

Paizbekova Aziza Djaksinovna
Associate Professor of the Department of Social and Humanities, branch of
National Technological Research University MISIS in Almaliq, Doctor of
Philosophy in Philological Sciences
Gmail: azizapaiz@gmail.com

UDC- 81`01/`08

USING GPT CHATBOTS IN ENGLISH LANGUAGE LEARNING IN A NON-LINGUISTIC UNIVERSITY: THEORETICAL ASPECT

Annotation. The paper examines the development of artificial intelligence (AI) technology and AI-driven chatbots, their application in higher education, specifically the language model ChatGPT utilizing the transformer architecture, self-attention mechanisms, and self-organizing attention in teaching English to technical university students. The research goal is to analyze literature related to AI and chatbots and to systematize the advantages and disadvantages of the ChatGPT language model with AI. The article delves into the concept of artificial intelligence, its future prospects in education, and the negative and positive aspects of integrating AI into the learning process.

Keywords: artificial intelligence, language model, chatbot, ChatGPT, English language learning in technical university.

Паизбекова Азиза Джаксиновна
Доцент кафедры социально-гуманитарных наук филиала Национального
исследовательского технологического университета “МИСИС” в г.
Алмалыке, доктор философских наук по филологическим наукам
Gmail: azizapaiz@gmail.com

ИСПОЛЬЗОВАНИЕ ЧАТ-БОТОВ GPT ПРИ ИЗУЧЕНИИ АНГЛИЙСКОГО ЯЗЫКА В НЕЯЗЫКОВОМ УНИВЕРСИТЕТЕ: ТЕОРЕТИЧЕСКИЙ АСПЕКТ

Аннотация. Статья исследует развитие технологии искусственного интеллекта (ИИ) и чат-ботов, их применение в высшем образовании, в частности модели языка ChatGPT, использующей архитектуру трансформера, механизмы самовнимания и самоорганизации в обучении английскому языку студентов технических университетов. Цель исследования - анализ литературы по ИИ и чат-ботам, систематизация преимуществ и недостатков модели языка ChatGPT с использованием ИИ. В статье рассматривается понятие искусственного интеллекта, его будущие перспективы в образовании, положительные и отрицательные аспекты интеграции ИИ в обучающий процесс. Особое внимание уделено развитию и применению технологий ИИ в обработке естественного языка в образовательной сфере, в частности появлению языковой модели нейронной сети - чат-бота GPT. Рассматриваются положительные и отрицательные аспекты модели языка ChatGPT с использованием ИИ, её особенности и перспективы в высшем образовании.

Ключевые слова: Искусственный интеллект, языковая модель, чат-бот, ChatGPT, изучение английского языка в техническом вузе.

Paizbekova Aziza Djaksinovna

Milliy texnologik tadqiqotlar universiteti MISISning Olmaliq shahridagi
filiali Ijtimoiy gumanitar kafedraning dotsenti, filologiya fanlari bo'yicha falsafa
doktori

Gmail: azizapaiz@gmail.com

NOLINGVISTIK UNIVERSITETDA INGLIZ TILINI O'RGANISHDA GPT CHATBOTLARIDAN FOYDALANISH: NAZARIY ASPEKTI

\Annotatsiya. Maqola, yaratish, o'rganish, o'zlashtirish, ta'lim jarayonida SI integratsiyasining ilmiy asoslarini o'rganadi. SI texnologiyalarining ma'ruzaga chiqishi va ularni dasturiy tarmoqlarda SI yaratish, ChatGPT, kompleks til

tuzumlarini, ko'p tilni, amaliyotda va ilmiy tadqiqotlarda qo'llanish imkonini ta'kidlaydi. O'qitish va chet tillarini o'rganishda ChatGPT foydalanishning yagona va o'zlashtirilgan usuli: vazifalar tuzilishiga qodir bo'lgan, ko'rsatilgan leksik so'zlar bilan turli til darajalarida matnlar, so'zlar kengaytiriladi, imlo va leksik ko'nikmalarini o'rganish, talabalarda muloqot ko'nikmalarini rivojlantirish, talabalarga jadval yaratish va chatbot xatoliklarini to'g'rilashni ta'minlash, boshqa xususiyatlari haqida ma'lumot beradi.

