APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN PEOPLE & LIFESTYLE BASED ON EDUCATION EXPERIENCE

A MESTERSÉGES INTELLIGENCIA ALKALMAZÁSAI EMBERI KÖRNYEZETBEN ÉS ÉLETMÓDBAN OKTATÁSI TAPASZTALAT ALAPJÁN

DOVRAMADJIEV, Tihomir A.[1] – DIMOVA, Rozalina S.[2] – PAVLOVA, Diana Y.[3] – FILCHEV, Rusko V.[4]

Abstract

The application of artificial intelligence (AI) in people's daily lives (lifestyle) is becoming more and more tangible. Directly or indirectly, it is present in the life of most modern people who massively use smart devices, computers, and others. They, in turn, use the services of the Internet, where a significant part of the applications in one way or another is connected to certain systems. Some of them have a direct connection with computerized systems, where AI intelligence participates directly or indirectly, but in one way or another collects, selects, and recommends information, activities, services, and others. In the field of education, AI is often already present in school and university curricula. The present study aims to cover the main important points related to the presence of AI in the everyday life of people in general, and concentratedly aimed on experts and non-experts working and developing activities in the fields of education, science, and development academic activity.

Keywords

Artificial Intelligence, people, academia, lifestyle, education, science

Absztrakt

A mesterséges intelligencia (MI) alkalmazása az emberek mindennapi életében (életmódjában) egyre kézzelfoghatóbbá válik. Közvetlenül vagy közvetve jelen van a legtöbb modern ember életében, akik tömegesen használnak intelligens eszközöket, számítógépeket és egyéb eszközöket. Ők pedig az Internet szolgáltatásait veszik igénybe, ahol az alkalmazások jelentős része így vagy úgy kapcsolódik bizonyos rendszerekhez. Némelyikük közvetlen kapcsolatban áll a számítógépes rendszerekkel, ahol az MI közvetlenül vagy közvetve részt vesz, és így vagy úgy információkat, tevékenységeket, szolgáltatásokat és egyebeket gyűjt, válogat és ajánl. Az oktatás területén az MI gyakran már jelen van az iskolai és egyetemi tantervekben. Jelen tanulmány az MI jelenlétével kapcsolatos legfontosabb szempontokat kívánja áttekinteni általánosságban az emberek mindennapi életében, és koncentráltan az oktatás, a tudomány és a fejlesztési tudományos tevékenység területén dolgozó és fejlesztő szakembereket és a nem szakértőket célozza meg.

Kulcsszavak

Mesterséges intelligencia, emberek, akadémia, életmód, oktatás, tudomány

[1] dr.tihomir.dovramadjiev@gmail.com | ORCID: 0000-0003-0734-1345 | BAEHF and TUV Professor (Assoc.) PhD Eng. | egyetemi docens, BAEHF és TUV
[2] rdim@abv.bg | ORCID: 0000-0001-8158-3647 | BAEHF and TUV Professor PhD Eng. | egyetemi tanár, BAEHF és TUV
[3] diana.pavlova@dentaprime.com | ORCID: 0000-0002-0188-1888 | Training and Development Specialist at Dentaprime Dental Clinic | Képzési és fejlesztési szakértő, Dentaprime Fogászati Klinika
[4] rusko.filchev@gmail.com | ORCID: 0000-0001-8795-7048 | DSK Bank Manager | Igazgató, DSK Bank

INTRODUCTION

The areas of application of artificial intelligence (AI) are very diverse [1]. In today's high-tech world, people are confronted with AI in one way or another [2]. Whether they have a deep understanding of the direct link to AI or not, a significant proportion of people already have access to such technologies, or at least handle digital information that accompanies, includes or applies to AI applications related to relevant databases [3, 4]. The fact that the majority of the population has an individual smartphone and/or computer can now be considered a prerequisite for the consumption of certain apps, software and more AI applications [5, 6]. In their normal life, people and in particular consumers (ordinary people's lifestyle or professionals) can interact with the current main types of AI and AI applications, depending on their focus and application [7].

- **AI crucial tasks.** AI is related to the predominance of intellectual analysis.
- **AI based on specific tools.** The difference between this direction and the above is that here AI is designed to be able to solve a larger class of problems.
- **AI according to the developed model of thinking.** AI is characterized according to the developed model of thinking.

