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REVIEW ARTICLE: VIRTUAL ROBOTS IN THE MODERN WORLD

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Abstract

The paper is dedicated to the review of the role of virtual robots in the modern society. We live in an age where almost all human tasks (activities) can be accomplished with the help of technology. Therefore, the application of such technologies provides an opportunity to maximize the potential when used correctly. The task can be performed both in real life and in virtual space. The article discusses the concept of virtual robots, the scope of their application and the possibilities in the hands of scammers and respectable users. The definition of the main types of classification is given and the "bad" bots and methods of protection against them are listed. The paper gives a short history of robotics development and gives possible ways of how the robots can be used. The authors investigate the issues of the scope of bots in social media, describe good and bad bots, develop the idea of the simplicity and efficiency of the technology of communication with bots.

Keywords: Chatbot, virtual robot, intelligence imitation, artificial intelligence

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1. Introduction

In the modern world, even the most remote person from the Internet space knows that virtual robots exist. Such a person has associations with robots from movies, TV series, fulfilling the desires of a person, something can bring or do planetary cleaning around the house (Iguides, 2022). And this will be true in relation to virtual robots, since they were made according to exactly the same scheme, but with the only condition that they are created in a computer environment, virtual space. In 1966, the first virtual robot was created - Eliza, the creator, Joseph Weizenbaum, endowed with the ability to enter a conversation. The user entered a sentence and Eliza checked the text for the presence of keywords, on the basis of which she formed a response to the user (Eliza Talking, 2013). Eliza parodies the dialogue with the therapist, where she basically paraphrased the received statements into a question, checking first for the presence of keywords. Today there is no way to communicate with the original Eliza of that year, but there are a sufficient number of resources on the Internet that have almost the same Eliza.

At its core, Eliza was a great start to develop a similar concept as a virtual robot, and people's first reaction to Eliza was quite touching. After the author explained that this is a system that cannot understand and comprehend the meaning of statements, people still turned to «Eliza» for help, to talk. The very idea of virtual robots has not been abandoned, but it is believed that only in 2017, their use has reached a stable state, as a matter of course in the Internet space. The idea of virtual robots reached the masses and was accepted kindly. In the world of the 21st century, people call virtual robots differently, the slang abbreviation "bot", short for "robot", and add prefixes, depending on what the bot is doing. For example, in an online store, this is a bot consultant, or a bot manager who is able to buy plane tickets, arrange delivery of goods from the store, etc. (Ordoñez-Avila et al., 2022). It should also be clarified that within the framework of this article, the word “bot” and “chatbot” are synonymous with each other.

1.1. Bot

A bot is a specialized algorithm built by programmers that performs a specific function and has the ability to “remember” the information received for a programmed response, creating and increasing a database. Bots are convenient in that they take the load off a person, perform repeating actions per unit of time than a person (Makarova, 2020).

1.2. Scope of Bots

Social networks and instant messengers, as well as gaming platforms: Telegram, Vkontakte, Facebook, Twitter, Odnoklassniki, Steam, Discord, Epic Games; -Internet banks and shops: Rosselkhozbank, Sberbank, VTB, Yandex market, Ozon, Amazon, Wildberries, eBay; - Mobile applications of educational and infotainment nature, telecom operators; -Government services (answering questions from citizens, making mailings, registering for driving, calculating taxes), insurance (what kind of insurance the user is looking for), healthcare (scheduling an appointment and notifying, health consultation, assisting a doctor) (Smyslova, 2018).

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2. Problem Statement

Although new technology is used by people there are a large of portion of technology that is not utilised properly. Hence the task of the article is to outline application of virtual robots to maximise one's ability to fully scope of usability of the technology. The article is providing brief knowledge of virtual robots and how they can be used in modern time to ease workflow and increase productivity.

3. Research Questions

The first and most common question of the research is how can virtual robots be used. The other arising question is how positively it can effect if used properly. It is believed that any technology can be used different ways in different hands, meaning that it can be used for good and similarly for negative outcome too.

4. Purpose of the Study

In the world of emergence of new technologies, almost daily, it is hard to follow the trends and use every new technology. One can easily miss new technology and fall behand. In such scenarios peoples tend to completely ignore the technology or procrastinate as they need to know a lot of new stuff. Meaning that it is easier for the one who has been using the technology when it has less functionality and knowledge of new features were build up step by step, but not at one everything.

5. Research Methods

Simplicity, speed and quality of the task performed by bots lead to positive results, the company wants to implement in all possible areas, and customers remain loyal. Bots are classified into the following types: 1.1. navigational, orientation, Smart bot (Myrouble. 2022).

