InData Labs

NATURAL LANGUAGE PROCESSING STATISTICS

for 2023-2025

The NLP statistics demonstrate a surge in the adoption of AI and NLP technologies. This is entailed by the large amounts of voice and text data organizations have such as e-mails, text messages, social media news feeds, video, audio, and more. Virtual assistants capable of a full-fledged dialogue have become ubiquitous and working with texts has been greatly facilitated. All this was made possible thanks to the implementation of natural language processing tools across industries.

Natural Language Processing is a scientific field that combines two disciplines - humanitarian linguistics and innovative artificial intelligence technologies - and aims to enable the computer to interpret, manipulate, and understand human language.

One of the growing directions for NLP growth has recently come to be deep learning. This became possible due to the following prerequisites:

The developers have accumulated enough training data for machine learning.

Supercomputers with advanced GPUs allowed for model training.

Deep learning algorithms can distinguish patterns from raw data, so today NLP is almost fully automated and has a high accuracy of speech comprehension. The technology is harnessed in business, science, and other spheres to solve a variety of tasks. Among them we can highlight:

- Segmentation and identification of target customer categories;
- Search, categorization, and analyzing the sentiment of reviews and comments;
- Classification of incoming inquiries and applications by content;
- Automation of interaction with clients;
- Text summarization with highlighting the key points, etc.

Modern tools also allow us to quickly process incoming appeals, search for necessary information, save transcriptions of video performances, and respond human-like in real-time. Companies are increasingly harnessing the power of NLP to get the edge in the market, automate relevant business processes, and drive innovation within the company's workflows.

Demand creates supply, that's why new NLP applications keep emerging and services are being developed to integrate the technology into business products and extend the functionality of existing solutions. Let's delve deeper into NLP's perspectives and what awaits us in the near future.

Quick recap of NLP statistics

The deep learning models solving natural language understanding problems have recently been on the rise and keep drawing the attention of businesses around the world. Statistical significance testing for NLP has proved its weight in provisioning actionable insights and advancing businesses' speech and text data.

We are eager to present a list of statistics demonstrating forecasts and future trends in natural language processing.

NLP Market is set to surge from a valuation of $29.1 billion in 2023 to an impressive $92.7 billion by 2028.

Global Market Analysis and Insights

of customer service operations will utilize virtual customer assistants (VCAs) by 2025.

Gartner

By 2025, NLP market revenue will reach $15,706.3 in hardware, $9,104.6 in software, and $18,479 in services.

Statista

of companies stated that they adopted the NLP technology analyzing customers' sentiment from their reviews or social media in 2023.

Bain&Company

Revenues from the NLP market worldwide from 2017 to 2025

Statista

NLP trends and classifications

The NLP market trends and requirements entail the technology's separation into multiple coordinated directions. To suit the needs of each individual business, NLP software engineers harness a bunch of technologies and pick up the right components for NLP software. Here are the lists of NLP branches implemented today:

01. Breakup by technology:

- Interactive voice response
- Optical character recognition
- Text analytics
- Speech analytics
- Classification and categorization
- Pattern and image recognition
- Multilingual language models
- Transfer learning
- Others

02. Breakup by deployment mode:

- On-premises
- Cloud-based

03. Breakup by organization size:

- Large enterprises
- Small and medium-sized enterprises

04. Breakup by end user:

- Education
- BFSI
- Healthcare
- IT and telecom
- Manufacturing and retail
- Media and entertainment
- Others

IMARC

05. Breakup by learning approach:

- Statistical
- Symbolic (rule-based)
- Connectionist

Generative AI: The ultimate trend

Generative AI, is an NLP-powered technology that enables machines to generate new ideas, content, designs, and solutions that mimic human creativity and innovation. By harnessing the power of such models, businesses can unlock a world of possibilities for various processes, from process optimization and problem-solving to data analytics and decision-making.

Unlike traditional AI models that rely on pre-existing data to produce results such as conclusions and predictions, generative AI can learn from the datasets it is fed and create new, original outputs. Humans collaborating with these algorithms can rely on their ability to propose new ideas, help them improve their skills, learn new things, and accelerate their activities. This opens up a whole new realm of possibilities.

Top GenAI applications of today

Our goal is to present the opportunities offered by each generative AI application and help businesses discover how algorithms can enhance their operations.

Elevated customer service

Generative technology drives the development of intelligent chatbots and virtual assistants. They can understand and respond to user queries, providing personalized assistance and automating various activities.

