

What Is Natural Language Processing?

Artificial intelligence (AI) is the key to unlocking a productivity revolution. This is a widespread view across many fields in our modern economy. In nearly every industry, experts are looking for ways to apply so-called machine intelligence to time-consuming tasks.

But the concept of artificial intelligence is often misunderstood due to its use as a buzzword about future technology. In general, AI refers to a broad category of technologies used for automation. Many AI technologies have yet to come, but artificial intelligence is already here. Natural language processing — a technology that has been around for decades — is a great place to begin understanding the role of artificial intelligence.

Natural language processing (NLP) is a concrete example of AI in action. NLP is a technology that automatically transcribes and analyzes human communications, including text and audio. NLP is artificial intelligence because it applies technology to tasks that could traditionally only be completed with the human mind.

A technology that can extract meaning from human language is deeply powerful in many use-cases. Before exploring some of these real-world applications, let's take a look at how NLP works.

How Natural Language Processing Works

Natural language processing works in several steps, including:

- Transcription and data structuring
- Report generation
- Analysis and insights
- Recommendations

Transcription and Data Structuring

The first — and possibly most important — step involves converting messy, unstructured data into a format that can be easily understood by software. Audio files from recordings or footage are transcribed into text. Chat logs and other text communications are left as they are.

These text files are then processed and organized into categories and lists. For example, NLP can structure data from a conversation between brokers to pair stocks with their associated prices and trade quotes.

The data structuring offered by NLP is critical because many virtual assistants, chatbots, and other applications cannot function without it.

Report Generation and Insights

Next, the software feeds the newly structured data into reports, CSV files, or visualizations. These reports may offer the number of sold and bought units and other important information. NLP software can also provide some big picture insights from structured data. For companies involved in sales, NLP can flag the products with the highest and lowest sales statistics.

Recommendations

NLP then takes its insights a step further by suggesting a course of action. In the case of surging demand for a product, the software may suggest an expansion in inventory. Alternatively, the software may recommend that restock orders be canceled for products that are selling poorly.

NLP In Action

Natural language processing can seem a bit arcane at first glance, but real applications demonstrate exactly how the technology works. We will look at a few applications where NLP is driving efficiency.

Trading Desks

NLP can be used to collect and analyze data about financial markets. With access to communications from trading desks, NLP software can organize the data buried in chat logs and voice communications between traders.

The software identifies and categorizes information such as asset names, prices, and trading volumes. From here, the structured data is used to generate a report. This report includes important trading information, such as the number of trades executed at each price point for a specific stock.

The NLP software will also point out any interesting conclusions about the data. For example, certain assets may be brought to your attention because of a sharp price change. Yet again, the software will act on this information by providing a recommendation. It may indicate a trade opportunity or suggest checking relevant market indicators for oversold or underbought conditions.

As you can see, natural language processing can be powerful for extracting insights from the many hours of spoken trade orders that eventually move prices.

Sales and Call Centers

Natural language processing can also reduce workloads and improve customer relations in call centers. In the case of call centers, NLP software works in real time to support salespeople or representatives. While NLP 'listens' to the call, it can pre-populate forms and offer recommendations based on the situation.

Let's imagine that a customer calls your company to order three industrial ovens and one deep fryer for their restaurant. The NLP software pre-populates the products and quantities in the purchase order. But after checking with current inventory levels, it becomes clear that the deep fryer is out of stock.

Once again, NLP comes in handy. By referring to some data insights, NLP realizes that customers who purchase three or more industrial ovens are often satisfied by industrial air fryers. NLP offers this insight to the sales representative, who can then decide to sell an air fryer to the customer.

Police Departments

Police officers now wear body cameras in many cities across the United States. Interestingly, this has allowed NLP to bring artificial intelligence to public safety. After a long week of patrols and interactions with the public, police officers still need to fill out reports. Natural language processing can reduce these workloads by transcribing audio from the body camera footages before pre-populating police reports.

Automation Is the Point

Now, you may be thinking that everything NLP software does could technically be accomplished by skilled human workers. This is true. However, it would require many paid working hours for a professional to build the reports and strategy recommendations that NLP software creates automatically.

This is the beauty of AI. Artificial intelligence and natural language processing provide automation wherever tasks are repetitive, predictable, and time-consuming.

Artificial intelligence is *not* just some grand technology that will transform the future economy. Many industries can now tap into the productivity revolution that AI has promised. Thanks to NLP, artificial intelligence is already here.