Kalit so'zlar: suniy intellekt, dastur, til modeli, texnik universitet, ingliz tili.

INTRODUCTION

In the modern world, the field of information technology is experiencing incredible growth and innovation, with progress happening at unprecedented rates. One of the most intriguing areas of IT development is artificial intelligence, or AI, which has garnered significant attention and investment from both the public and private sectors. AI pertains to the development of advanced computer systems capable of performing tasks typically requiring human intelligence, such as visual perception, speech recognition, and problem-solving. With the potential to revolutionize various industries, from healthcare to finance, transportation to education, AI has become a focal point of interest for researchers, engineers, and entrepreneurs worldwide. The relevance of using artificial intelligence in education deserves special mention. AI is becoming increasingly prevalent in the educational sector, with many institutions beginning to integrate AI-based tools to enhance learning efficiency.

However, despite AI's potential to revolutionize education, it remains a relatively nascent field with numerous challenges that need to be addressed. Overall, the use of AI in education is still in its early stages, but there is significant potential for transformation in this area and for improving learning outcomes for students. Today, artificial intelligence is becoming a common component of

chatbots. It allows for expanding their capabilities, transforming a “virtual machine” programmed for communication into a genuinely productive conversational partner. The use of artificial intelligence transforms chatbots into educational tools, rather than just instruments for modern business. In today’s world of IT technologies, the most sought-after, well-developed, and popular chatbot is GPT [9].

According to the international news agency Reuters, specializing in news production in finance, business, politics, and technology, by February 1, 2023, within two months, the audience of active ChatGPT users reached 100 million people. This set a historic record for user growth [10].

LITERATURE ANALYSIS:

Let’s consider the concept of “Artificial Intelligence” (AI). O.V.Tolstel offers the following definition of AI: “Artificial Intelligence (AI) is an interdisciplinary field that creates objects capable of solving various tasks similarly to how humans do. AI employs mathematics, logic, psychology, biology, philosophy, linguistics, electronics, etc.” [5]

According to the author, the traditional concept of artificial intelligence, which has been dominated by symbolic computations and working with knowledge bases for the last 50 years, has acquired new elements such as fuzzy logic, neural networks, evolutionary modeling, and many other technologies.

R.S.Islamov defines AI as “a combination of software and hardware designed to achieve the ultimate goal, namely, to compare its operation with human intellectual activity” and AI systems as systems that “can analyze and extract information from large datasets, self-learn, automate certain everyday processes, and solve tasks requiring immense calculations”[3].

In our view, one of the promising directions for the use of artificial intelligence is its application in the field of education. As noted by R.A.Amirov and U.M.Balalova, the application of artificial intelligence has significant potential to

transform the education sector, create new opportunities, and optimize the industry's operations[1].

In the article on artificial intelligence and the future of education by V.A.Chulyukova and V.M.Dubov, machine learning is considered as a branch of artificial intelligence that, using data analysis algorithms, draws conclusions, makes forecasts, and decisions. Instead of creating programs using specialized tools, systems are trained on vast amounts of data and algorithms, enabling them to perform these tasks. In the educational sphere, the latest developments in artificial intelligence are employed for adaptive learning, which is an instructional method that caters to the individual needs of each learner through interactive mechanisms[7].

Researchers E.I.Shefieva and T.E.Isaeva define the role of digital technologies not merely in the primitive procedure of information transmission, control, and assessment of performance but in the development of human thinking and the expansion of the learning process's capabilities. The authors discuss the potential of using artificial intelligence as an auxiliary technology, such as computer programs capable of converting text to speech and vice versa, performing text scaling, forecasting, spell checking, and launching search systems.

