

COGNITIVE TECHNOLOGIES – ARE WE IN DANGER OF HUMANIZING MACHINES AND DEHUMANIZING HUMANS?

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Abstract:

The purpose of this article is to introduce some of the problems arising from the rapid development and raising the status of machines and the increasing disregard for human rights in the context of the use of cognitive technologies. Cognitive technologies are highly acclaimed and are being introduced into almost all aspects of life, especially in business. The article asks the question of whether the use of these technologies leads to a gradual humanization of machines while dehumanizing humans. The article is purely theoretical and based on a literature study of selected bibliographic items. On the basis of the analyzed texts an attempt was made to introduce the concept of artificial intelligence, cognitive technologies and algorithms. It also attempts to diagnose the state of work on the regulation of the legal situation related to the development of artificial intelligence and cognitive technologies, as well as the status of robots. The philosophical concept of dehumanization and its selected examples are also outlined. The discussion leads to the conclusion that the pace of development of cognitive technologies, overtaking the human ability to comprehend them, poses a threat of machines getting out of human control.

Key words: *human, robot, artificial intelligence, cognitive technologies*

INTRODUCTION

The development of cognitive technologies has been gaining a dizzying pace in recent times. Their current and projected capabilities are extremely attractive on many levels. In business, the purpose of their use is to accelerate the pace of business development and increase the quality of services offered, while reducing operating costs [1]. In everyday life, they are designed to help people and make their lives easier. By creating new opportunities that were previously unavailable, they have a huge impact on human life and work. Manufacturing automation, autonomous vehicles, facial recognition, medical diagnostics, humanoid robots, digital assistants are just some of them. One can say, we have entered a whole new stage of civilization progress. However, it seems that the total potential of developing artificial intelligence is not entirely predictable. Enabling computers and robots, through cognitive systems, to imitate specifically human actions, both in terms of repetitive, routine activities and entire processes of performing various tasks, raises a number of new problems. The presented research problem includes reflections on the nature of problems arising in the process of

development of artificial intelligence, robotics and cognitive technologies, and their application in various areas of human life. The dynamic development of digitization and the pace of technological progress can generate legal, psychological and social effects that are difficult to predict, both in the area of business and in the daily lives of citizens. These considerations stimulate the question whether, as a consequence of the development of cognitive technologies, the process of gradual humanization of artificial intelligence with simultaneous systematic dehumanization of humans has not begun. With a whole range of positive effects, it should be remembered that the technology dominating at a given time plays a key role in human life because it is the basis for all activities. And every invention has "a dual nature – it is both a blessing and a curse" [2].

LITERATURE REVIEW

The concept of cognitive technologies has been around in science for quite a long time. Research related to these technologies has an interdisciplinary character and is closely connected with the research on artificial intelli-

gence, algorithms, robots or humanoids. Their rapid development and increasing capabilities generate various ethical issues. There is a question of responsibility, both for the machines themselves and of their creators, as well as the status of artificial intelligence. Various legal issues arise, and finally, the problem of human domination by artificial intelligence is worrying. The dream of mankind has long been to have a device that could not only adapt its behavior to changing tasks and needs, but that could acquire and use knowledge, that is, learn. These dreams, from the level of fantasy eventually descended to the level of scientific research. In 1950, Alan Turing published *Computing Machinery and Intelligence*. In the following years, Marvin Minsky, an American cognitive scientist, stated that it is the task of humans to develop and create entities that are better and more intelligent than humans [3]. The term "artificial intelligence" itself (AI) was coined in 1956 by John McCarthy at a scientific conference entitled *Summer Research Project on Artificial Intelligence* at Dartmouth College in Hanover, New Hampshire. The idea was to use machines to perform processes that in humans are called intelligent behaviors [4]. Research on the development of artificial intelligence has been described as attempts to create thinking computers, or machines with minds in the literal sense of the word [5], or as "the science of activities that would cause machines to perform functions that are currently better performed by humans" [6]. In 2019, the European Commission's High-Level Working Group developed a definition of artificial intelligence and presented it in *A Definition of AI: Main Capabilities and Scientific Discipline*. She described it as systems that exhibit intelligent behavior by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals [7]. The development of artificial intelligence has gained momentum and is increasingly moving towards cognitive technologies [8]. Research on these systems is based on the model of cognitive science. Cognitive science is a scientific field that deals with the observation and analysis of action. Cognitive systems use rational human processes to process data. They also perform diagnostic and predictive functions. They provide inferences, make insights into processes and offer automated actions based on data analysis and contextual human interactions and as such are implemented in the latest technologies [9]. A new discipline called cognitive computing is being developed in the field of science. It encompasses a whole range of activities focused on the automation and autonomization of computers, capable of learning and coordinating their own work. Cognitive computing is a kind of computer simulation of human thought processes. Scientific research carried out today in the field of artificial intelligence is directed towards the construction of computer programs and machines capable of imitating specific functions of the human mind and senses that are not responsible for simple numerical algorithmization [10]. The method of system dynamics has been applied here. The term "system dynamics", in a general sense, means a set of technologies that are largely the result of studies on the functioning of

