Combating Disinformation and Building Security Awareness in Using Artificial Intelligence among Young People

TECHNOLOGIES OF TOMORROW

Collective Work Edited by
Antonio Paolo Miccoli
Michał Żadkowski

Funded by the European Union

ENABLER

TECHNOLOGIES OF TOMORROW
Combating Disinformation and Building Security Potential in the Use of Artificial Intelligence by Young People

Publisher:
AGIFODENT Asociacion Granadina para la información, formación y desarrollo de las nuevas tecnologías
Calle Sta. Ana, 1
18190 Cenes de la Vega, Granada,
Spain
In collaboration with:
Enabler Foundation
Cegielniana 3L/2
84-230 Rumia,
Poland

Collective Work Edited by
Antonio Paolo Miccoli
Michał Żadkowski

Granada 2024
First Edition

Funded by
the European Union

The presented publication is the intellectual result of the project **"Technologies of Tomorrow - Combating Disinformation and Building Security Capacity in the Use of Artificial Intelligence by Young People"** coordinated by the Spanish association AGIFODENT - Asociacion Granadina para la información, formación y desarrollo de las nuevas tecnologías, co-financed by the Erasmus+ Program under ACTION 2 Partnerships for Cooperation – Small-scale Partnerships (KA210-YOU) within the Youth sector of the Erasmus+ program, project number 2023-1-ES02-KA210-YOU-000164824.

The project partner was the Enabler Foundation.

The publication has been prepared in three languages – Spanish, Polish, and English.

Artificial Intelligence has been used to aid the creation of this publication.

Spis treści

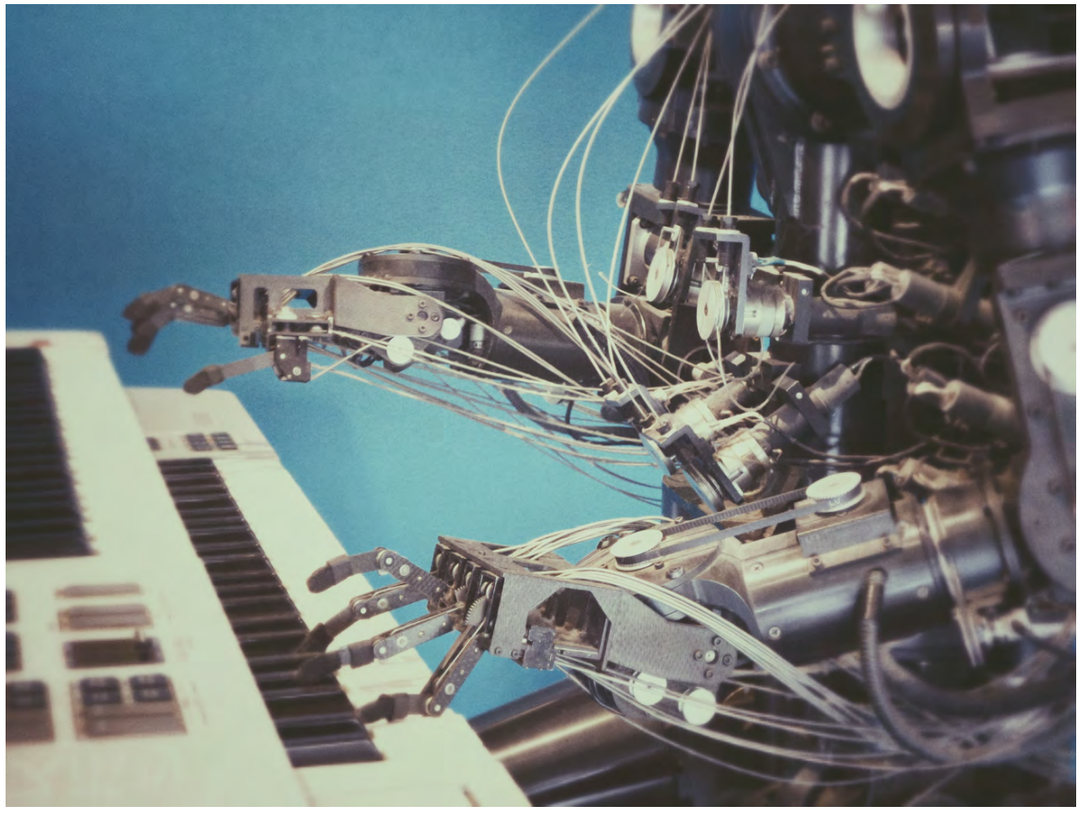
In the preamble of the project "Technologies of tomorrow combating disinformation and building security capacity in the use of artificial intelligence by young people," the partners included information that the year 2022 brought a kind of breakthrough in the field of artificial intelligence (AI), marking a turning point in technological development.

