

**IDENTIFICATION OF NATURAL LANGUAGE PROCESSING
WITHIN THE INTERDISCIPLINARY ASPECT**

Lyubov Tsilenko

*PhD in Pedagogical science,
Associate Professor of Foreign Languages,
PhD in the department of foreign languages,
Moscow Polytechnic University, Moscow, Russia*

Paul Nakonechnyy

*Student group 191-362
Faculty of Information Technology
Moscow Polytechnic University, Moscow, Russia*

Konstantin Tsilenko

*Pediatric surgeon
European Medical Center, Moscow, Russia*

Abstract. The present paper covers the analyses of the identification of Natural Language Processing (NLP) within multidisciplinary context in the case of innovative technology perspectives. This scientific direction is a dynamically growing branch, and a special place is occupied by blending investigations from different scientific fields such as Artificial Intelligence, Information Technology, Linguistics, Education, Medicine, and another knowledge.

Keywords: Natural Language Processing, Artificial Intelligence, Information Technology, Linguistics, Education, English.

**ИДЕНТИФИКАЦИЯ ОБРАБОТКИ ЕСТЕСТВЕННОГО ЯЗЫКА В
ФОРМАТЕ МЕЖДИСЦИПЛИНАРНОГО АСПЕКТА**

Циленко Л.П.

*к.пед. наук, доцент,
доцент кафедры Иностранные языки
Московский политехнический университет*

Наконечный П. А.

*Студент гр. 191-362
Факультет Информационных технологий
Московский политехнический университет*

Циленко К.С.

*Детский хирург
Европейский Медицинский Центр, Москва*

Аннотация. В статье анализируется идентификация обработки естественного языка в междисциплинарном контексте с точки зрения перспективы инновационных технологий. Это научное направление является

динамично развивающейся отраслью, и особое место занимает взаимодействие исследований из разных областей науки, таких как искусственный интеллект, информационные технологии, лингвистика, образование, медицина и других знаний.

Ключевые слова: Обработка естественного языка, искусственный интеллект, информационные технологии, лингвистика, образование, английский язык.

Natural Language Processing (NLP) is a dynamically growing branch covers a tremendous variety of interdisciplinary subfields, involving computer science, linguistics, artificial intelligence, mathematics, and other branch of knowledge. It takes the roots in 17th century as a theoretical side with philosophical proposals by Leibniz and Descartes to introduce special codes that would connect words between different languages. The first scientific article on a topic of NLP - "Computing Machinery and Intelligence" was published in 1950 by Alan Turing.

NLP is mainly concerned with the interaction between humans and computers. In particular, it gives computers the path towards highly-accurate predictive tools to understand and generate human languages in much the same way as human beings can. [1, 5, 11] Moreover, it refers to processing and analyzing huge amounts of natural language data. NLP based on a text, speech, their cognition, including the contextual nuances of language within them, and distinctive interactions.

In recent years, the process of globalization in politics, economy and social life brings the internationalization of language. English has become the only leading role of linguistic internationalization. Moreover, "In the modern world of new technologies, you can't hope to be a successful expert without knowing English. It is the most used language in the world, and you can find almost anything written in it" [4]. English learning has become the content of all educational institutions. In the light of this facts, in university curriculum, English learning/teaching is a very significant part. In order to test the level of University Students' English learning, NLP will help to determine their result at the end of each semester. Clearly, this technology will improve the quality of examination and eliminate the paper making work that consumes a huge educator-power resources. 'It is the field of education, in order to reduce unnecessary

marking work, the research of computer automatic marking is becoming more and more mature' [3].

NLP is increasingly important in medicine, where this technology helps analyze notes and text in the electronic health records and healthcare that would otherwise be inaccessible for study when looking for improving care. Medicine is one of the areas where effect is visible, precise, and real. NLP is closely connected with computer programs that translate text from one language to another, respond to spoken commands, or summarize large volumes of text rapidly — even in real time. There is still a huge amount of untapped technological resources in healthcare field, and NLP could be very helpful to improve and mobilize medical science [7, 8, 11].