Nevertheless, many authors, such as P.V.Sysoev and E.M.Filatov[4], R.A.Amirov and U.M.Bilalova[1], V.A.Chulyukov and V.M.Dubov[7], and E.I.Shefieva and T.E.Isaeva[8], note that despite the rapid advancement of AI systems, they cannot completely replace human labor. Humans possess unique qualities and abilities, such as intuition, creative thinking, critical thinking, cognitive flexibility, empathy, friendliness, and more, which are challenging to reproduce in AI.

However, it must be acknowledged that the capabilities of AI in education are still limited. The system cannot replace professionals, but it can enhance teachers' skills and the educational process. "Despite having several drawbacks, AI

should be perceived in the educational system as an innovative technology. Nevertheless, as with the adoption of any technical innovation, it should be remembered that the goal of ‘smart machines’ is to assist humans, not to undermine human, pedagogical communication, to destroy the carefully constructed environment of personal growth and upbringing established in universities”[8].

RESEARCH METHODOLOGY

Despite concerns associated with the application of artificial intelligence, it is worth noting the significant prospects of its use by all participants in the educational process. The potential of AI in the learning process, especially in language studies (both native and foreign), is not an exception, in our opinion. The capabilities of artificial intelligence as a means of teaching the Russian language were discussed in the work of O. P. Fesenko when addressing issues of educational virtualization and the creation of a “digital university” based on AI [6].

We are particularly interested in the use of AI capabilities in teaching foreign languages at higher education institutions. For instance, teaching English in technical universities could become a more productive and engaging process through the application of modern information technologies, given that artificial intelligence is becoming an integral component of chatbots’ operations. These chatbots serve as conversational partners and can generate texts of various types. The advantage of an AI-powered chatbot (specifically, the GPT chatbot based on the Generative Pre-trained Transformer language model, versions GPT-3.5, GPT-4, etc.) lies in its ability to generate responses by reacting to textual messages in the form of questions, requests, and queries from a human. P. A. Gaydash defines chatbots in his article on chatbots and online trainers as programs created to simulate a conversation between a user and one or multiple interlocutors in real-time [2].

According to the author, a user can communicate with a chatbot via text or audio messages on various social messengers, websites, mobile applications, or

over the phone. Thus, from a linguo-methodological perspective, the potential of chatbots lies in creating a language environment for learners, allowing them to intensify the learning process and reduce errors when constructing dialogues with native speakers [2]. The emergence of such chatbots became possible in the last decade when there was a rapid development of artificial intelligence (AI) technologies, and two real technological revolutions took place in the field of natural language processing (NLP). The first NLP revolution was associated with the successes of models based on vector representations of language semantics, employing unsupervised learning methods.

It should be noted that the market for services using GPT is not limited to foreign companies. The implementation of GPT models is carried out not only by OpenAI but also by other developers both foreign (Google's BERT, Microsoft's Turing NLG) and domestic (Yandex announced in February 2023 the release of ChatGPT-style – "YaLM 2.0", Sber trained a model on a Russian corpus of GPT-3, creating ruGPT, widely used in the Russian-speaking domain). GOOGLE also launched its chatbot Bard, based on artificial intelligence principles.

The methods of our research include a set of general scientific methods (synthesis, analysis, generalization, comparison, classification) when describing the research results.

ANALYSIS AND RESULTS.

Let's highlight the most significant achievements in the development of AI chatbots and the advantages of using such language models.

1. The first and most crucial breakthrough in the development of this type of language model is creating a dialogue situation. ChatGPT has advanced natural language capabilities, namely, the ability to naturally respond to conversational prompts. Thus, the user engages in a conversation with the machine: asking questions, making requests, and so on. The chatbot also responds to clarifying

questions from the user and can perceive misspelled queries without disrupting speech communication.

2. Continuous increase in the volume of training data. ChatGPT has access to a vast amount of training data, allowing it to process and understand language more advancedly. The expansion of data can come from various sources, such as academic journals, news articles, and online encyclopedias.