Although work on projects utilizing the potential of AI has been ongoing for years, November 2022 was a particularly significant moment in terms of their social "popularity" the release of the ChatGPT 3.5 model by OpenAI was an event that contributed to a rapid increase in interest and the number of projects related to the implementation of artificial intelligence.

The partners, citing data from the cyberdefence24.pl portal, state in the application that within just five days of its launch, ChatGPT gained such popularity that its number of users equaled the annual result of Facebook. This achievement demonstrated how quickly AI technology can attract the attention and interest of society, especially young people.

Further in the project, we can read that in addition to so-called chatbots, tools for working with images, sound, and video that used advanced artificial intelligence algorithms for analyzing, generating, and processing multimedia were also extremely popular in 2022.

The availability of the aforementioned technologies opened up new possibilities for the development of creativity and innovation in various fields, ranging from art to science.



How has the availability of new tools affected young people?

For young people, artificial intelligence not only represents a fascinating field for exploration and creative development but also opens doors to unlimited possibilities in the realm of technology. With the dynamic technological progress and a deepening understanding of the potential of artificial intelligence, young people are becoming key "players" in shaping the future of this field.

One of the most significant aspects of teenagers' engagement with AI is their ability to discover new applications for this technology. Thanks to their mental flexibility and openness to new ideas, young people can look at AI from a completely new perspective, leading to the emergence of innovative solutions and applications.

They can use their creativity to solve social and environmental problems by creating intelligent systems that will support people in everyday life, for example, by reducing greenhouse gas emissions, improving public health, or providing better access to education the possibilities are truly endless!

However, the key role in the development of artificial intelligence is played primarily by reliable education of young people. AI-oriented curricula should inspire young people to explore this field in a practical and critical manner.

We also cannot forget about the role of youth in shaping the ethical framework for artificial intelligence. As AI becomes more widespread, it is important for teenagers to be aware of the potential risks associated with its misuse and unlimited trust in the content it generates, which is not always true.

However, along with the rapid development of artificial intelligence, societies have also faced new challenges, particularly in the area of education, including non-formal education in the youth sector.

Valuable educational activities in the field of AI should consider not only teaching the technical aspects of this technology but also (and perhaps even primarily) issues related to data security, disinformation, and ethics in the context of using artificial intelligence.

The European Commission emphasizes that artificial intelligence can contribute to solving many social problems, but at the same time points out the need to ensure high-quality technology and social trust through appropriate legal regulations and education.