5.1. Navigational

The bot has a pre-thought-out scenario for the development of the task, thereby responding to simple and already answered tasks, relieve the burden on the shoulders of the organization's employees and does not waste the user's time. And in case of any deviation from the scenario or when the task goes beyond the scope of the bot's work, a technical employee is called to solve the problem. Such bots do not involve the analysis and collection of information obtained during the work process. Often their tasks are suitable for simple actions: leave a request, order, buy, get information.

5.2. Orientation

Such a bot no longer adheres to a prepared scenario and can navigate based on keywords in the user's statements. For example, on a site selling books, turning to a virtual assistant, you write "I want to buy a book by Albert Camus Outsider" by defining the keywords "Albert Camus Outsider" the bot will redirect you to the page of the site where such a book is sold (Kozoriz, 2019). Most orientation bots, like navigation

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bots, do not have the ability to collect and analyze information. Also, the bot may respond incorrectly to the user's request, incorrectly matching it with the existing template.

5.3. Smart bot

Smart bot is a bot based on artificial intelligence, the most advanced to date. When an orientation bot forms a dialogue using keywords, then a smart bot uses natural language processing and semantics to recognize the context of what the person is saying. Such bots can process input data: date, time, place, description, objects and numbers. These data are the building blocks for the subsequent formation of the utterance. Possibility of expanding vocabulary, including synonyms for natural response and learning user preferences in their memory for relevant actions. The disadvantages include the fact that even with an imitation of intelligence, such bots are not able to show the emotions that the user expects. Therefore, such bots are not applicable in dialogues with certain categories of people where such a situation may arise: patients with incurable diseases, survivors of the loss of loved ones, war veterans.

6. "Bad Bots"

Everything that has been said so far has referred to the “good” bots, there is also another side to the use of bots that are engaged in attacking websites, mobile applications and APIs, hacking and further selling credentials:

Bot parser - regularly monitors various kinds of information from various sources, for example, personal data of people, prices for goods, news, the number of likes and subscriptions, borrowing of copyright content. This information is most often sold to third parties or engaged in aggressive plagiarism, where they put the material in a more favourable light for the user (as if the price of the product or fake information to please the user), as a result of which they take a better position when searching on the Internet.

Bot-cracker - with the help of brute forcing, they steal user data for their sale or for sending spam messages asking for help with money. Click bot - simulates user clicks on ads placed on the site in order to spend the advertising budget. This can be done by scammers to capture the commission for displaying ads or competitors with the help of scammers. Spam bot - sending spam via e-mail, social networks and websites. Often such information is inappropriate, backed up by a phishing link or data collection form.

Botnet - this term means a network of personal computers hacked or infected using the Internet. Which generates and sends traffic without the knowledge of the owner, the main purpose of such activity is DDOS attacks (massive spam attack on the server so that the server goes down).

In parallel with the fact that new types of “bad” bots are being released into the world, protection against them is also being developed. Some of them are: -reCAPTCHA against spambots and automated form execution. -Multi-factor authentication that prevents attack by adding one more step in authorization or authentication. -Botfaqtor to protect websites from click bots by blocking bot traffic. The method is based on an algorithm with hundreds of patterns, according to which malicious traffic is singled out. Bots are included in the stop lists. - Rate limit unknown IP address. One user will not be able to send an unlimited number of requests to the API (Kaspersky, 2022).

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7. Findings

The first thing that can be noted is that the idea came from fantasy to reality, and, as is the case with other technologies, its path to the maximum implementation of the intended functionality took several decades. Although its potential and capabilities will grow exponentially. The application of technology will be frequently as humanity will depend more and more on virtual reality.

The scope of bots' applications is wide and can be found in many modern tasks solving repetitive problem and many other tasks. As it was already mentioned above technologies can be used differently in different hands, meaning that it can be used to fulfil any given task of technology scope or used negatively towards individuals similarly to viruses' usage.

Bots are very useful tools if used correctly. Although, they are used by individuals to do simple tasks or not used at all. Awareness of people is the main reason of underusage of the technology and near future will illustrate will they be used with full potential or some other technology will replace them before they reach their full capacity.

8. Conclusion

Every year, the value of technology is growing, and communication with bots is becoming more comfortable. The simplicity and efficiency of this technology makes it possible to implement it practically in any field of activity, mainly to automate routine processes, develop and open up new opportunities, improve quality and reduce the resources expended. What for the user, in a world where a huge number of enterprises are fighting for attention, it takes a minimum of time and the maximum possible benefit for them.

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