3. The chatbot processes complex language structures, accurately determining the style, nuances, and context of the language it uses. This language processing step is achieved thanks to a more advanced neural network architecture, better hyperparameter tuning, and improved training methods.

4. GPT can translate into multiple languages and from several languages (for example, the list of languages that “ChatGPT-4” “knows” includes 26 languages from various linguistic groups). It can also understand and process more complex multilingual requests.

5. GPT has the ability to enhance fact accuracy by incorporating a greater number of fact-checking methods, leveraging multiple data sources specific to a particular field, or utilizing specialized representations of certain information/knowledge.

6. The language model is continuously monitored and updated as it is used worldwide. The chatbot assists in generating training data for systematic iterations (repetitions) during the training, evaluation, and monitoring process.

7. The advanced reasoning and command-execution capabilities of ChatGPT expedite efforts to ensure safe operations.

The GPT language model can be utilized in various applications, from chatbots and virtual assistants to language translation and content creation. It is also used in scientific research to explore the capabilities and limitations of large language models, as well as the ethical and societal implications of their use.

We consider it essential to highlight the significant prospects of applying an AI chatbot in the field of teaching and learning a foreign language. The following key advantages of using ChatGPT in the teacher's work can be identified.

1. ChatGPT can autonomously determine the linguistic level of the “interlocutor” and generate text/dialogue (hereafter referred to as “text”) at the language proficiency level set or specified by the user. This allows the teacher to produce text tailored to the proficiency level of an entire student group or individual learners. The chatbot can make texts more complex or simpler by replacing lexical units and grammatical structures according to the specified level.

2. Educators can set or “assign” a topic to the AI-powered language model, thereby defining a lexical set of words for use in the generated text. For instance, if the topic is “Travelling”, the chatbot enables the teacher to create numerous additional dialogues for conversational practice beyond the main textbook. These can include texts for translation from Russian to English and vice versa, all centered around the lexicon of “Travelling” and at the required language proficiency level of the student group. Additionally, ChatGPT allows students to familiarize themselves with examples of common English phrases and idioms typical of real-time linguistic environments, rather than just those recorded in dictionaries or textbooks.

3. In the practice of every educator, at some stage of teaching or directly during a lesson, situations often arise where a group of students or part of the group does not understand a certain topic. It might be that the textbook offers an insufficient number of exercises to reinforce the theoretical material, or the text or tasks do not engage a specific group of students. For instance, learners frequently make numerous errors or consistently repeat the same mistake related to a particular grammar topic. With the help of an AI-powered language model, teachers can generate a specific number of example sentences tailored to the

desired tasks and parameters for translation using the required grammatical structure.

4. Thanks to its multimodality, meaning the ability of the chatbot (GPT, version 4) to perceive not only text but also images, describe photos/pictures, and craft narratives based on given parameters (ideas, images, etc.), educators can introduce more creative, supplementary, or distinct material into the teaching process beyond what the textbook offers. Teachers also have the flexibility to use materials generated by the chatbot as additional resources for both stronger and weaker students.

5. Undoubtedly, the language model can be a valuable tool in practicing written communication skills: teaching proper formatting and composition of various electronic letters, from writing complaints to corresponding with a “friend” on a topic set by the teacher, ensuring correct linguistic and logical essay structuring, employing speech clichés in project descriptions, summarizing articles, and more. Given that ChatGPT is a language model that generates text based on prompts, within the context of teaching English, it can be utilized to help students practice writing texts of various genres. By providing learners with a prompt, educators can request

6. ChatGPT can be utilized to teach students about cultural differences between Russia and English-speaking countries. The ability to explain jokes, memes, and language nuances used by native speakers promotes a deeper understanding of contemporary culture and the mindset of the language’s speakers. This is particularly important for students in technical fields who might work with representatives from diverse cultures in their professional spheres. ChatGPT can provide examples of cultural customs, holidays, and traditions, aiding students in grasping cultural differences and navigating them.