Table 1 shows the three main groups of AI with their directions, characteristic of modern society and present in one way or another directly or indirectly in the lives of people and society.

AI crucial tasks	AI based on specific tools	AI according to the developed model of thinking
Machine translation	Artificial neural networks	Search in online space for solution(s)
Automatic forwarding and retrieval of information	Evolutionary calculation	Presentation of knowledge
Speech communication	Pattern recognition	Machine learning
Intelligence of games, proof of theorems and automation of research	Expert systems	
Computer vision	Heuristic programming	
Data mining	Multi-agent approach and etc.	
Writing lyrics and music, etc.		

Table 1: Main groups of AI, typical for the modern technological society)[7]

Aimed at the daily activities of the majority of people, namely consumers (and partially also professional developers) using artificial intelligence is associated with certain priority

applications of AI [7]. Some of the popular implementations of AI (popular in people & lifestyle) are related to activities such as:

- **Computer vision.** This technology processes visual information to extract useful knowledge. It includes many tasks [8]: site discovery; tracking of objects; pattern recognition; segmentation; estimation of the depth of the distance.
- **Biometric identification.** It is widely used. Particularly popular application related to activating access to a particular person's smartphone through biometric fingerprint [9]. Biometric identification systems are many and are varied, such as: face recognition system, iris identification, analysis of the chemical composition of sweat, analysis of the chemical composition of body odor, analysis of microvibration of the fingers and micromovements of the hands, analysis of heart rate and heart size, fingerprints, voice biometrics, gait recognition, user action analysis - stride length, balance and speed, stylometry - keyboard handwriting - recognition of the author's individual handwriting when writing on smartphone or tablet, posture analysis, lip identification, palm vein pattern analysis, DNA test, auricle identification [10]. Biometric identification systems consist of two parts:
    1. Hardware.
    2. Specialized security software.
- **Natural language processing, searching and extracting information from texts.** They are used to generate texts that are almost indistinguishable from human ones in style [11].
- **Voice recognition.** It is widely used in call centers. It is also used in education and in the process of learning foreign languages. There are three types of speech recognition errors that affect speech quality:
    1. Replacement - another word is recognized instead of one;
    2. Insert - there is an additional word as a result of the recognition;
    3. Delete - when the word has not been recognized at all.
- **Speech synthesis.** Includes the following options: Changing the style of speech, generating several voices from one model, generating previously unknown voices, transmitting the intonation by model, adapting to the speaker's voice, and others.
- **Machine vision.** Machine vision is the application of computer vision in industry and manufacturing. They are used for counting objects on a conveyor belt, reading serial numbers, or searching for surface defects. Machine vision technology helps equipment see the production process of something, analyze data and make an informed decision. Modern machines already recognize over 90% of objects, which does not only fix the presence but also determine exactly what they see [12]. Such an example is IBM's PowerAI Vision [13].
- **Machine translation.** Depending on the language pair, the subject area, and, in fact, how similar the data used to train machine translation models is, the quality of the results of the different systems can vary considerably [14].
- **Generating text.** Allows the measure of the quality of language models, for example, by the probability of guessing the next word from the previous context (Perplexity Per Word). For example, Google Brain allows many remote correlations to be effectively taken into account due to the original word position coding scheme

using Fourier transform. This is the general seq2seq architecture used in machine translation [14].

- **Dialog systems (chatbots).** They are related to the interaction between man and vehicle (eg cars, buses, trucks, ships, etc.). By purpose, these systems are divided into three groups of chatbots: general purpose, targeted, and those capable of dialogue. Modern intelligent dialogue systems are complex and differ according to their purpose, being divided into three groups: natural language comprehension module (NLU); dialog manager (DM); Natural Language Generating Module (NLG) [15]. There are three indicators for determining the quality of chatbots:
    1. Consumer indicators. They include: the total number of users, active users, included users, and new users.
    2. Message indicators. They include: call start messages, bot messages, general messages, lost messages, and new calls.
    3. Bot indicators. They include retention level, target completion rate, goal/message completion time, number of failures, and customer satisfaction [14].
- **Tonality analysis.** Through this activity, users can determine the speaker's attitude or emotional reaction. They are divided into three types:
    1. Polarity of tonality. This is the main influencing factor.
    2. Custom models. Defines a specific language or jargon. Popular applications are IBM Watson, Meaning Cloud, and Salesforce Einstein.
    3. Aspect assessment of the tonality. It is determined on the basis of the situation.