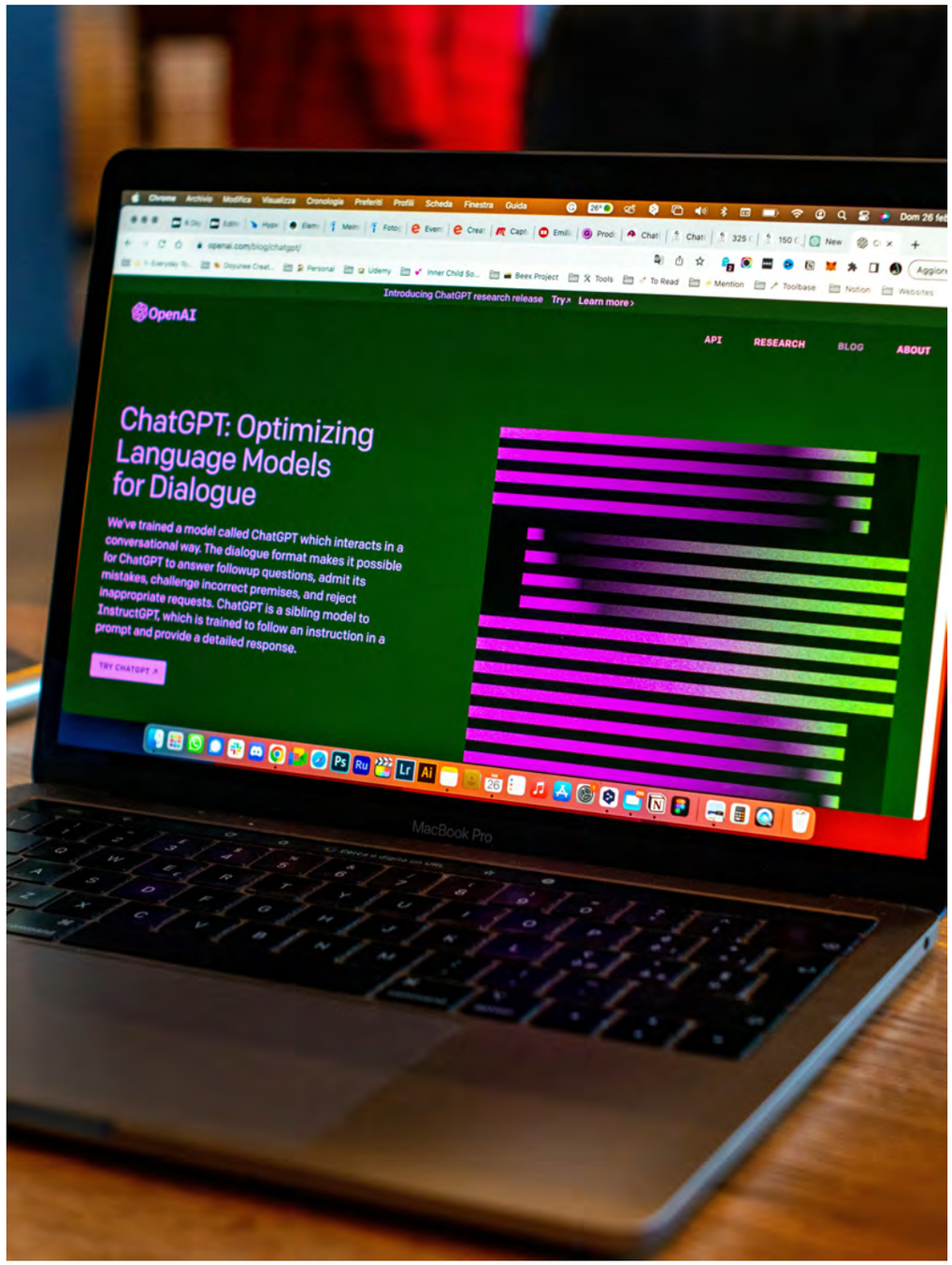
In response to these challenges, educational projects in the field of artificial intelligence are playing an increasingly important role, such as the initiative "Technologies of tomorrow combating disinformation and building security capacity in the use of artificial intelligence by young people" implemented by the partners.

The main goal of the project is to promote practical applications of AI in non-formal education of young people by developing and scaling educational tools dedicated to trainers who work to improve the digital competencies of youth. The project also aims to provide them with appropriate tools and knowledge needed to effectively use AI technology. The partners pay special attention to working with youth with special needs to ensure their equal access to digital and technological education.

Good practices developed as a result of the eight-month Spanish-Polish cooperation have been cataloged in this publication it consists of 5 main parts that provide basic knowledge on the application of artificial intelligence. They have been supplemented with a short introduction and summary, as well as 7 worksheets for teenagers that youth trainers can use for educational work.

The introduction to the publication contains a brief historical overview of the culmination of work carried out over the last several decades in the field of artificial intelligence. The authors examine the most important achievements from the 20th and 21st centuries. Then, a simple explanation of the differences between models is provided, along with an example classification of available AI models. The next part of the introduction is devoted to sample applications of artificial intelligence, such as automation and optimization of educational processes, or personalization of medicine and therapy. In this section, the authors show that AI can have versatile applications, also in everyday life. The introduction concludes with a short debate "Do we need to fear that AI will take our jobs? Or will it make them easier for us?", which presents arguments in the dispute over whether the impact of artificial intelligence on the job market is beneficial or destructive for us.

