CHAPTER

Artificial Intelligence Form of Digitalized Communication: ChatGPT

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To Cite This Chapter:
Yüksel, H. (2023). Artificial Intelligence Form Of Digitalized Communication: ChatGPT. In M.H. Calp & R. Butuner (Eds.), *Current Studies in Technology, Innovation and Entrepreneurship* (pp. 95–104). ISRES Publishing.

Introduction

Today, Artificial Intelligence (AI), which is a source of inspiration for scientists doing research in many different fields, is rapidly advancing and developing with the contribution of information technologies. AI manifests itself in many areas of life and research. This technology is constantly developing and improving with advances in the field of informatics. Users of artificial intelligence technologies can do many routine and time-consuming tasks more easily and quickly, saving time.

As computer and information communication technologies continue to develop over the years, the way for the development of artificial intelligence has been paved. AI is the ability of machines to adapt to new situations, solve problems, answer questions, plan, and perform a variety of other functions that require a certain level of intelligence in humans. Artificial intelligence from another perspective; it is defined as the study of intelligence behavior in humans and machines and trying to turn such behavior into an output such as computers and computer-related technologies. The reason why various definitions of the concept of artificial intelligence are used is that this concept can be applied in many different fields such as psychology, engineering, sociology and health. Therefore, the term artificial intelligence can mean different things when considered from different perspectives (Doğan, 2002). Based on these definitions, it is stated that artificial intelligence is the culmination of innovations and developments in information and communication technology and is the main feature of software that tries to imitate the human brain and has intelligence in the context of human intelligence (Coppin, 2004;

Whitby, 2008; Chen, Chen and Lin, 2020).ChatGPT (Artificial Intelligence -supported chat robot), one of the most important examples of artificial intelligence technologies in recent times, has influenced many fields of work, especially content creation and education processes, due to its potential in terms of data production (Bostrom, 2014). ChatGPT , an AI application , is an AI chatbot developed by OpenAI (US -based AI research company) and released in November 2022. This application is built on basic large language models and fine-tuned using both supervised and reinforcement learning techniques (ChatGPT, 2023). ChatGPT application has managed to attract great attention in a short time due to its ability to provide humanoid responses. ChatGPT differs from other artificial intelligence applications because it brings a new breath to digital communication and is significantly superior to its existing counterparts.

Although artificial intelligence discussions have a long history, studies on ChatGPT are still a very new issue. Although new studies on this application have emerged recently, studies in the context of artificial intelligence and ChatGPT are quite limited. Considering the recent studies on the basis of ChatGPT; It has been observed that different branches of science focus on its impact on health, economy and other sectors (Atlas, 2023; Biswas, 2023; Crawford, Cowling and Allen, 2023; Lo, 2023; McGee, 2023). In our country, studies based on artificial intelligence and ChatGPT are not yet at a sufficient level. However, it has been observed that the studies carried out are generally on education, economy, tourism, security and software technologies (Yiğit, Berşe and Dirgar, 2023; Bilge, 2023; Özevin, 2023; Keskin, 2023; Küçüker, 2023). This study was carried out to understand the potential and features of ChatGPT, the latest popular artificial intelligence technology. Thanks to this study, the depth of this application, which has a very clear future, will shed light on future studies.

Artificial intelligence

Change and digitalization processes that occur due to technological developments continue to progress unstoppably, and this process, called the digital era, continues its transformation in stages.

As a result of developing information technologies, the internet evolved and first appeared as Web 1.0. While Web 1.0 represents the first-generation internet and allows one-sided communication and content production, with Web 2.0, the size of this communication has increased and become an indispensable part of people's lives. With Web 3.0, an attempt has been made to transform it into a decentralized form, eliminating the need for intermediaries for communication. The intermediaries in Web 1.0 are servers, and the servers needed to interact with someone were replaced by platforms in Web 2.0, and communication began to be established by registering. Web 3.0 will allow establishing a decentralized connection without any intermediary in the coming years, thanks to the improvements made on it (Arvas, 2022; Koçak, 2023). The characteristics of the development processes of web technologies are shown in Table 1.