the human brain. It is a kind of combination of artificial intelligence and signal processing - two elements crucial for the development of the so-called "machine consciousness". They combine a set of modern tools: machine self-learning, reasoning and inference, natural language processing, speech, computer-human interaction and many others [11]. Automation and algorithmization are used not only for automatic tasks, but also for purely mental tasks, until recently considered specifically human, such as reasoning, sensing, and decision making [12]. Thus, humans have entered a world in which technological solutions can learn, recognize the language of humans, and communicate with humans themselves using natural language [13]. In business, cognitive computing is already so widely used that it is one of the fastest growing branches of AI today [14, 15]. They are also used in telecommunication, banking and e-commerce companies, just to mention a few of them. Thanks to the use of semantic databases, they can, for example, recognize images and process natural language [16], and thanks to the increasingly improved capabilities of self-learning mechanisms, they allow systems to infer and, for example, provide information. They play a huge role in innovation efforts [17], especially in environmental [18, 19] and other sustainability efforts [20]. Work on the increasing automation of processes and the development of robotization have, among other things, led to a change in the demand for certain competencies of workers [21]. Most of the tasks performed by workers are routine in nature, so their work can easily be replaced by computers and algorithms [22]. Thus, an increasing range of work is being automated, but this has consequences in terms of job losses and thus the gradual exclusion of humans and their marginalization [23, 24].

METHODOLOGY OF RESEARCH

The study is theoretical in nature and is based on a critical analysis of the literature on the subject. The literature has been limited to some literature on cognitive technology and related issues. The literature study, i.e., the analysis and critique of the literature of selected publications, helped to identify what and how it was analyzed in the topic of interest of this paper and also helped to outline the direction of further research. The focus was on the issues of defining what artificial intelligence and algorithms are in their essence, and what research on cognitive technologies is all about. Several examples of the benefits of using these technologies are cited and some of their negative effects on humans in selected situations are described. Some sample suggestions for work on legal provisions related to the participation of artificial intelligence are also cited. The study shows that the pace of development of modern technologies is far ahead of human competence in their control and use. There is also a lack of sufficient reflection on the dangers associated with giving machines, for example, decision-making power, or handing over responsibility to them. Of course, the presented reflections do not exhaust the whole issue, but it seems that they can open new fields and directions of research.