PERSPECTIVES ON THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND IMPACT ON PEOPLE & LIFESTYLE

Prospects for the development of AI are directly related to the development of computer technology, ICT, electronics, automation, and others [16, 17]. Their application will become more tangible and will be a permanent part of online shopping and commerce (especially during epidemics), healthcare, transport, cybersecurity, and others [18]. AI will turn from a service into a permanent part of people's lives. The change in actual and future people's lifestyles become more and more true, globally the presence of AI is associated with [7].

- Exemption of people from routine activities, replacement or reduction of the intensity of intellectual work in certain professions until complete replacement of specialists from certain professions with intelligent devices;
- Building a digital interactive information technology space where people and thinking machines will collaborate;
- Fully integration of thinking machines such as robots into complex and dangerous places for work, rescue operations and others.
- Making responsible decisions in complex situations and processes;
- Increasing the efficiency of information processing with large volumes of data;
- Improving the quality of assistance in a routine area of everyday life;
- Improving the quality of professional assistance;
- Others.

When talking about AI related to people & lifestyle, we should also take into account the attitude of individuals and different societies on this issue. This refers not only to the purely technical and practical but also to psychological and social aspects, as well as the comfort zone of the individual and others. Generally speaking, it is necessary to take AI into account in people's lives and the necessary ethics [19].

It is clear that Artificial Intelligence is a technology that is evolving along with digitization [20]. People use AI in their daily lives, but they realize that this process of intellectual digitization must be carefully monitored [21]. This requires a responsible attitude from each individual and society.

Many see the impact of AI on humans and lifestyle in increasing human capabilities, but some predict that the growing dependence of people on automated systems will undermine their ability to think independently, take action and communicate effectively with others.

Artificial intelligence has great potential to change a person's life and make it more productive, efficient, and easier. Life will continue to change rapidly and one must be able to adapt to new conditions. Advances in AI will affect what it really means to be human in the 21st century. The changes that AI will bring to life will have positive and negative effects on people's daily lives, as artificial intelligence transforms the world in which we live. Comparing the risks and benefits of what lies ahead is complicated. Here are some of the consequences we need to think about how to deal with, as well as some of the positive effects of artificial intelligence.

Consequences of the implementation of artificial intelligence [22-28].

The positive impact of artificial intelligence on lifestyle:

- Artificial intelligence can improve the efficiency of human work and increase people's free time. If people do work that is more enjoyable for them, it can increase a person's happiness and satisfaction with life.
- AI will present new opportunities and abilities to improve lifestyle, providing technologies and opportunities for people to develop their natural interests and talents.
- With better monitoring and diagnostic capabilities, artificial intelligence can affect healthcare. The potential for personalized treatment plans, for awareness of the person, will change the quality and lifestyle.
- One will gain time and productivity with the introduction of autonomous transport and AI. Without travel to work, people will be able to spend their time in various other ways.
- One will feel more secure. The detection of crimes will increase with artificial intelligence.
- AI virtual assistants who use natural language processing to understand and perform tasks given by people will change lives.
- Automated systems powered by artificial intelligence are changing games and home life.
- AI can keep the family connected and informed with the right data and reduce the mental strain of household management.

