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A Review of the Literature on Natural Language Processing (NLP) to Promote Industry Advancement

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Abstract:- Artificial intelligence (AI) research is a fast-growing discipline that has branched out into a number of business and academic domains. In order to handle various data processing and modeling tasks, artificial intelligence (AI) combines machine learning, deep learning, and natural language processing (NLP). Studies on a variety of subjects related to artificial intelligence (AI), particularly natural language processing (NLP), have yielded data that researchers have gathered. This study aims to describe the trends in themes and interpret the changes in topics over the previous five years, as well as identify potential topics about the application of NLP to help the industry better. This review article highlights prospects in the areas of education, health, finance, marketing, and social sciences while providing a broad overview of the effects of AI on several uses in a range of industries. We may anticipate seeing even more cutting-edge uses of AI and NLP across a variety of sectors and domains as these technologies develop, which will ultimately change the way we work, live, and engage with the outside world. But as AI and NLP are used more and more, it's critical to take privacy and ethical issues into account and make sure these technologies are applied sensibly and ethically. We found 33 subjects among the more than 5,000 articles that were published between 2018 and 2023.

Keywords: intelligent computers, natural language processing (NLP), artificial intelligence (AI), and ethical behavior.

I.OVERVIEW

Global technological and industrial transformation is accelerating due to the adoption of new technologies like blockchain, artificial intelligence, and other ICTs like the Internet of Things (IoT). Academic, corporate, and government sectors have all given artificial intelligence a lot of attention [1]. Artificial Intelligence (AI) is the catchphrase of the modern period, claims Jordan (2019). It opens up new ground for government policy, business, and corporate conduct very swiftly [3]. According to [4], artificial intelligence (AI) is the capacity of a system to accurately assimilate outside information, to learn from that data, and to use that learning in a flexible manner to accomplish certain tasks and objectives. The purpose of

Artificial ability (AI), a fast emerging subject, is to build intelligent robots capable of doing tasks that typically need human ability, such as comprehending natural language, finding patterns, and making judgments. AI has the potential to change a number of industries, including banking, transportation, and healthcare. Among their subfields are robotics, natural language processing, and machine learning. Natural language processing is a well-liked and fascinating subfield of AI. Natural language processing, or NLP, is recognized as a prominent and quickly expanding area of artificial intelligence (AI) for a number of reasons. The way organizations operate is rapidly being revolutionized by natural language processing, or NLP. Because of the exponential growth of data, industries are looking to AI and NLP to help them analyze, interpret, and use data more efficiently. By leveraging AI and NLP technology, industries can improve operational effectiveness, make well-informed decisions, and personalize the consumer experience. As the benefits and uses of AI in the auditing industry continue to expand, unintended repercussions are starting to become more noticeable [5]. The difficulties with AI ethics that are most easily explained in technical terms receive the majority of attention. These include privacy and data security issues as well as methods to enhance machine learning systems' interpretability and dependability [6].

Many studies have opted to focus on this global data source in order to address a range of research questions in different fields, such as how NLP is used by numerous industries worldwide and how this technology affects their financial benefit.

II.CORRELATED SOURCES

First and foremost, it is imperative to develop automated systems that, for limited text, can carry out jobs just as accurately and effectively as a person [7]. Second, natural language processing (NLP) facilitates the development of deep learning methods such as question-answering, machine translation, neural networks, and sentiment analysis [8]. Finally, the development of practical NLP applications, including chatbots and voice assistants [9] and now the well-known ChatGPT technology, has contributed to the rise in popularity of the Big Four Voice Assistants: Google Assistant, Amazon's Alexa, Microsoft's Cortana, and Apple's Siri. Overall, the burgeoning demand for automated text analysis, developments in deep learning, gains in practical applications, and interdisciplinary cooperation have all fueled the field of natural language processing's explosive growth and elevated it to a central position in AI research. Numerous sectors make use of natural language processing (NLP). It is essential to collect relevant data that can support research, administrative reporting, and decision-making [10]. It takes information out of medical records for use in the healthcare industry. NLP was used in the work by [11] to retrieve therapeutically useful information from Chinese computerized medical records. They evaluated the HCC staging using this information, along with the patient's symptoms. The research made use of EHR and EMR data. It is crucial in the therapeutic setting to help physicians diagnose cancer [12] and with treatments; one such application was created by [13] and provides therapists with real-time treatment strategy recommendations during a psychotherapy session. The goal of this NLP project was to enhance patient care by supporting clinical judgment. It also made it possible for AI to