RESULTS OF RESEARCH AND DISCUSSION

The world of algorithms

Artificial intelligence works through the use of algorithms. Highly developed algorithms have penetrated so deeply into both social and cultural spheres that functioning without them is no longer possible. Processes related to algorithmization are becoming key processes in almost every area of modern life, so an increasing number of scientists undertake research and discussions on them. What are algorithms? There are many definitions of them. One of them, dating back to the 1970s, describes them as a combination of logic and control processes [25]. Another, describes them as procedures for transforming input data into the results we expect using mathematical calculations performed by a computer [26, 27]. Algorithms can also be described as a defining technology because as such it shapes the way we think and perceive the world [28]. Algorithm can also be thought of as a shorthand name for a sociotechnical assemblage containing: algorithm (in the technical sense), model, target group, data, applications, and hardware – all linked to a social environment [29]. Algorithms have imperceptibly become invisible social participants in human space. They can process thousands of complex data in real time, exceeding the capabilities of not only a single human, but entire groups of people, even experts. Thus, they are often used, among other things, to standardize many decision-making processes [30]. Algorithms are more often making various choices for people, shaping their taste, flavor and preferences. They generate visions of a perfect world without errors, a world with 100% accuracy, efficiency and predictability [31]. Man perceives algorithmized activities as effective, objective, neutral, and, consequently, trustworthy. Their accuracy, reliability, and objectivity make humans willingly succumb to their influence [29]. This puts our vigilance to sleep, and just when a person thinks that technology represents a neutral phenomenon, it slips away and exerts its greatest influence on humans [32]. One of the key examples of this influence to which man is subjected in this regard is the mechanism of so-called personalization used, among others, by Google, the existence of which not everyone is aware of, and which also determines what is to be of certain value to a man. Some scholars describe it as a form of symbolic violence [33]. From a cognitive point of view, personalization is a valuable convenience, reducing information retrieval time. However, it can lead to cognitive error, also known as confirmation error. Confirmation error can, in turn, result in incorrect decisions based on selective considerations. Other negative effects include loss of privacy, manipulation of public opinion, and large-scale dissemination of false information or conspiracy theories. Some researchers believe that we have been lured into the trap of so-called digital ecosystems, such as Google or Facebook, which, in an experiment of psychological, sociological, and technological nature, manage us through algorithms. Human beings are vulnerable to them because they have no cognitive tools or normalized knowledge of these systems, since their owners tactically present them as a kind of "black boxes"

to which the average user has no insight [34]. The operation of algorithms aims to reduce the complex reality to simple logical models, allowing to perform fast and complex calculations, correlating extensive data. The huge amount of data forces the creation of complex systems for their analysis, filtering and distribution. New technologies require new categories of description, because the analytical tools and paradigms used so far are no longer sufficient, and a human cannot cope with their interpretation. Their increasing level of complexity makes their operation virtually impossible to comprehend by human reason. It is also increasingly difficult to predict the "behavior" of a given algorithm in a particular situation [35]. The better algorithms become at making decisions about solving human problems, the more willing humans are to give them the power to decide and manage their lives, their work, and society as a whole. By giving algorithms decision-making power, and thus responsibility, we systematically give them power over humans.

Humanizing robots

Humans have a natural tendency to humanize the various objects they use, attributing to them personal and emotional properties. Moreover, human brain is particularly geared to picking up a simple set of characteristics in various objects that define a human face (the so-called pareidolia). The development of artificial intelligence and its nature is particularly conducive for humans to subject it to humanization. Especially those machines that resemble humans, like robots and androids. They are not mere devices for humans to simply turn off. They are already beings that "live" and are a kind of "robo sapiens" [36]. Robots are increasingly being discussed in a social context. The socialization of robots does not consist only in their physical resemblance to human appearance, but in the creation of multimodal relationships with them [37]. Humans interact with them in a variety of interactions based on human relationships. This state of affairs even calls for giving robots, especially social androids, a specific status. In 2011, during the Human-Robot Interaction conference in Lausanne, a team of experts in engineering and psychology debated a new ontological category for robots. Robots and devices equipped with artificial intelligence, especially those that fall into the category of cognitive technologies, can take autonomous actions that are difficult to predict and, although their purpose is to help, they can cause physical, economic, or emotional harm to humans [38, 39]. Research is moving towards developing the highest level of intelligence, or super intelligence. It is intended to be a creation that surpasses humans in every aspect. Thus, there will not be a single aspect in which humans will be smarter than such intelligence. In a sense, we will cease to be a superior species. Many scientists believe that the creation of artificial intelligence will be the beginning of the extinction of our species. Super intelligent non-human beings may at some point begin to follow their own logic, which may not necessarily align with the assumptions and interests of their creators [40, 41, 42]. This