Part One (AI in text work) is divided into three sections: Examples of currently available models, Prompt what is it and how to create it in text work? Its impact on the quality of responses, and Who is the author of text written together with AI?. In this part of the publication, the authors examine how enormous the potential of AI is in working with text.



The reflections in Part One conclude with a section where the authors of the publication provide methods for checking whether given content was generated by AI.

Part Two of the publication (AI in image work) was designed with the aim of presenting in detail the role and impact of artificial intelligence in image creation. The structure of this part is similar to the previous chapter, but this time it focuses on specific aspects related to images rather than text. We begin our considerations by citing examples of currently available models in this section, we present an overview of existing AI models that specialize in working with images. We discuss various algorithms such as GANs (Generative Adversarial Networks), VAEs (Variational Autoencoders), and recent advances in transformer-based models that have achieved breakthrough results in generating high-quality images. Examples include OpenAI's DALL·E, Google's Imagen, or Midjourney, each representing a unique approach to image generation, their applications, and limitations.

Next, we devote attention to the prompt again reminding what it is and how to create it in image work. In this part, we focus on the role of textual commands that guide the AI's image generation process. We discuss how to construct effective prompts that precisely convey intended visions, paying attention to word choice, detail, and context. We cite examples of successful and less successful prompts, demonstrating how subtle changes in formulation can significantly affect the resulting images. We analyze how the prompt influences the image generation process, showing that it is more than just a simple command. It serves as a "guideline for AI," defining the style, theme, and even composition of the image.

We then move on to the issue of authorship debate in the context of AI can the creator of the model, the person creating the prompt, or the machine itself be considered the author of the image? We present different points of view, legal precedents, and how these issues affect copyright and ethics in digital art.

The summary of the second part of the publication is a short fragment on "Fake news and AI" we close the chapter with a series of reflections on the potential role of AI in the production and dissemination of fake news through generated images.

We provide guidance on how to recognize images created by AI, drawing attention to characteristic features and anomalies. We catalogue known cases of disinformation using generated images and consider the future of this technology as a tool in the fight against disinformation.

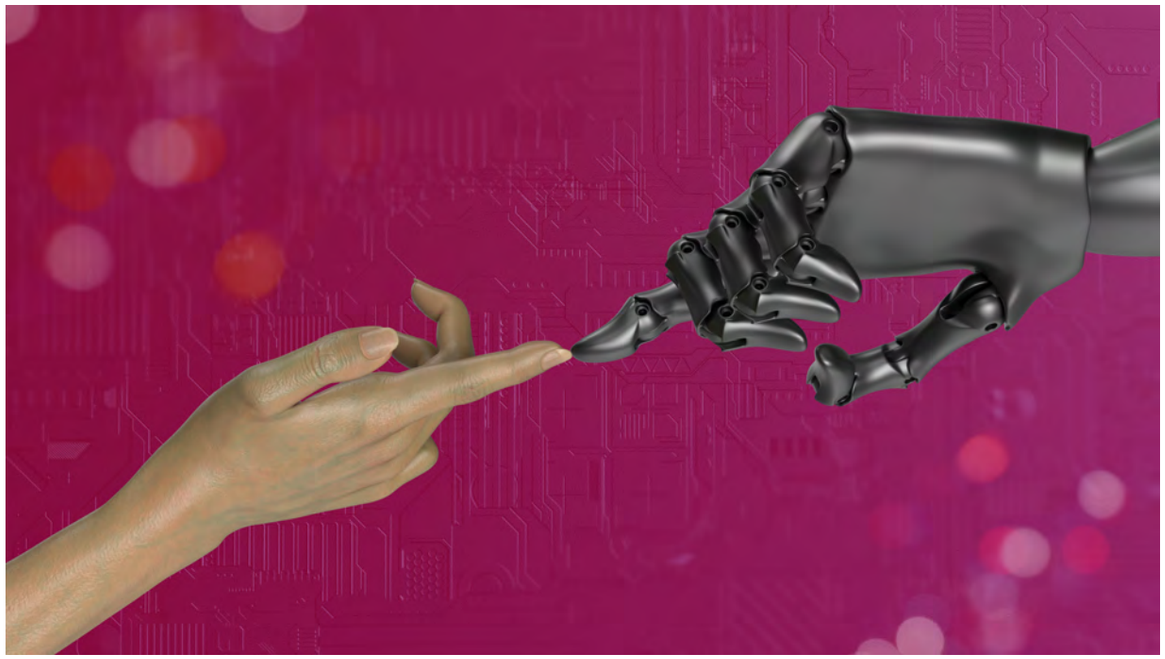
In the third part of the publication, titled "Other interesting examples of AI services" we aim to show youth trainers the potential of artificial intelligence in creating new forms of artistic expression and facilitating work in various fields. We begin our considerations with the use of AI in music creation. We present several example tools that can generate new musical pieces based on given styles or imitate specific genres and artists. We analyze how the creative process changes when collaborating with algorithms, noting both the creative possibilities and ethical challenges related to authorship and copyright.