More personalized experiences

Generative AI tools enable highly customized marketing campaigns, product recommendations, and sales emails that cater to each customer's individual needs, behaviors, and lifestyle choices.

Content creation

GenAI solutions offer unprecedented capabilities for creating human-like, personalized content tailored to business goals. With the help of NLP models, such applications generate high-quality text that aligns with specific styles, tones, and contexts.

Top-notch cybersecurity

GenAI has the ability to recognize patterns, detect anomalies, and predict fraudulent activities, significantly enhancing security measures for companies that handle sensitive data, financial transactions, and confidential work.

Supply chain optimization

By leveraging the company's provided datasets, GenAI enables automated demand forecasting, inventory management, route optimization, and logistics planning. Accurate and efficient monitoring, coupled with supported decision-making, empowers businesses to minimize the negative consequences of stock-outs or overstocking.

Business intelligence

GenAI helps businesses enhance their processes and achieve better results. Generative solutions excel in sentiment analysis and extracting insights from large datasets. They assist CEOs, directors, and other decision-makers in planning, goal setting, and other critical operations that are foundational to the growth of any company, regardless of industry.

Benefits of implementing NLP in business

Organizations are measuring the return on investment for NLP projects based on time to:

Production

Efficiency improvements

Cost reduction

Expert.ai

of businesses believe that chatbots will allow them to provide a more customized support experience for their customers.

Businesssolution.org

Businesses can reduce customer service costs by up to 30% by implementing conversational AI solutions like virtual agents and chatbots.

Medium

Virtual AI assistant for customer support

Watch video

Benefits of implementing NLP in business
Insight generation
Internal task automation
Enhanced decision-making
Sentiment analysis
Recruitment process automation
Streamlined workflow
Improved customer experience
Reduced customer service

Ways NLP can scale your business

Insight generation

Statistical NLP helps you turn raw and messy data into meaningful insights and visualize the research results to make them more understandable and actionable. This helps solve problems before they happen and allows for significant financial savings and improvements in a company's ROI.

Recruitment process automation

Harnessing NLP in recruitment helps eliminate prejudice, speed up the interviewing process, and automate the candidate prescreening process with chatbots and resume-checking NLP software. Additionally, it allows recruiters to better advertise positions or recruit talent.

Internal task automation

Boosting efficiency with NLP on board is much easier. Integrating statistical methods of NLP into business workflow, you automate a wide range of internal tasks, thereby eliminating mundane manual processes and shifting employees' focus to more critical and value-adding activities.

Streamlined workflow

The cost of asking your employees to accomplish basic tasks may eventually strain your budget significantly. Identifying the sagging places and automating them will drive the company's overall performance and boost efficiency across the board.

Enhanced decision-making

No more need to sift through vast amounts of unstructured data in pursuit of making a better decision. NLP made it possible to gain better access to customer feedback, market trends, business processes, and other data sources to drive decision-making with greater speed and accuracy.

Improved customer experience

Large volumes of queries and complex issues can make it challenging to provide efficient and personalized service. Here, NLP-based conversational AI chatbots come in to improve customer satisfaction by automating responses, providing more context and clarity, generating insights, and creating empathy.

Sentiment analysis

Another NLP trend that has taken off recently is sentiment analysis whose NLP models transform the opinions found in written language or speech data into actionable insights. As a result, you get an accurate analysis of customer sentiment and make further informed decisions upon it.

Reduced customer service costs

Implementing NLP-based self-service chatbots, which operate 24/7, you address customer service issues without the need to hire more agents. Investing in conversational AI helps businesses improve cross-channel experiences and reduce customer support costs.

NLP tools and solutions: Examples

Key companies successfully integrating NLP-based solutions today include IBM Corporation, Microsoft Corporation, Google, Inc., Amazon.com, Inc., Apple, Inc., Meta Platforms Inc., Intel Corporation, SAS Institute, Inc., Baidu, Inc., Health Fidelity, Inc., Conversica, Inc., and Inbenta Technologies.

For instance, **Amazon's Echo** is now leading the field with speech recognition NLP, and Echo buyers boosted their spending by 10% overall, with half of this increase going straight to Amazon items.

Businesssolution.org

Microsoft offers **Azure AI Language** solution, which is a cloud-based service that provides NLP features for understanding and analyzing text. The solution encompasses a wide range of NLP technologies to help users work with texts easily and efficiently.