is why there have been calls for artificial intelligence research to be placed under the curatorship of an international supra-state body that would exercise control to ensure that a situation does not become irreversible in their creation. The trend of subjecting all areas of our lives to algorithmization and optimization is an undeniable temptation. However, we are falling into the trap of technological rationality, forgetting that algorithms are written by programmers who make cognitive errors, lack knowledge, follow stereotypes, and consciously guide the algorithm to a specific action, not always positive. The initiated error in the operation of artificial intelligence can be very costly for us. Hence, there is a need for ethical education [43]. It is important to remember that as humans "We shape our tools, and then they shape us" [44]. This phrase also applies to the algorithms that humans create, but they also create us. [45]. Algorithms, perceived as objective and rational participants in life, by simplifying, fragmenting and trivializing human life, manifest their superiority to humans. Observing the work on artificial intelligence, it is already evident that although AI does not yet have a self, it exhibits autonomy. This independence is precisely the source of concern. For there is no guarantee that this one will not get out of control or will not be used for evil purposes [46, 47].

Dehumanization of man

The development of modern technology has made the scientific world mainly governed by the sciences. Social sciences and humanities have receded into the background, and everyone has the right to speak, without the need for expertise in this area [48]. There is also a systematic withdrawal from the humanistic vision of man as "the measure of all things and the center of research interests" [49]. This state of affairs finds its justification in the mechanism which Michał Heller called "the mathematical nature of the world" [50, 51]. Thanks to mathematical models one can order the growing complexity of the world, one can predict and warn against various dangers, one can intervene and prevent critical situations. Since numbers have taken over, the primary goal of the logic of a numerical civilization is to count, record and algorithmize every area of human life [52]. By creating certain standards of measuring reality and presenting it in the form of numerical representations, man has given control over himself to algorithms, which in fact have deprived many phenomena of their context and meaning [53]. Even human relationships are transformed into algorithms, "becoming mechanized and highly economized sociability" [54]. Numbers and indexing enter into every area of human life. The use of indicators always involves simplification and reductionism due to the ease of use and handling of data. In this perspective, the multidimensionality of human beings is reduced to a single dimension, constantly subjecting human performance and efficiency to comparison and evaluation [55]. This situation is referred to as the "power of statistics". It entails standardization and rejection of anything that cannot be classified [56]. This statistical logic of the rule of algorithms minimizes human individualism.

Human beings are incapacitated by ubiquitous indexing at school, in the workplace, at universities, and even in their personal lives. The mechanism of improvement, which is the basis of technological thinking, is, for example, the ideological foundation of sports training, i.e., achieving better and better capabilities of the human body, i.e., running faster, jumping higher, hitting harder [57]. Man, possessed by the idea of gauging monitors himself and his body parameters with the help of modern devices and applications [58]. Social practices related to self-tracking begin to play the role of peculiar emanations of "self technology". This category was first used by Michael Foucault in 1982, during his lecture entitled Technologies of the self, delivered at the University of Vermont. By "technologies of the self" Foucault meant activities of individuals aimed at development and self-improvement. It is about using one's own resources or performing various operations on one's own body and soul, thoughts, behavior, way of being, that is transforming oneself in such a way as to achieve a state of happiness, purity, wisdom, perfection, or even immortality [59]. Today's commitment to such a "training of oneself" arises from one's own decision to buy a certain device, as well as from the call coming from that device [58]. Ordinary daily activities, such as status updates, liking or spreading various content, make it possible to predict and manage human behavior [60]. The algorithm plays the role of alienating the human being, and by creating constructs of oneself in social networks, a split occurs between the real self and the virtual self, presented online. Virtual reality has taken on as much importance as empirical reality, and has even become more important than it. The consequence is the objectification of the human being. Technological totalization is even more dangerous when the acceptance of the affirmation of technology, in the subjective feeling of man, making life easier, lies outside his consciousness. Instead of making life easier, man achieves only a status symbol, conditioning social relations and an element mediating human relations, displacing the previous forms of direct human contacts. The power of technology over man is also manifested in the compulsion to constantly be online in order to maintain these relationships and not condemn oneself to digital marginalization [61]. Human behavior is determined by the prevailing technological order, forcing compliance with the rules imposed by that order. When an individual does not keep up with the technological change, he begins to feel shame and complexes towards the products of his own work [55]. Such a situation draws a vision of a fully mechanized society, focused maximally on the production of material goods and consumption, directed by computers [62]. Man begins to appear as an insignificant element of the total machine, properly nourished and entertained, but passive and lifeless, almost devoid of feelings [63]. We are dealing with a process of reducing man to his effectiveness. Thus, we are passing from the stage of tools as extensions of man to the stage when man becomes an extension of the tool [64]. The process of human dehumanization has been going on for a long time. Already in the last century, a humanist and psychiatrist,

