

then make decisions or predictions. An algorithm is fed with lots of data so that it can, without our direct help, spot patterns and irregularities in a dataset. A major advantage of ML is that it can keep improving as more data is provided. When you visit online shops, for example, the products promoted to you are often chosen by a recommendation system that inspects your past actions to find things you might prefer. In addition, algorithms are used for spotting fraud in financial systems and for anticipating future developments such as trends in the market or collapses of machinery. The main thought is to train computers to discover and use knowledge just like humans do, but at a much higher and quicker level.

Using the basic principles of Machine Learning, Deep Learning (DL) stands out as a leading approach that helps AI overcome tough and complicated tasks. The main component of Deep Learning is artificial neural networks which are designed based on the nervous system in our brain. They are made up of numerous layers of linked nodes, known as neurons which handle information in order from lowest to highest. Every layer learns to identify more abstract features from the data which helps the network reach a detailed understanding. The deeper aspect describes how many layers there are in the network and networks with more layers can identify complex skills. Contrary to expectations, Deep Learning has shown fantastic results where people believed AI would not be able to help. Its largest achievements are in image recognition for identifying things in images and speech recognition that helps computers and devices to grasp what is said with impressive accuracy. Because of these new advancements, DL is now used in driverless cars, medical scans, voice support and state-of-the-art surveillance.

Another major part of AI is Natural Language Processing (NLP) which focuses on computers interacting with language humans use. Thanks to NLP, machines can understand human language and respond to us like we would expect. This field uses several techniques and faces different challenges, some of them are analyzing text, identifying sentiment, translating automatically and extracting information. It is mainly thanks to Deep Learning that recent progress in Natural Language Processing brought about the creation of highly complex technology such as large language models (LLMs), with ChatGPT being a prime example. By utilizing these models, we can get