Table 1. *Features of Web 1.0, Web 2.0 and Web 3.0 (Grayscale Research, 2021)*

	Web 1.0	**Web 2.0**	**Web 3.0**
Interaction	Read	Reading-Writing	Reading-Writing-Possession
Vehicle	Static Text	Interactive Content	Virtual Economies
Organization	Companies	Platforms	networks
Control	decentralized	Central	decentralized

The concept of artificial intelligence was first used at the Dartmouth Conference in 1955, and its definition has been continuously worked on since then. Prof. John McCarthy, who used the concept of artificial intelligence for the first time at the conference, stated that artificial intelligence is machines that can think like humans, make decisions, perform tasks that humans focus on, and solve problems. However, today, the definition of artificial intelligence is not limited to this comprehensive definition, but is addressed more comprehensively and from different perspectives (Elmas, 2018). Definitions of AI in important and different sources are given in Table 2.

Table 2. *Prominent definitions regarding Artificial Intelligence*

Researcher	Year	Definition
Bellman	1978	Automation of activities that we associate with Human Thought…. Activities such as decision making, problem solving, learning
Haugeland	1989	Exciting new effort to make computers think… literally mental machines
Kurzweil	1990	The art of creating machines that perform functions that require intelligence when performed by humans
Schalkoff	1990	A field of study that seeks to explain and mimic intelligent behavior in terms of computational processes
Rich and Knight	1991	Study of how computers can do things they are better at than humans
Winston	1992	The study of computations that enable perception, reasoning, and action

Types of Artificial Intelligence

When current and future artificial intelligence systems are examined, it is observed that artificial intelligence is classified into four different groups (Mijwil and Abttan, 2021).

a) Reactive Machines: IBM's Deep Blue chess program defeating world champion Kasparov in 1990 is cited as the best example of reactive machines. But deep Since Blue had no memory, past experiences could not be used for future activities.

b) Limited Memory: These are systems that make their decisions by taking advantage of past experiences. It has been observed that such systems are used more frequently in vehicles.

c) Theory of Mind: This theory is essentially a psychological concept. Recognizes that others have beliefs, desires, and intentions that influence their decisions.

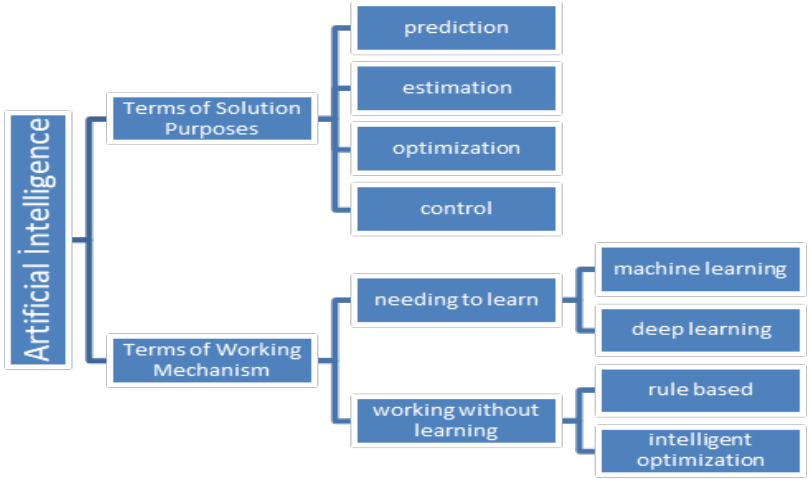
d) Personal Knowledge: This type will have a thought and consciousness of its own. Such artificial intelligence systems use information obtained by making inferences about current situations to understand the emotions of others.

Classification of Artificial Intelligence

At the core of artificial intelligence is problem solving. Therefore, it is very difficult to put the techniques, algorithms and applications in order. However, it is still possible to make a classification when considered from different perspectives (Ginsberg, 2012; Melin et al., 2017). Artificial intelligence is divided into certain classifications in terms of its working mechanism and solution purposes, as seen in Figure 1 (Köse, 2021). In this context, there are certain capabilities that computer systems must have in terms of artificial intelligence. These abilities are as follows (Küçüker, 2023):

- Natural Language Processing Capability
- Information Display Presentation Ability
- Automatic Reasoning Ability
- Machine Learning Capability

Figure 1. *Classification of Artificial Intelligence (Köse, 2021)*



Technologies Using Artificial Intelligence and Expectations

When the technologies using artificial intelligence are examined; "Artificial Neural Networks, 3D Printers, Augmented Reality, Block Chain, Cloud Computing, Big Data, Deep Learning, Industry 4.0, Industrial Robot Technologies, Machine Learning, Internet of Things, Autonomous Robots, Virtual Reality, Cyber Security, Society 5.0" (Loijens et al., 2017; Mendi, 2021; Kösebay, 2020; Badaoui et al., 2017; Myers et al., 2020; Sivathanu and Pillai, 2018; Alpaydın, 2011).

