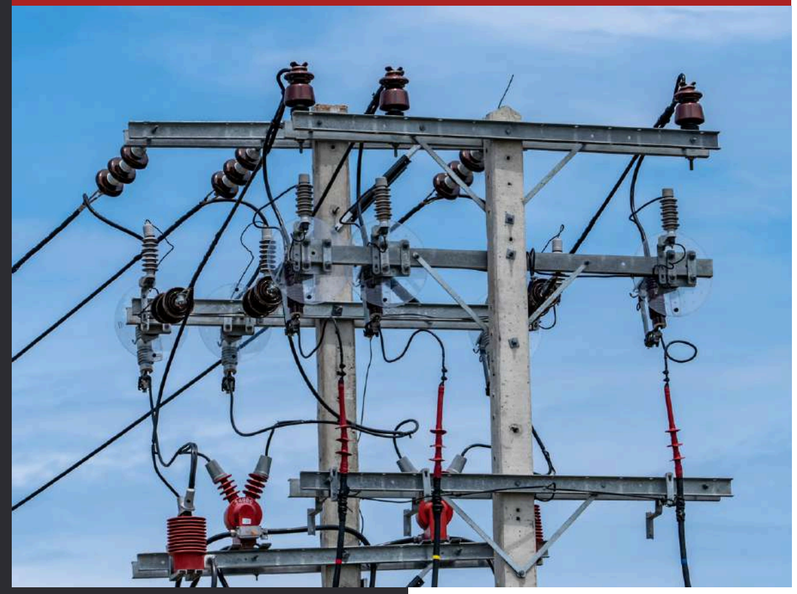
Storage of energy user's data to record information useful to analyze coverage of automatic retrievement of **consumption data** and **customer behavior**.

Performed activity

Development of ETL pipelines using the **Pentaho Data Integration** tool to extract data from structured sources, time series data (InfluxDB), and streaming data (Apache Kafka). Enrich the database with key performance indicators (KPIs) to identify consumption peaks and gaps, and address data quality issues. Deploy and schedule pipelines to ensure data availability.

Infrastructure Monitoring

Internet of Things
-
Smart Grid



Project Target

Construction of an infrastructure **performance monitoring** platform, distributed throughout the Italian territory, in order to prevent breakages and malfunctions of electricity pylons.

Performed activity

Data collection project, from unstructured sources, in the field of Business Intelligence in the electricity transmission sector. The project was created through a mix of open-source and enterprise-type software. The IoT data source, to be accessed to retrieve sensor readings were distributed on the **Mongo DB** platform.

Business Intelligence - Insurance

Data Integration and Reporting in Management Control

Project Target

Processing, through a **Data Integration process**, of collection and settlement indicators of insurance products and dashboards
KPI trend monitoring.

Performed activity

Data, segmented by territory and organized into monthly and weekly intervals, was loaded into a multi-fact schema **DWH** on **Oracle DB**. Custom KPIs and reports were developed for analysis by line of business, insurance product, or territory. Calculation logic was implemented for reserves, surrender rates, and claims rates.

Reporting in Credit Risk

Business Intelligence - Banking

Project Target

A **credit risk monitoring tool** was built using SAS and Tableau. This tool stores data on relationships, subjects, economic exposure, guarantees, and creditworthiness indicators.

Performed activity

Using **Tableau** Business Intelligence software, dynamic and interactive dashboards were developed to analyze the general status of the bank (volume of guaranteed and non-guaranteed exposure, number of customers, distribution of guarantees) and the creditworthiness of customers (stage allocation according to IFRS9 principles, internal credit rating assigned to loans, transition matrices on the evolution of the debtor classification).

Intelligent Document Processing

Generative AI - Banking

Project Target

The **RiskAssistantAI** is a Generative AI model that helps users understand business reports by providing them with detailed information, particularly focusing on identifying risks.

Performed activity

By combining **Azure**'s cloud-based Artificial Intelligence services with the latest Large Language Model (LLM) from **OpenAI** (GPT-4), documents even hundreds of pages long can be queried to extract information without having to worry about reading or knowing the content of them in advance.

Predictive Maintenance

Big Data - Telco

Project Target

Maintenance planning of a series of routers via a predictive model of **RUL (Remaining Useful Life)** for each unit, based on telemetry variables and sensory data.

Performed activity

Collection of the different data and structuring of the time series in a format suitable for the model;
statistical analysis of measurements;
implementation of a **Deep Learning model** for the prediction of the machine failures

