Artificial Intelligence and Big Data are two of the driving forces behind a variety of technological innovations that have shaped today’s digital environment and Industry 4.0. These two trends have the common goal of getting the most value out of the large amount of data generated today.

**Big Data** refers to the storage and processing of massive amounts of structured, semi-structured, and unstructured data with great potential to be extracted and organised to provide valuable information for organisations and enterprises.

On the other hand, **Artificial Intelligence** consists of a combination of algorithms with the objective to create machines that imitate the functions of humans (such as learning, reasoning and making decisions).

**What is the relationship between Artificial Intelligence and Big Data?**

Although both concepts revolve around data, they have very different functionalities. There is a reciprocal relationship between Big Data and Artificial Intelligence.

**Functionalities of Big Data**

Big Data acts as an input that receives a massive set of data. This data needs to be processed and standardised in order to become useful.

**Functionalities of Artificial Intelligence**

Artificial Intelligence is the consequence of this process. It consists of a set of software that take advantage of the output generated by these results to create series of algorithms that allow programs and mechanisms to show intelligent behaviours and reason as humans do, resulting in [multiple advantages](https://nexusintegra.io/blog/advantages-disadvantages-artificial-intelligence/) for companies.

Big Data is therefore the fuel of Artificial Intelligence. This second feeds on and learns from processed data, creating and recognising patterns and developing sophisticated analytics solutions for all types of industries.

Increased data and processing speed have made it possible to develop Artificial Intelligence, which uses this information to analyse and act with the environment accordingly. It would be a natural mistake to compare these two terms as they are two concepts that are fed back and go hand in hand.

**The role of Big Data in Artificial Intelligence**

Artificial Intelligence needs data to build its intelligence, both initially, subsequently and continuously. The larger the amount of data that Artificial Intelligence systems can access, the more machines can learn and therefore more accurate and efficient their results will be.

As AI becomes smarter, less human intervention is required when it comes to process control and machine monitoring. Artificial Intelligence lives in a continuous learning phase in which it feeds on data continuously.

Just as Big Data is necessary for Artificial Intelligence, the same goes the other way around. Such vast amounts of data would not have the value they have without the Artificial Intelligence models, capable of unlocking the potential of these data stores and transforming them into intelligence.

**Artificial Intelligence applied to Big Data provides the following benefits:**

* **Deviation detection: AI** can analyse the data provided by Big Data to detect unusual occurrences in it. For example, through sensors, marking predefined ranges and identifying any anomalies that go out of range.
* **Probability of future outcome:** AI can use a known condition with an X probability of influencing the future outcome to determine the probability of that outcome.
* **Pattern recognition:** Detect patterns from large data structures that humans would be unable to recognize.

These benefits would not be possible without [Machine Learning](https://nexusintegra.io/es/blog/las-4-industrias-que-mas-se-benefician-del-aprendizaje-automatico/) (ML); driving force of artificial intelligence. It is a technique, belonging to the field of AI, that feeds data machines so that they are able to accurately mimic human processes and learn to make decisions autonomously, based on algorithms. Through models such as machine learning, AI supported by Big Data aims at the following objectives:

* **Reasoning**
* **Machine learning**
* **General intelligence**
* **Robotics**
* **Natural language processing**
* **Computer vision**
* **Programming and machine learning**

In order to refine AI systems so that they become able to generalise behaviours in the same way that a human brain can, millions of samples of data broken down into a format that systems can understand are needed.

**Artificial Intelligence: the future of Big Data?**

Although the concept of Artificial Intelligence goes back centuries, it is with the rise of Big Data in the last decade that it has experienced a resurgence. AI and Big Data are closely interconnecting and increased data availability is enhancing cognitive and AI initiatives within their organizations.

Artificial Intelligence is creating new models for analysing data that are no longer tedious and manual. What used to be statistical models like SQL, guided by engineers, has now converged with computing to become AI and machine learning. AI is improving this analytical world with entirely new capabilities to make semi-automatic decisions.

**What do I need to make this happen in my business?**

The Nexus Integra [Iot & Big Data platform](https://nexusintegra.io/product/" \t "_blank) is in place to help.  This platform will allow you to apply Big Data and AI technologies to an industrial environment. It will enable your firm to connect machines, sensors and any data source, making it possible to process, homogenize and exploit this data in order to operate easily and establish predictive performance analysis, among others.

The world was entrenched in big data before it even realized that big data existed. By the time the term was coined, big data had accumulated a massive amount of stored information that, if analyzed properly, could reveal valuable insights into the industry to which that particular data belonged.

IT professionals and computer scientists quickly realized the job of sifting through all of that data, parsing it (converting it into a format more easily understood by a computer), and analyzing it to improve business decision-making processes was too much for human minds to tackle. Artificially intelligent algorithms would have to be written to accomplish the enormous task of deriving insight out of complex data.

Data professionals and those with a [master’s in business analytics](https://online.maryville.edu/online-masters-degrees/business-data-analytics/) or data analytics are expected to be in demand as corporations broaden their big data and artificial intelligence capabilities in the coming years. The objective is to catch up to, and leverage, the amount of data being produced by all of our computers, mobile smartphones and tablets, and Internet of Things (IoT) devices.

## AI vs. big data

Big data is most assuredly here to stay at this point, and AI (artificial intelligence) will be in high demand for the foreseeable future. Data and AI are merging into a synergistic relationship, where AI is useless without data, and mastering data is insurmountable without AI.

By combining the two disciplines, we can begin to see and predict upcoming trends in business, technology, commerce, entertainment, and everything in between.