Next, we present another interesting way of using AI to "bring to life" old family photographs, which is made possible by tools such as Deep Nostalgia from MyHeritage. We demonstrate how technologies can enrich family heritage, adding a new dimension to static photos through facial animation, giving them life. We also discuss the potential emotional and ethical implications of such technologies.

We then turn our attention to the use of artificial intelligence to create an effective (and impressive!) webinar. This section is dedicated to innovations in webinar creation, where AI can serve as a tool for generating virtual presenters. We discuss how to use available platforms to create advanced presentations with virtual characters that can imitate human behaviors and interactions, making the material more engaging. We point out tools that enable personalization of the appearance, voice, and gestures of virtual presenters, which opens up new possibilities for webinar organizers and youth educators, as well as for teenagers themselves.

The next fragment of the third part is devoted to the topic of using AI for film editing we conclude the third part with an overview of AI tools supporting film editing, where artificial intelligence can automate editing, improve image quality, and even generate special effects. We show how these technologies speed up the film production process while maintaining a high level of creativity. Additionally, we provide interesting examples of film productions in which creators have utilized the potential of AI. The content is supplemented by reflections on the role of AI in the context of disinformation, particularly in film production and analysis. We discuss strategies and technologies for verifying the authenticity of video materials, as well as educating users about the possibilities of image and sound manipulation.

Part Four (AI what else should we know?) complements the practical information about artificial intelligence. The authors included information about generative AI and models that can improve themselves "learn".



Part Five of the publication (Safety and countering disinformation in the context of working with AI) focuses on key aspects of safe use of AI technology and strategies for countering disinformation. This section aims to equip readers with the knowledge and tools necessary for responsible use of AI, highlighting both the potential and risks associated with its use.

The authors begin by presenting basic safety principles that should be applied when working with AI. These include protection of sensitive data (discussing methods of securing personal and sensitive data processed by AI systems; we draw attention to the importance of encryption, data anonymization, and the use of security protocols to prevent unauthorized access and information leaks) and protection of image and privacy (discussion on tools and practices ensuring privacy protection and image of people whose data is used by AI systems; we address legal issues regarding consent for data processing and possibilities of control over how it is used).