Company Profile Business

Case Studies

A collection of examples of projects realized in the field of research and development

www.dmbi.org

Myectomy Project

Predictive models - Medicine

Project Target

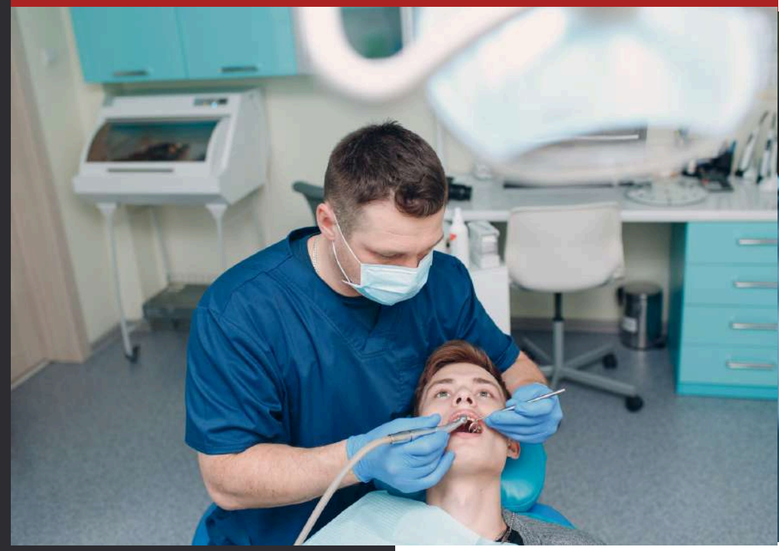
In collaboration with the **Sapienza University of Rome**, a dataset of patients undergoing **myectomy** was analyzed using descriptive and inferential statistical techniques. This model provides surgeons with an additional tool to evaluate the appropriateness of the intervention.

Performed activity

Creation of a dataset including patient parameters before and after surgery. Hierarchical clustering models were developed to group patients based on their pre- and post-operative parameter similarities. A logistic regression model was built using the pre-intervention parameters to predict the probability of parameter improvement following myectomy.

REP Project

Predictive models - Medicine



Project Target

Conducted a study to analyze questionnaires completed by children undergoing orthodontic treatment with **Rapid Palatal Expanders** (RPEs) to evaluate pain perception across various palate regions throughout the treatment process and investigate correlations between individual characteristics and the invasiveness of the treatment.

Performed activity

Collaborated with the orthodontics department of the **Umberto I University Hospital** to obtain the questionnaires filled out by children undergoing RPE treatment.

Analyzed the questionnaires using inferential statistical techniques to identify correlations between variables and assess the pain perceived in the palate.

Produced tabular reports, graphs, and statistical indicators to formally justify the results and support the conclusions of the study.

Auricular Acupuncture Project for Facial Pain

Predictive models - Medicine

Project Target

With the collaboration of researchers from the **Umberto I University Hospital**, we conducted a study to gather and analyze clinical and molecular data related to auricular acupuncture treatment. The study aimed to assess the effectiveness of auricular acupuncture in pain reduction and identify potential biomarkers associated with its therapeutic effects.

Performed activity

Processed the clinical data to monitor the trends in pain levels recorded by patients and identify correlations with personal attributes such as sex and age.
Analyzed the molecular data using inferential statistical techniques, including tests and regression models, to assess the changes in salivary biomarkers before and after acupuncture treatment.
Conducted the experiment with four groups: patients, patients receiving auricular acupuncture, healthy volunteers receiving sham acupuncture, and healthy volunteers receiving no therapy.

Company Profile Business

Use Cases

Discover how our ideas come to life through real-world projects

www.dmbi.org

Demand Prediction

AI - Logistics Sector

Problem:
Inefficient Storage Strategies in Logistics

Logistics companies, especially those operating with **distributed warehouses**, often struggle with inefficient storage planning, leading to bottlenecks, wasted space, and longer delivery times.

Solution:
Leveraging AI and Machine Learning for Optimized Storage

By employing **Machine Learning** and **Artificial Intelligence** models, companies can gain valuable insights into customer behavior and needs. These insights enable them to optimize storage strategies, efficiently allocate loads between warehouses, and ultimately improve overall operational efficiency. This leads to a reduction in costs, faster delivery times, and better customer satisfaction.