7. There’s a wide range of applications for the ChatGPT language model in developing and refining spoken English skills. This is especially relevant for

students in non-language, such as technical, fields, where success in English within the professional domain often doesn't correlate with existing conversational proficiency. The AI chatbot can serve as a conversational partner for students looking to practice spoken English, given ChatGPT's ability to engage in dialogue, answering user queries. This can help students enhance pronunciation, sentence structure, vocabulary, and boost their confidence in speaking English. The chatbot can converse using vocabulary and grammar tailored to the student's chosen level or as determined by the bot itself. Furthermore, it can engage in role-play dialogues, acting as a salesperson in a shoe store or an interviewer for a managerial assistant position, providing ample opportunities for professional communication training in a foreign language.

8. ChatGPT can also be employed for group work. Students collaborate, inputting questions or prompts, and generating responses from ChatGPT. This practice can aid students in developing teamwork skills and learning from peers. One way to use ChatGPT for fostering collaboration is through group discussions. Students, working in teams, use ChatGPT to identify discussion topics. Additionally, employing ChatGPT to facilitate discussions ensures equal participation opportunities for all group members and language practice. Another collaborative use is group writing assignments and projects. Students can work in teams, using ChatGPT for brainstorming, outlining, and editing each other's work.

CONCLUSION

Artificial intelligence expands the possibilities of the educational process, from creating a digital university to teaching specific disciplines. Artificial intelligence becomes the foundation for developing new educational tools and means, especially chatbots, which can be used as training simulators.

The most popular and convenient tool for teaching foreign languages at universities is the GPT chatbot, based on language models (GPT-3.5; GPT-4, etc.). This chatbot has the potential to become a valuable tool for teaching English to

students. It can be used for practicing conversational skills, grammar, vocabulary, and writing, exploring and using cultural context, as well as promoting the development of teamwork skills. With technologies like GPT, learning English can become more accessible and engaging. However, GPT should be used in conjunction with traditional language learning methods, such as classroom instruction and immersion in a language environment, and with clear recommendations for students. When using ChatGPT in the classroom, it's essential to establish rules and expectations regarding student behavior.

REFERENCES

1. Amirov R.A., & Bilalova U.M. (2020). Prospects for the implementation of artificial intelligence technologies in higher education. *Management Consulting*, 3(135). (Accessed: 26.03.2023).
2. Haydash P.A. (2021). Chatbots and online trainers as the latest tool for learning foreign languages. *Bulletin of Humanities Research in Interdisciplinary Scientific Space*, 1, 70-72.
3. Islamov R.S. (2020). Artificial intelligence in information and communication technologies and its influence on foreign language education in higher education. *Philological Sciences: Theory and Practice*, 13(12), 300-305. DOI: 10.30853/filnauki.2020.12.61.
4. Sysoev P.V., & Filatov E.M. (2023). Chatbots in foreign language education: advantages and controversial issues. *Bulletin of Tambov University. Humanities Series*, 28(1), 66-72. DOI: 10.20310/1810-0201-2023-28-1-66-72.
5. Tolstel O.V. (2005). Some applications of artificial intelligence technologies. 1-2, 95-106.
6. Fesenko O.P. (2022). Teaching linguistic disciplines in the context of the “meta-university” project and virtualization of education. In: *Materials of the International Scientific and Practical Conference*. Samara: LLC “Scientific and Technical Center”, 237-249.

7. Chulyukov V.A., & Dubov V.M. (2020). Artificial intelligence and the future of education. Modern Pedagogical Education, 3. (Accessed: 26.03.2023).

8. Shefiev E.Sh., & Isaeva T.E. (2020). Using artificial intelligence in the educational process of higher education institutions: foreign language teaching as an example. Accessed: 26.03.2023).

9. Bilyk K. (n.d.). Popularity of ChatGPT and Midjourney led to a fivefold increase in neural network users in Russia. (Accessed: 26.03.2023).