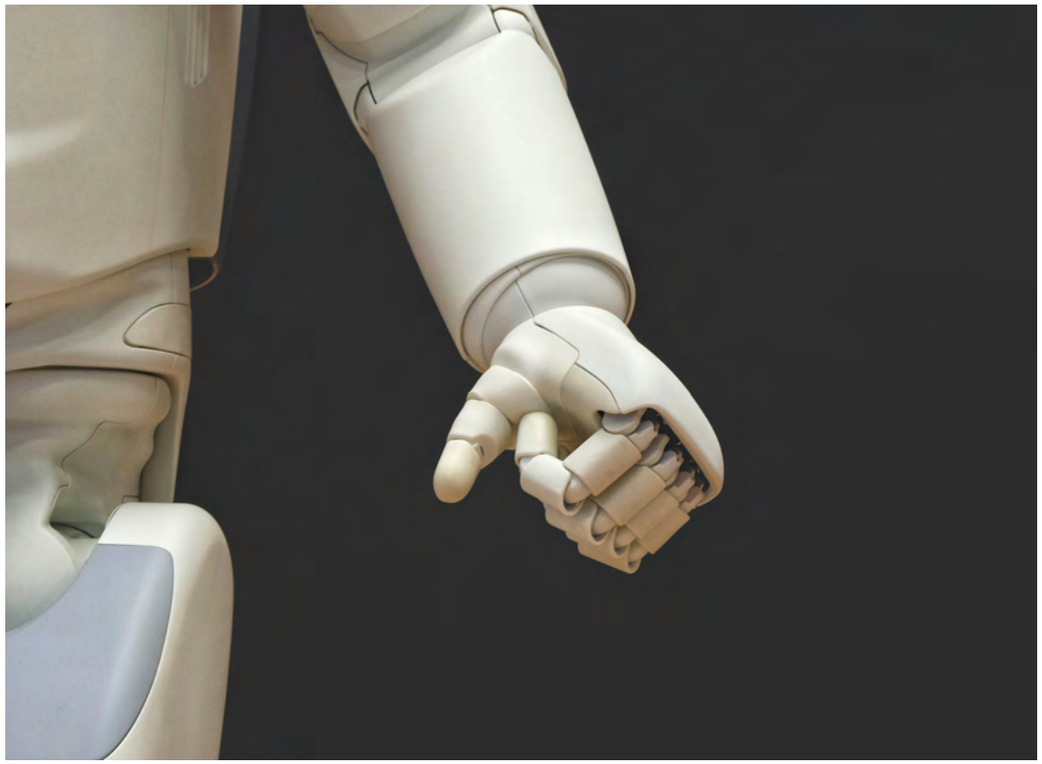
Next, in the fragment "AI as a tool, not a panacea," the authors remind that artificial intelligence, although increasingly advanced, is still a tool created by humans for humans. They emphasize that it depends on us, the users, how we will utilize its potential. They discuss the importance of an ethical approach to designing and implementing AI systems, pointing out the need for conscious and balanced use of these technologies. They consider how important it is to reflect on the moral and social implications of their applications.

In the last part of this section, we discuss in detail the issue of disinformation in the context of working with AI. We once again present methods for identifying false information generated by AI, including tools and techniques used to verify the authenticity of content (text, image, video). We discuss the role of education and digital awareness in recognizing and countering disinformation, emphasizing the need to develop critical thinking skills in the digital world, focusing on youth.

The summary of the publication is divided into two parts. In the first one "Are we in the midst of a revolution?" we consider whether the moment we are currently in is indeed a historical breakthrough.

AI, with its ability to learn, adapt, and perform tasks with unprecedented precision and efficiency, opens new horizons of possibilities, but are we dealing with a revolution? We conclude our reflections with the fragment "Potential threats and opportunities," in which we emphasize that wisely used AI can be a source of enormous opportunities and possibilities for humanity it is, after all, an example of the titular "TECHNOLOGIES OF TOMORROW". Innovations in AI can contribute to solving some of the world's most pressing problems, including the climate crisis, diseases, or educational limitations. Artificial intelligence has the potential to significantly improve the quality of life, streamline production processes, intensify scientific research, and enable new forms of artistic expression. Additionally, it is constantly evolving, so the opportunities for its use will increase day by day.

On the other hand, working with the potential of artificial intelligence also brings challenges and threats. Issues such as data privacy, cybersecurity, ethical dilemmas related to automation and machine autonomy, as well as the risk of disinformation and manipulation, are serious problems that require attention and specific educational actions, especially for young people, who constitute a group extremely susceptible to manipulation.



At the turn of the last century, we witnessed a true technological revolution centered around computers and their unprecedented potential for use. In just a few decades, computers and the Internet have revolutionized virtually every aspect of our lives. Today, it's hard to imagine daily life without access to the global network. The Internet has become not only an essential tool for seeking information or conducting social life but is also crucial in education and professional life. The digital revolution has transformed the way we learn, work, and communicate on an unprecedented scale.

We observe a similar pattern with artificial intelligence. Although just a few years ago it seemed that AI was something reserved for scientists or known from science fiction literature, today this technology is becoming ubiquitous. Artificial intelligence, like the Internet, is transforming our lives in ways that until recently seemed unimaginable. From personal assistants to advanced medical decision support systems, AI is becoming a tool without which it's difficult to imagine effective functioning in many areas.

However, with the growing influence of artificial intelligence on our lives, there is also a need for a responsible approach to using this technology. Especially the young generation, growing up in an environment of advanced technologies, needs guidance in understanding how to use AI in a way that is both wise and beneficial to themselves and society.