Artificial intelligence is used in many different sectors today, and its areas of use will gradually increase in the future. Future predictions about the use of artificial intelligence in different sectors and under different technologies are as follows;

1. Health: Artificial intelligence can be used in the field of health for diagnosis, treatment and prevention of diseases. Artificial intelligence algorithms can analyze medical data to provide early diagnosis of diseases, create treatment plans and be used for drug discovery.
2. Education: Artificial intelligence can be used to enhance students' learning experiences. Artificial intelligence can provide customized educational materials by analyzing students' learning styles, interests, and strengths.
3. Finance: Artificial intelligence can be used in many areas in the financial sector, such as fraud detection, credit risk assessment, investment strategies and portfolio management.
4. Law: Artificial intelligence can also be used in the field of law. Artificial intelligence can be used in many areas such as making court decisions, analyzing legal documents and contract management.
5. Transportation: Artificial intelligence can be used in the development of autonomous vehicles of automobile manufacturers. It can also be used for traffic management, driverless public transportation systems and security systems.
6. Art: Artificial intelligence algorithms can be used in many areas such as creating paintings, music and videos.

These predictions mean that AI technology will be used in almost every industry, and as the number and diversity of AI applications increases, AI technology will also become more advanced.

Natural Language Processing and CHATGPT

Studies in the field of Natural Language Processing and Deep Learning are aimed at understanding the structure of language, modeling language learning processes, and understanding machine language similar to human language. Natural language processing is a set of theoretically motivated computational techniques for analyzing and representing naturally occurring texts at one or more levels of linguistic analysis in order to achieve human-like language processing for a range of tasks or applications (Liddy, 2001). Many Natural Language Processing (NLP) applications are used in areas such as vocabulary creation, semantic analysis, syntax analysis, sentiment analysis and machine translation. It is also used in many industrial applications such as natural language processing, voice assistants, digital advertising, social media analytics and customer service.

Recently, advances in deep learning and natural language processing have enabled a great progress in the development of language models. In particular, large language models such as Google's BERT, OpenAI's GPT, and Facebook's RoBERTa have achieved great success in various NLP applications. In addition to these applications, applications such as Chatsonic, JasperChat , YouChat , Character AI and Pi also use ChatGPT- like features.

Much of the research in the field of natural language processing is conducted using machine learning techniques. Therefore, machine learning steps such as data collection, data pre-processing, model training and evaluation of results play an important role in the development of NLP applications (Adalı, 2012).

ChatGPT

ChatGPT, first released as a prototype on November 30, 2022, is a chatbot developed by OpenAI. There are ChatGPT, GPT-3.5 and GPT 4.0 versions, which basically act as virtual assistants (Khan et al., 2023).

ChatGPT; It is an artificial intelligence-based chatbot written in Python language, developed by OpenAI. The robot can answer the questions asked to it as if it were a human. In addition, ChatGPT can understand what language you write in, create descriptive texts and content, write programs in different programming languages and debug them (Krupiy, 2020).

ChatGPT Working Principle

This tool, which works like the human brain, uses interconnected neurons and learns from the data it obtains and predicts the subsequent process (answers).

- Artificial Intelligence educators have taken into account the Reinforcement Learning from Human Feedback (RLHF) model in developing the response system for the artificial intelligence process.
- ChatGPT works on the RLHF model. Thanks to this model, it collects data in a slightly different way compared to other alternatives.
- The ChatGPT database has been merged with data from the previous system, InstructGPT. The combined data was converted into a dialogue form.
- The data compared is collected from two or more sample responses sorted by quality.
- The information is obtained from the conversations that Artificial Intelligence instructors have with the chatbot.