monitor patient requests and locate instances on websites like Cop web and Health Map [14]. To help with investing decisions and spot new market trends, natural language processing (NLP) can evaluate news articles and social media data [15]. Additionally, it has the ability to automate customer service, which uses natural language processing to analyze user inquiries and provide comprehensive assistance [16]. Textual documents intended to convey different messages about industry norms and laws, management's assessment of the firm's present and future performance regarding corporate financial performance, analysts' assessments of a company's performance, and evidence of compliance with relevant regulations and requirements are commonly presented in the finance domains. In order to get insights, draw conclusions, and create different methods and artifacts to advance knowledge in accounting, auditing, and finance, NLP tools have been used to mine these texts [17]. According to the study by [18], the subject of "Natural Language-based Financial Forecasting" (NLFF), or "stock market prediction" from an applications standpoint, is evolving as a result of the exponential growth in NLP approaches for financial market forecasting. Another study was carried out by [19], and their analysis showed that NLP could be fully utilized for the banking industry. Text-mining technologies are one such technology that has had a significant impact on the financial industries. Text mining has grown in popularity as a result of the development of big data resources and the examination of substantial volumes of financial data [20]. Due to the widespread use of social media and the Internet, buyers often conduct online research and comparison shops before making a purchase. Thus, social media data and online reviews play a critical role in the business, tourist, sales, marketing, and aviation sectors [21]. All things considered, NLP has the power to completely change the financial industry by automating a great deal of work and offering fresh perspectives on consumer behavior and market trends. NLP is useful in education since it can evaluate student work and offer corrections on syntax, grammar, and vocabulary. The NLP technique increased the teachers' performance, motivation, and communication skills, according to the study [22]. In order to assist academic leaders and advisers at educational institutions in making judgments about specific students, it provides an integrated learning analytics solution that makes use of a distributed technical infrastructure [23]. The study by [24] also discovered that NLP chatbots can assist students in studying in circumstances similar to those of a human educator while looking into extra choices and techniques for determining chatbot quality. To assess the advantages and disadvantages of the current student services, data on student input must be gathered. Artificial Intelligence (AI) can assist in identifying areas that require improvement with regard to learning management systems, instructional methodologies, and study situations. In-game education is demonstrated by the data analysis [25], which indicates that the educational game with this NPC has an overall user rating of over 75%. Consequently, it may be claimed that NPCs in educational games increase player interest. All things considered, NLP has the power to change education by offering fresh approaches to individualized learning, learning assessment, and supporting a range of student requirements. We might be able to expect more innovative NLP uses in education as technology advances.Scholars, professionals, and detractors all foresee the end of the legal profession and offer specific examples of when artificial intelligence (AI) systems outperform lawyers in a

given situation [26]. The law has long been a desired issue for language and semantic technologies, as it is required by the government. It puts Natural Language Processing (NLP) technology's limits to the test [27]. NLP has applications in law, including contract management, legal research, document analysis, and litigation support. The legal systems of several nations have recently given these strategies more consideration [28]. According to [26]'s research, those who employ deep learning techniques reap greater benefits. Given that these models are able to extract information from within words as well as the relationships between words, it seems that they are at least as good as other models.

III.FINAL THOUGHT

In conclusion, a number of industries, including banking, education, law, marketing, and the social sciences, have seen a transformation thanks to artificial intelligence (AI) and natural language processing (NLP). Numerous jobs, including document analysis, legal research, consumer profiling, content optimization, and social media analysis, can now be automated thanks to these technologies, which also offer fresh perspectives and methods for comprehending massive amounts of data. We may anticipate seeing even more cutting-edge uses of AI and NLP across a variety of sectors and domains as these technologies develop, which will ultimately change the way we work, live, and engage with the outside world. But when AI and NLP are utilized more frequently, it's critical to take privacy and ethical issues into account and make sure these technologies are applied sensibly and ethically. NLP and AI are powerful tools that can support industry growth in a number of ways. Businesses can make well-informed decisions that propel growth and success by enhancing data analysis, operational efficiency, personalized service, and predictive analytics. As these technologies advance, their future uses will probably be even more inventive. Natural language processing facilitates improved decision-making within an industry. Decision-makers can use this wealth of behavior and sentiment analysis data to gain insightful understanding of users' and consumers' needs, preferences, and orientations.

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