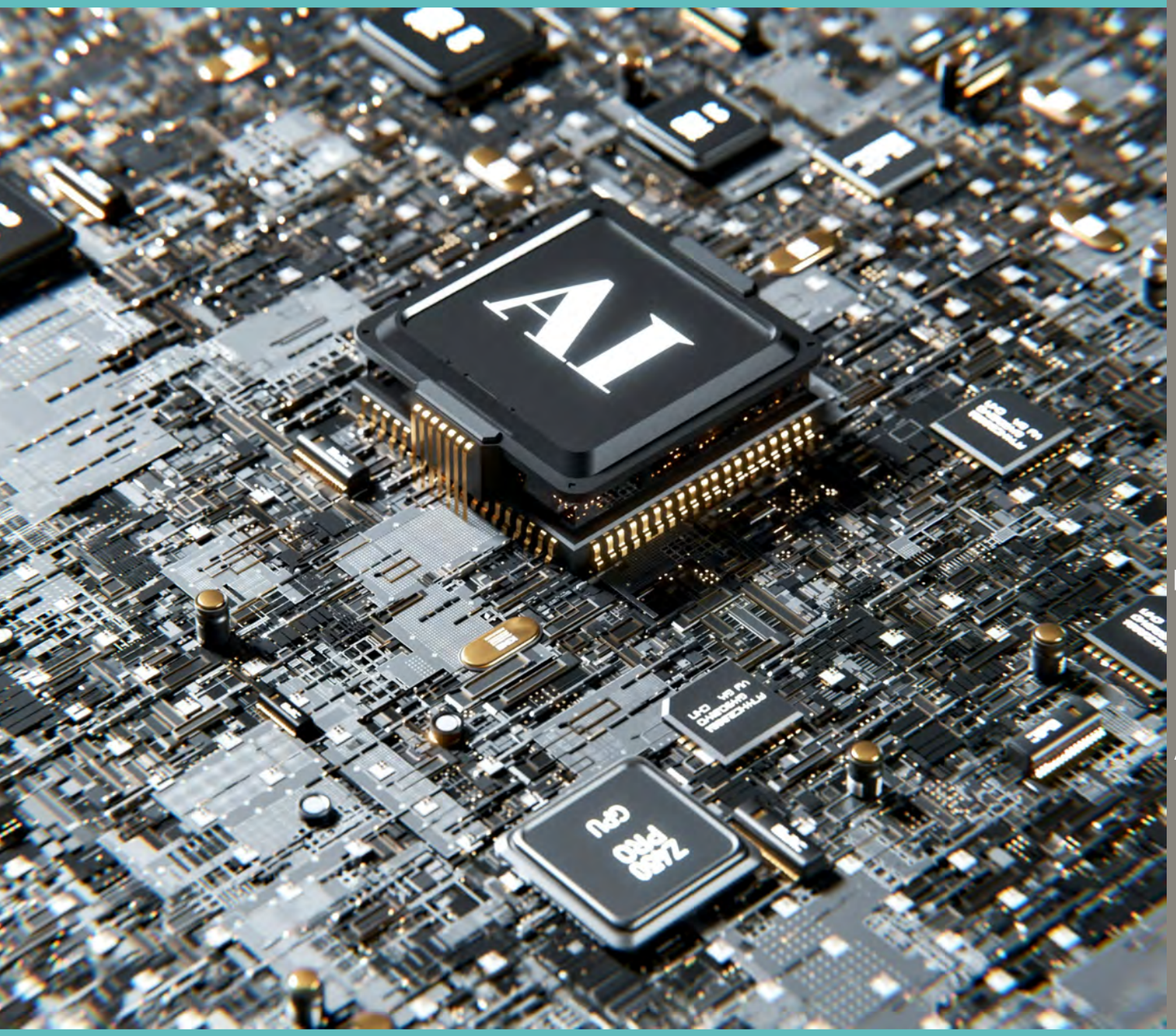
This task rests primarily on educators, teachers, and youth trainers. It is a crucial moment to instill in young people the ability to think critically, exercise skepticism, and reason logically in the context of technologies that, although promising, are still tools created by and for humans.

Our role as educators in this context takes on particular importance. We not only have the task of teaching young people how to use artificial intelligence effectively and safely but also how to develop it in a way that supports social progress and the ethical use of technology.