Antoni Kępiniski, drew attention to the progressing processes of human depersonalization. He pointed out that we see human qualities in individuals less and less often, defining people rather by their attributes related to efficiency and effectiveness of functioning. Currently, looking at a human being, "human characteristics are seen in him/her less and less, and attributes related to the efficient functioning of a technical-social machine are seen more and more clearly" [65].

Examples of regulatory proposals

The presence of robots in more and more spheres of life generates various problems, including those of legal nature [66]. There are already various proposals for models of legal regulation in relation to artificial intelligence and robots. However, in the situation of the possibility of autonomous machines, they do not meet the required criteria. There are even some suggestions to consider an AI-equipped robot as a legal person, but a difficulty would arise in holding a specific individual responsible [67]. Many countries are working towards establishing the status of robots and androids, and determining the issue of legal liability. For example, Japan, which produces more than half of the world's robots, has developed the Japan Robot Strategy, which is a set of policies with respect to robotics. South Korea, on the other hand, has developed a Robot Ethics Charter, which enshrines principles regarding the coexistence of humans and robots, as well as guidelines aimed at manufacturers [68]. In Germany, a Robotics Center has been established where research is being conducted on such issues as the legal status of semi-autonomous industrial robot cars [69]. In the UK, the Science and Technology Committee, in its report on artificial intelligence, proposed the establishment of a working group to monitor the legal, ethical, and social implications of developing technologies [70]. In 2017, the European Parliament approved a report proposing civil legislation on robotics and called on the European Commission to develop legislation on robotics and artificial intelligence to fully exploit their potential while maintaining ethical and safety standards [71]. In 2019, the European Commission published the final version of the Ethics Guidelines for Trustworthy AI [72]. According to it, artificial intelligence should be, among other things, ethical, that is, consistent with ethical principles and values. Other proposals for legal solutions in this regard include, for example, the introduction of a robot registry, the prohibition of modifying robots to turn them into weapons, the installation of a "kill switch" button to disable the robot, the regulation of the status of robots by giving them the status of an electronic person, and the creation of a mandatory insurance system [73]. Meanwhile, in October 2017, a humanoid robot named Sophia was granted citizenship for the first time in world history. Thus, it was treated as a human being despite the fact that it is not a human being but an intelligent device. This raises a number of questions, such as: Will not the elimination of such a being be a murder comparable to the deprivation of human life? What will be the rights of robots in relation to humans?

CONCLUSION

Chapter 1 The algorithmic world of modern man shows that machines are more efficient, more effective, more reliable than we are. It can be said that in confrontation with artificial intelligence we actually do not stand a chance. It is definitely becoming more effective and efficient, surpassing the technical and physical capabilities of humans. Algorithms, which were created by humans and for humans, are more and more often incomprehensible by them, out of their control, full of soulless, technical rationality. It would be a mistake to burden algorithms with problems and evil alone. Their actions and real help for humans cannot be overestimated. However, it is difficult to adapt to their rules when they force the reduction or even elimination of emotions, compassion, empathy, and all other non-quantifiable feelings [55]. Only, are they still needed in a world rationalized to the extreme? The questions posed at the beginning, through the analysis of the collected literature, led us to the point where we need to ask ourselves another question: who is a human being and what is his or her essence? After all, the use and efficient operation of technology cannot replace a deep reflection on reality. We must remember that for the time being we still possess higher competences than machines in understanding, explaining, and making sense of phenomena. However, if we relieve ourselves of the duty to think and give it to algorithms for our convenience, if we succumb to the temptation to give to technologies the decisions that are difficult for us, they can take control not only over individuals but also over entire social groups.

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