In practice, this intellectual vector allows people to interact with computers by means of a voice or text instead of using Graphical User Interface (GUI) or console commands. GUI is a form of user interface that allows users to interact with electronic devices through the implementation of graphical icons and audio indicator such as primary notation, instead of text-based UIs, typed command labels or text navigation. Most people at least once have interacted with NLP in the form of voice-operated GPS systems, digital assistants, speech-to-text dictation software or customer service chatbots.

Human language is filled with irregularities that make it incredibly difficult to make a program that would accurately determine the intended meaning of a text or voice data. There is a bunch of the problematic cases that take humans years to learn. And a program must understand them with a single circuit [9, 10].

NLP can be divided into several steps needed to break down human text and voice data in data that computer can understand. Some of the tasks include the following: speech recognition, speech tagging, semantic analysis, named entity recognition, co-reference resolution, sentiment analysis and natural language generation.

NLP also plays a growing role in enterprise solutions that help streamline business operations, increase employee productivity, and simplify mission-critical business processes, which are not always seen from the outside.

One of the major problems facing NLP today is abundance of different languages used by humanity. English is just one of them. Consequently, this issue is especially important for developing countries or nationalities with small population talking in their languages. For example, India has 23 official languages including English. Most of those have own dialects and won't be supported by leading NLP platforms in near future.

It should be underlined that the 21-st century brings many changes in the technology regarding the state-of-the art interdisciplinary innovating processes. NLP has a great research potential, not as a separate scientific technological field, but also as a major interdisciplinary research area. NLP has become critical to be a typical example where various crossing disciplines collaborate to achieve common goals. Availability of this type of digital technologies is increasing, and so there is the need for different scientific investigations.

References

1. Ashrafi A., Mokhanachev V.S., Philippovich Y.N., Harlamenkov A.E., Tsilenko L.P. Video classification using CNN-LSTM architechure for Bengali sign language В сборнике: Фундаментальные и прикладные науки сегодня : Материалы XXVIII международной научно-практической конференции, Bengaluru, 18–19 апреля 2022 года. – Bengaluru: Pothi.com, 2022. – 255 с. – ISBN 978-1-4357-7553-4. – EDN IPKFFT.
2. Ashrafi A., Mokhanachev V.S., Philippovich Y.N., Tsilenko L.P. Development of image dataset using hand gesture recognition system for progression of sign language translator. *Advances in Intelligent Systems and Computing* 2020. Т. 1294. С. 665-675. https://link.springer.com/chapter/10.1007%2F978-3-030-63322-6_56
3. Chen Zhiming, Li Maoxi, Wang Mingming. Sentence level translation quality estimation based on neural network features [J]. *Computer research and development*, 2017, 54: 1804-1812.
4. Sklemina O. Yu., Skvortsov A.A., Pshonkin D.E., Tsilenko L.P Magnatic memory. Mechanical tests and proposed mechanisms <https://iopscience.iop.org/article/10.1088/1757-899X/1129/1/012071/pdf>
5. Tsilenko L.P., Ermolin A.A., Afanasyev K.M. current challenges and opportunities in traning English to IT-engineers *Язык, Культура, Образование*. 2022. № 7. С. 59-64.
6. Tsilenko L., Zakirova E., Artemev V. Linguistic limology as a type of enhancement the students' communicative competence in the course of English for specific purposes

В сборнике: Лингвистическая Лимология. Материалы Всероссийской научной конференции с международным участием. Москва, 2022. С. 205-210.

7. Tsilenko L., Fedorenko M.A., Shipovskaya A., Sklemina O.Yu. The synergistic approach to project activities and English at the nonlinguistic university В сборнике: Актуальные проблемы обучения иностранным языкам в неязыковом вузе. Материалы III Всероссийской научно-практической конференции. Москва, 2021. С. 11-114.

8. Tsilenko L., Shipovskaya A., Tsilenko K. Integrating academic achievements in a cross-cutting science based community Язык. Культура. Образование.2020. № 5. С. 92-96.

9. Tsilenko L., Tsilenko K. Linguistic paradigm of modern science world Язык. Культура. Образование. 2019. №4. С. 81-84.

10. Tsilenko L., Tsilenko K. Cognitive aspect of cross global science collaboration Язык. Культура. Образование. 2019. №4. С. 85-88.

11. Першин В., Макеева М., Циленко Л. Лингвопрофессиограмма инженера/ Высшее образование в России. 2004. №5. С. 162-163.