ChatGPT Features

ChatGPT can interact with people using natural language, answer the user's questions or produce texts as part of the conversation using natural language processing techniques. ChatGPT further increases the use of artificial intelligence technology in interacting with people (Salvagno, Taccone, & Gerli, 2023)

ChatGPT, whose most well-known feature is " question-answer", are as follows:

Text Writing: Thanks to ChatGPT, you can write academic articles, literary texts, movie scripts, etc. All text- based content can be created.

Mathematical Equation Solution: ChatGPT has the ability to solve difficult equations in seconds. It can even explain the solution methods of equations in the most understandable way.

Interlingual Translation: The application, which translates between all languages, also contributes to your foreign language development by chatting with you from the simplest level to the most challenging level.

Classification: Information on any subject can be categorized and classified more quickly thanks to ChatGPT.

Giving Advice: When you ask questions about a topic or activity, they can give you advice about it.

Debugging: With ChatGPT, which is very successful in writing and developing code, you can learn about errors in a code block and these errors can be easily edited.

Advantages and Disadvantages of ChatGPT

ChatGPT offers different advantages to users. However, in addition to its advantages, it also brings certain disadvantages in terms of communicative processes. These evaluations vary depending on certain characteristics such as intention to use and line of business. Therefore, ChatGPT can offer answers and opportunities as well as negativity to the sector or person according to their wishes (Salvagno , Taccone and Gerli , 2023; Lu etc., 2018).

Advantage of Chat GPT:

- Fast and Easy Communication
- Broad Subject Coverage
- Personalized Service
- Error Correction Capability
- Chat Based Communication
- Content Creation
- Sensitivity Analysis
- Data collecting
- Customer Service Automation

Disadvantages of Chat GPT:

- Lack of Empathy
- Bias and Accuracy Issues
- Limited Context Awareness
- Scaling Challenge
- Need for Human Oversight

Discussion

Considering that the evolution of artificial intelligence developed by humans has gone through a process similar to human learning, it remains unclear what it will turn into in the future, how independent it will be in the decision-making phase, and how its harmony with humans will be shaped. As a result, emerging artificial intelligence applications may bear characteristics of the people who program them.

ChatGPT, a successful artificial intelligence technology, is a natural language processing model developed by OpenAI company. ChatGPT is a technology that can summarize or write about any topic written in natural language.
There are certain reservations because the program reaches the questions and requested information in digital environments and makes it available without citing sources. Also, marketing, education, healthcare, etc. Since it has started to be used in many other areas, it has the potential to mislead individuals.

ChatGPT, ensuring the accuracy and reliability of the information obtained is a significant challenge. Even though ChatGPT is planned through a serious data source, there is often the possibility of errors or oversights during the training process. Therefore, it would not be wrong to say that, in addition to the benefits of the program, it also brings with its certain ethical concerns.

ChatGPT, in fact, the most important limitation of artificial intelligence is that it requires more emotional intelligence. In human communication, it can be difficult to understand and respond to emotional cues such as humor or comedy. Therefore, people may find it difficult to communicate successfully and effectively with chatbots and automated systems (Kalla, D. & Smith, N. 2023). ChatGPT will change the communicative habits of both individuals and institutions among all these positive and negative discussions.

Conclusion

ChatGPT, an artificial intelligence chat robot specialized in dialogue developed by OpenAl company, is an artificial intelligence product that enables users to make transactions without the need for human power by shortening their computing processes. ChatGPT is considered as the interaction between artificial intelligence and humans.

ChatGPT usage offers significant developments and opportunities. This technology can become an effective tool in research and applications by further increasing the quality and accessibility of various services. ChatGPT's ability to quickly generate consistent responses makes it useful for digital communications that require high volumes of communication, such as answering customer inquiries or conducting surveys. With ChatGPT, businesses can automate certain communication tasks, which can help reduce workload and allow staff to focus on other tasks. However, in the coming periods, it may be necessary to provide more data to improve ChatGPT and other artificial intelligence models and obtain more effective results.

Artificial intelligence technologies can benefit humanity in aspects such as workforce, research and detection. However, it is not currently possible for artificial intelligence technology to fully replace human ability and knowledge. It should also be noted that although it is used as an active support program in many areas, especially considering its deficiencies in issues such as producing false information, lack of emotional intelligence, security and ethics, it has not yet replaced humans.

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