- AI will allow for greater individualization, such as training based on human needs and intellectual abilities.
- AI will lead to infrastructure improvements (traffic relief, supply chain improvements, etc.). "

Negative impact of artificial intelligence on lifestyle:

- AI will make the workforce reorient and many people will lose their jobs because of the machines. According to PricewaterhouseCoopers, 7 million existing jobs will be replaced by AI in the UK from 2017-2037, but 7.2 million jobs can be created. Uncertainty and how a person will earn a living are under discussion.
- AI will have economic, legal, political, and regulatory implications that will affect lifestyle. Will people be able to control machines with intelligence in all situations?
- The purpose of AI is to benefit humanity, but whether it will be restricted from crossing ethical or legal boundaries in the work it is designed to do. This is important for the person and his lifestyle.
- Artificial intelligence algorithms are powered by data. This data is collected for each person and the confidentiality of personal information is violated.
- Limiting personal space. The widespread use of AI by large technology companies leads to the destruction of digital privacy.
- Socio-economic inequality. With the disappearance of millions of low-skilled to medium-skilled jobs, the income gap between medium-skilled and high-skilled labour will be huge. According to the UN, "71% of the world's population lives in countries where inequality has risen" and "the share of income that goes to the top 1% of the world's population has increased in 46 of the 57 data countries."

AI raises the question of man's understanding of himself and his freedom. Some people tend to be very conservative because they are not comfortable with technology that takes decisions out of their hands.

The hope is that artificial intelligence will have a more positive than negative impact on humans. He is a model of human activity. Human beings with their will and consciousness remain the source of intentions and the judge of all results. Machines are created to provide ease and efficiency in the journey from intention to an outcome. AI will work to improve human activities and experiences, save time and increase people's life satisfaction.

RESEARCH METHOD AND RESULTS

According to the project HEDY, the task is: “AI People & LifeStyle” two groups were interviewed, (1) experts with professional experience and professors from the Technical University of Varna, (2) non-experts, students at the Technical University of Varna.

FOCUS GROUP WITH EXPERTS

The following statements apply to the experts we invited to the online focus group discussion:

- have a university degree

●their professional status is in areas related to ICT, human-robot interaction, 3D design, and telecommunication networks:
○ working for at least 7 years
○ at least 10 papers published in peer-reviewed scientific journals
○ at least 10 presentations at scientific and professional conferences.
The experts we asked work as professors in the private and public sectors and as professors at the Technical University of Varna.

Demographic description of the expert focus group
women: 2 persons; men: 4 persons; min. age: 29 years; max. age: 59 years; average age: 44 years
Qualifications: computer engineer, telecommunication engineer (3 persons), computer scientist, a mechanical engineer. PhDs: 6

The questions asked to the expert focus group are shown in Table 2.

CATEGORY	N:	QUESTIONS
Introduction	1	What is your experience with artificial intelligence?
Transition	2	Do you have direct experience with AI management?
Key	3	When you think of AI, what is the most important benefit that AI can bring to humanity? And the disadvantage?
	4	How do you define AI in your lifestyle? (people & lifestyle)
	5	Is there currently an impact of AI in your lifestyle?
	6	In your opinion, how do you expect AI to affect people's daily lives?
	7	How should AI be developed in the university learning process?
End	8	Of all the needs we discussed, which one is most important to you?

Table 2: Questions asked to the expert focus group

Content analysis of the expert focus group interview

All of the experts interviewed are professors or external lecturers at higher education institutions and also participate as trainers in the private sector. The experience of the participants in artificial intelligence is professional. In their professional activity, they use it in teaching, 3D design, information, and communication networks as engineers.
Regarding their opinion on the most important benefit that AI can bring to humanity, they believe that there are many benefits from it. Priority is given to the storage of huge databases, which through appropriate algorithms can be used in AI applications. AI also auto-

mates complex processes that keep users active, as well as save time, and increase productivity in conditions of limited resources. AI can replace people working in hazardous areas. It helps a person with information and replaces the person physically in dangerous activities. The disadvantages are different. The main is the possible loss of control over AI by humans. There is a lack of information and research on how much AI can be controlled. Dangerous is human stupidity, which limits the functions of the brain, as well as inaction. Limited human thinking and lack of self-development can lead to human dependence on the presence of artificial intelligence, which leads to a decline in the development of human beings.

Asked how they define AI in their lifestyle, experts define it as good at this stage. They see its development as a means of transparency of certain processes and speed of decision-making. There is also a negative effect – the majority of society has focused entirely on AI, and other major trends and fundamentals in people's lives are ignored.
People lose their sense of true values in life. AI attracts and directs the attention of people in areas where someone blames them, rather than pointing their attention to personal self-development. Makes people more dependent on advertising and external influences. This separates them from the tranquility of life with nature.