AI for Route Planning and Optimization

AI
-
Logistics Sector

Problem:
Route Optimization in Logistics

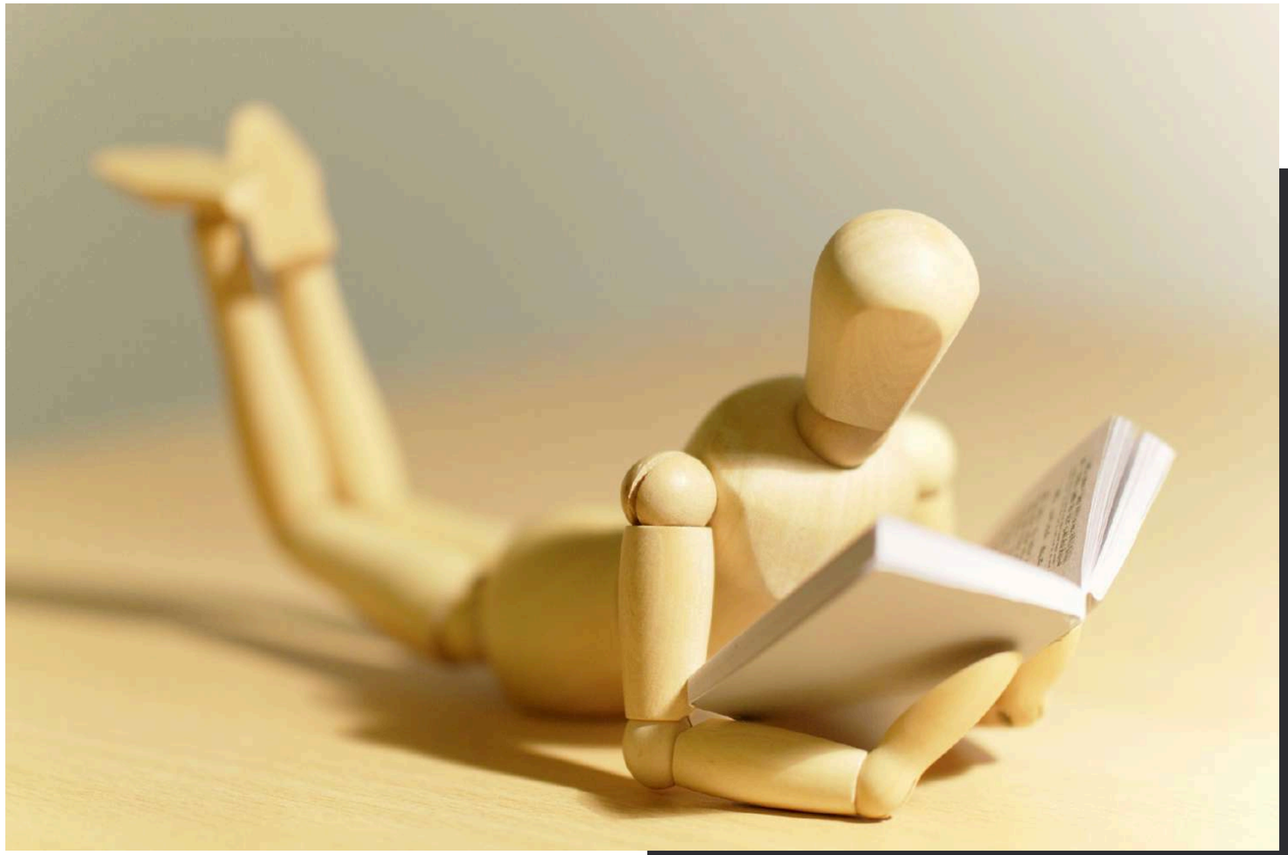
The logistics industry faces significant challenges in **optimizing delivery routes**. Traditional methods often result in longer routes, increased fuel consumption, and delayed deliveries, ultimately impacting both operational costs and customer satisfaction.

Solution:
AI-Powered Logistics. The Path to Smarter Routes

Advanced technologies like **Machine Learning** and **AI** provide solutions to these challenges. By analyzing complex data such as traffic patterns and vehicle capacities, companies can optimize delivery routes, reducing costs, improving efficiency, and enhancing customer satisfaction. Ultimately, this contributes to achieving sustainability and profitability goals.

Digital Academy

CUSTOMIZABLE COURSES



Design and provision of training courses on the main Data Science technologies, with a tailored approach based on the clients needs and in support of the project that they have to carry out.

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Our Target

CLIENTS

- **Large enterprises:** Large enterprises often have complex data needs and can benefit from the expertise of a data science consultancy to help them extract value from their data.
- **Startups and SMEs:** They may not have the in-house resources to invest in data science, so they may rely on a consultancy to help them get started.
- **Government agencies and non-profit organizations:** Government agencies and non-profit organizations can also benefit from data science to improve their services and operations.

PARTNERS

- **Data engineering companies:** Data engineering companies can help data science consultancies build and manage their data pipelines.
- **System integrators:** System integrators can partner with data science consultancies to offer clients a more comprehensive range of services.
- **Other data science consultancies:** Data science consultancies can also partner with each other to offer their clients a wider range of expertise and experience.

Skills in Big Data Architecture

•**Implementation** and **maintenance** of **Big Data** infrastructure that allows the ingestion and integration of large amounts of data, both in volume and production speed.

•**Exploitation** of computational engine frameworks for **Big Data** processing, aimed at both statistical analysis and the development of Artificial Intelligence models.

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EXAMPLES OF ARCHITECTURES:

•**Operating system**: Hadoop

•**Ingestion tool**: Apache Kafka

•**Framework**: Spark

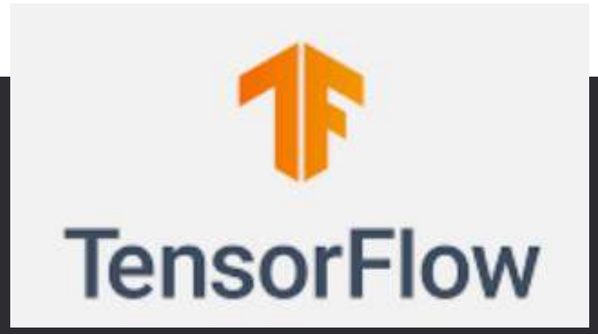
•**Cloud Platforms-PaaS**: Azure, AWS

Big Data Tools

A short list of Big Data tools

ML Tools

A short list of Machine Learning tools



BI Tools

A short list of Business Intelligence tools

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