Meta Platforms introduced a solution capable of analyzing messages and extracting objects a nd features from them for facilitated communication. For example, if the message contains the phrase "Good morning, tomorrow at 2 PM", you will receive a sign that includes a greeting, and an object that contains the timestamp.

Health Fidelity's NLP engine, **Lumanent Insights**, gets critical insights into a patient's health status and enables better care plans and more complete revenue capture. The solution has processed over 139.2 million clinical records so far while supporting 9.6 million lives with a greater than 95% success rate for capturing the correct risk category.

Other major players in the NLP market are 3M Company, FUJIFILM Holdings Corporation, International Business Machines Corporation, NetBase Quid Inc., Nokia Corporation, Gnani Innovations Private Limited, Mihup Communications Private Limited, Observe.AI and others.

Challenges of NLP implementation

Although we keep progressing in terms of the potential applications and overall capabilities of NLP, these are some of the most important issues some businesses face upon its implementation:

Lack of R&D

NLP implementation requires much-annotated data and assistive technologies like neural networking and deep learning. Therefore, a business without relevant development tools and adequate training data may not get accurate outcomes.

Language specifics

Idioms, homonyms, syntax, misspellings - all of this can make things go wrong and lead NLP algorithms astray. That's why it is essential to "introduce" all these linguistic subtleties in the algorithms from the outset.

False positives

When NLP detects an addressable that can't be adequately replied to, it's a false positive. The idea is to create an NLP system that can identify its own limits and clear up uncertainty using questions or hints.

Innate biases

In certain situations, the biases of programmers and also biases in the data sets used to develop them might be carried by NLP systems. This may entail less objectivity in the system's responses.

FAQ

What is the accuracy percent of NLP?

Nowadays NLP algorithms can reach over 90 percent of accuracy, which is an excellent result for accomplishing the tasks assigned to them. For instance, NCBI's NLP software is claimed to be 98% accurate, while Chat GPT is evaluated by critics as having from 85 to 99 accuracy percentage.

Is natural language processing still relevant?

A combination of AI, ML, and deep learning models, NLP has been at the forefront of businesses' digital transformation. NLP awaits a bright future of being implemented throughout all verticals, as it has the power to streamline business workflows and boost growth in multiple directions if implemented correctly.

Is NLP in demand?

The high demand for NLP engineers in the market explains its high demand for businesses as well. The technology is increasingly implemented by companies around the globe while its greater capabilities are still to be discovered.

What are the most common problems in natural language processing?

There are two major problems faced by those embedding NLP software. Firstly, it's an ambiguity caused by language complexities. Secondly, it's data training which requires much effort and diligence. If approached meticulously, both aspects can be overcome without much trouble.

Why is NLP difficult?

Natural language processing is complicated due to languages' constant development and lack of regimented rules regarding individual speech. That's why, the technology requires consistent advancements to be able to keep up with linguistic subtleties.

What are the challenges of NLP?

The year 2023 faced 2 key challenges regarding NLP usage. First comes data privacy since NLP systems require vast amounts of data to function. Secondly, bias has come to the fore - NLP models can be biased against certain groups, which can result in unfair outcomes.

Conclusion

Supporting human-to-machine interactions, natural language processing has recently become an indispensable technology for business growth and revolutionized the way businesses operate. Private organizations, multinational corporations, and the public sector have been applying AI and ML technologies to their use. Streamlining text and speech-related tasks, improves operational efficiency, scalability, agility, and resource allocation.

Currently, natural language processing is battling difficulties in language meaning due to lack of context, dialectal differences, ambiguity, and data privacy. However, as research continues in this field, there are more breakthroughs expected to enhance the technology and boost its accuracy.

NLP solutions give professionals a leg up in the workplace and are likely to do so for years to come. As more enterprises strive to become tech leaders in the market and use AI-powered machine learning models, its significance for businesses becomes evident. We thus may stay certain of the further spread of technology and new discoveries in the sphere that are bound to revolutionize the present market.

About InData Labs

Since 2014, InData Labs has been helping global companies leverage the power of AI and Data Analytics to achieve business outcomes. As a leading AI technology partner, InData Labs handles the full-cycle process of digital transformation, including consulting, design, implementation, and maintenance.

With its proficiency in artificial intelligence, generative AI, cloud development, and analytics, InData Labs has helped over 150 clients from the USA, UK, EU, and other countries bring their projects across the goal line and make sense of the trending technologies. As a recognized leader, InData Labs is listed among the top Data Science and Machine Learning partners and AI service providers.

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