Currently, the influence of AI on their lifestyle is partial (professionally and as a consumer). AI is not so well implemented at the moment. When surfing the Internet, they use it through the ads it generates. In the future, they expect AI to affect people's daily lives, depending on the control of the people who run these systems, as well as their permissible application in society. Some professions will disappear.

AI will make people addicted. This will make them lazier and will rely on their intellect rather than their natural intellect. This will make their lives easier, but also deprive them of social communications and closeness between people. The lie will disappear because of the transparency of public information. In some cases, this will have a positive effect (for people who understand or have an idea of AI), and in cases where people are not aware of AI (have superficial information about AI from the Internet, television, etc.), it is likely to have a negative impact.

The discussion was about how AI should be developed in the process of studying at the university. The comment was that the education system and universities, in particular, need to adapt to current global trends, where AI will expand its presence. Students must have personal knowledge as well as some professional skills related to AI.

It is important to learn from people so that they do not accept artificial messages as reality. AI should be presented in the learning process, but only with the presumption that students will continue research (engineering) work in this field.

Of all the needs that were discussed, the most important for the experts was to have control over AI and ethical standards. Important are the technical aspects of AI – high-speed decision-making and transparency for society, the role as a human supporter. It's important to replace the person in dangerous activities and as a source of information is an important application of AI, as well as the control and automation of processes that a person neglects during his dynamic daily life.

FOCUS GROUP WITH NON-EXPERTS

The focus group consists of students of Industrial Design and Safety Engineering at the Technical University of Varna. We have formed a group of students who have taken

course "3D design". Students who have taken the course have been invited to participate in a focus group discussion on the challenges, opportunities, risks, and future of artificial intelligence. 15 full-time students responded to our invitation.

Demographic description of the focus group
women: 11; men: 4; min. age: 20; max. age: 24; average age: 22

Questions asked to the student focus group are shown in Table 3.

CATEGORY	N:	QUESTIONS
Opening	1	Tell us your name and place of employment or employment status if any.
Introduction	2	Have you ever participated in a Focus Group?
Transition	3	What is your first association with the term Artificial Intelligence?
	4	Can you give us an example of an interaction you have had with AI?
Key	5	When you think about AI, what is the most important advantage AI can bring to humanity?
	6	Do you see any risk related to the adoption of AI on a large scale in the future?
	7	There are some concerns about the possibility that AI may "robot-ize" humanity, do you have an opinion on that?
	8	When you heard the term AI governance… what do you think it is?
	9	Do you think it should be a legal framework to regulate AI or it needs to be as open as possible?
End	10	What do you think is the missing information about AI? I mean, if you want to get insight into AI, what do you like to learn?

Table 3: Questions asked to the student focus group

Analysis of the content of the discussion in the focus group

The members of the focus group said that they have no experience with artificial intelligence and their first association with the term is the use of sound commands in the smartphone - Siri Voice Assistant on iPhone and this helps them in everyday life. They associate it with an algorithm, the inclusion of many technologies, hard work, and art. For some, it is a maintenance tool/program designed to maintain already established knowledge, a group of instructions that change in real-time according to input parameters. AI is a program that evolves over time and recognizes objects in the video cameras of smart devices, as well as optimizes the operation of the devices through the data collected by them, which

are subsequently analyzed and optimized by AI. Artificial intelligence is the intelligence demonstrated by computers, it is also the science of concepts in computer science that makes computers capable of performing tasks that can be considered intelligent. AI is convenience, automation, a robot, or a robotic object.

We asked them to give us an example of the interaction they think they had with AI. The answers were Siri or another voice assistant. 30% say they do not have such an interaction. They include Google and nVidia forecasting machines, Google Assistant and site cookies, hacking attacks, sculpting programs, various online communication systems such as chatbots, and a robotic vacuum cleaner.

About what is the most important benefit that AI can bring to humanity and what are the disadvantages, they believe that there are many advantages, but so far more disadvantages. Helps a person in everyday life, but facilitation would lead to habituation. If people use AI in more difficult situations and if one does not have AI, a person can panic. There are possibilities for mistakes - if there are sound commands and the person does not have good diction (or AI is not tuned to the speech of that particular person), errors can occur.

The benefit is for industrial automation, to develop the economy, huge calculated power in real-time. The advantage is that some unpleasant and dangerous tasks that people perform at work will be automated, bringing convenience, and saving time in which a person can develop in another direction. In this hectic daily life, he can do housework for us, such as cleaning. The disadvantage is that the emotion is exhausted, a person can get used to AI and this can affect his health - desocialization. Global job losses are also possible - with the collapse of the economy we are seeing, people will lose their jobs. Artificial intelligence aims to completely replace human actions that are not considered completely normal, leading to the devaluation of human labor in the middle statistical sector. certain goals, ie the performance of some machines will be optimized. There may be less and less need for human precision at the expense of machines, but it is possible that there will be a bug in the system.

Answering whether they have heard of AI control and what they mean by that, they say they have heard the term and believe that it is controlled using artificial intelligence, complex process automation, or a stand-alone automotive robot in production. Some believe that AI management is the work done by artificial intelligence, real-time management scripts, or a mobile network, such as AI network management. They associate this with car manufacturing robots and a camera that needs to take clearer pictures at night. For them, the management of AI is primarily a substitute for human resources, a program that manages mostly alone, studying the process. It is a computerized control and automatic service system, using a huge database of possible situations, which takes us through a service based on constant criteria and requirements, based on our specific desires for certain parameters. The work of individual researchers and the solution of specific tasks leads to differences in the approach to building artificial intelligence, as well as the use of completely different, sometimes incompatible technical means. They don't remember where they first heard of the term.

When asked if they need artificial intelligence in their lifestyle, it became clear that about 40% answered yes, 25% said they do not see the need, and others - to some extent, can do without AI, but do not see any problem with it and to use it. The answer is that it

would be useful to automate some commonly used services, for example, much of the bureaucracy.

When commenting on the current impact of AI on their lifestyle, students felt it was relative. It is primarily through the phone or computer. The presence of such automation gives them more convenience, especially when physical actions are slow and/or incompetent. They emphasize the use of AI in sites that select and offer products in the ads that interest us. They have a negative impact on filtering spam information created by AI. One-third believe that AI has not yet affected them.

According to them, they expect AI to affect people's daily lives in different ways, but above all successfully. The impact will be bipolar - younger people will adapt more easily and quickly to automated systems, and older people will find it increasingly difficult to keep their skills and knowledge of working with them up to date. The impact of AI will be more intense in the future. AI will give people more time for themselves. It can make life easier to some extent, for example, it will be useful for people with disabilities or people with diseases, and it can make life easier for them and their loved ones (if they are not alone). Some students expect it to have a negative impact on humanity. So far, technology is weak, but it will intensify in the near future, especially in marketing techniques. The social impact will be positive, but the economic one will be negative.

For better or worse, AI definitely has and will have an increasing share in our daily lives in the future, based on the path of development we have generally chosen directly or indirectly. So it is good to have professionally trained staff in this line of thinking. However, it is desirable that people are familiar with the mechanical implementation of processes that are automated. It would be good to have an elective discipline to teach.

Finally, there was a discussion about what was important to them. The answers were: the disadvantages of AI; to study AI in the learning process so that more people know what it is and what it is used for; possible dangers; automation for people who need extra care. The opinion was expressed that it is important to emphasize that it is good for factories or similar, but that we need to pay more attention to people who need help in their daily life. The interaction and help of artificial intelligence for man are important. It saves time from the same recurring obligations to use some services, for example. As well as AI gives a lower probability of errors, assuming that automation can offer it. However, these processes should definitely be monitored by informed and trained staff. AI is also important for improving the learning process. The study of the possibilities for creating such programs or devices, called intelligent agents, is the subject of a separate section of computer science. Optimizing AI performance and practical application were also of interest.

CONCLUSION

The present study presents in a compact form significant applications of artificial intelligence in people's daily lives. In a systematized form, priority areas of the presence of artificial intelligence are presented, where it directly or indirectly affects the way of life. Concentrating directly on the academy, education, and science, a study is carried out on the significance, presence, and necessity of artificial intelligence, referring to university experts and regular students.

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