We have made every effort to ensure that the publication we are presenting to you becomes a useful tool in the education process of the younger generation. We want to prepare them not only for life in a world where technologies like AI play a key role but also for actively and consciously shaping that world.

This is the goal of our work to equip young people with the knowledge and skills necessary to navigate a dynamically changing technological environment, which is essential in shaping the so-called "technologies of tomorrow."

We wish you fruitful work with the materials!



Introduction to Artificial Intelligence

Historical overview

Contrary to popular belief, artificial intelligence (AI) has been with us longer than most might think. The common perception of AI as a product of the latest scientific achievements does not fully capture its history and development, which is significantly longer and more complex. The history of artificial intelligence dates back to the 1940s. Let's trace a brief historical outline of the research and developmental work that has taken place in the field of AI over the past several decades.

Beginnings (1940-1956)

In the past century, Alan Turing, a prominent British mathematician, proposed the idea of the Turing machine, an abstract model of a computer. The Turing machine could simulate any algorithm and provided a theoretical foundation for the development of computers. Turing also developed the Turing test, an attempt to assess a machine's ability to imitate human intelligence, which was fundamental to the development of artificial intelligence. This test aimed to examine whether a machine could exhibit behavior indistinguishable from that of a human. Shortly thereafter, in 1956, the field of artificial intelligence research was formally initiated at the Dartmouth Conference. This was a moment when a group of scientists from various disciplines united to explore the possibilities of "machine learning." The participants of this Dartmouth College Conference began to formulate the first concepts and algorithms that laid the foundations for future AI research.

You can read more about the Turing machine here:

Early Development (1956-1974)

In the 1950s and 60s, the first computer programs utilizing artificial intelligence were created. Among these was the Logic Theorist (1956), developed by Allen Newell and Herbert A. Simon, which could solve problems using logic. Another significant milestone was the creation of the first simulation of human personality—ELIZA, developed by German computer scientist Joseph Weizenbaum in 1966, which simulated a conversation with a psychoanalyst. This program was one of the first examples of natural language processing (today, we would say it was simply the first chatbot capable of conversing with humans; ELIZA conducted several "therapeutic" conversations with patients, acting as a psychotherapist).

The early 1970s saw both theoretical development and the first practical applications of AI, including speech recognition and image analysis. During this time, logicand rule-based models, known as "expert systems," also developed. These were used in various fields, from medicine to engineering.

The AI Winter (1974-1980)

The mid-1970s marked the beginning of the first AI winter (the second occurring from 1987-2000), a period characterized by limitations in funding and enthusiasm for AI. This was due to the overestimation of AI technology's capabilities and the failure to meet many ambitious promises. Many governments and research organizations began to cut funding for AI research, which slowed its development.

During this time, the AI field faced numerous technical challenges, such as hardware limitations, a lack of sufficiently large datasets, and difficulties in creating algorithms capable of generalizing knowledge beyond very narrow areas.

Revival and Development (1980-1987)

The 1980s saw a resurgence of interest in AI, partly due to the commercial success of expert systems, which found applications in various fields such as medical diagnosis, geology, and finance, becoming symbols of AI's practical value. These systems were capable of mimicking the decision-making abilities of human experts, making them valuable tools in professional environments.

Also in the 1980s, new methods began to be explored, such as neural networks and genetic algorithms, which later played a key role in the development of AI.

Second AI Winter (1987-1993)

During this period, there was a renewed slowdown in AI development, caused by difficulties related to scaling expert systems and technological limitations. Many large corporations withdrew their support, leading to reduced research funding.

Era of Deep Learning (1993 to present)

In 1993, Yann LeCun developed convolutional neural networks (CNN), which revolutionized image processing and pattern recognition, especially in handwriting recognition. In 2006, Geoff Hinton introduced the idea of deep learning, which significantly advanced AI. This technique enabled the effective training of multi-layered neural networks, revolutionizing many fields such as speech recognition, natural language processing, and image analysis.

The last decade has brought tremendous progress in the field of AI. The development of technologies such as TensorFlow and Keras has facilitated the creation and deployment of AI models. Artificial intelligence has begun to play a key role in many aspects of daily life, from personalized recommendations on internet services to self-learning algorithms in autonomous vehicles.

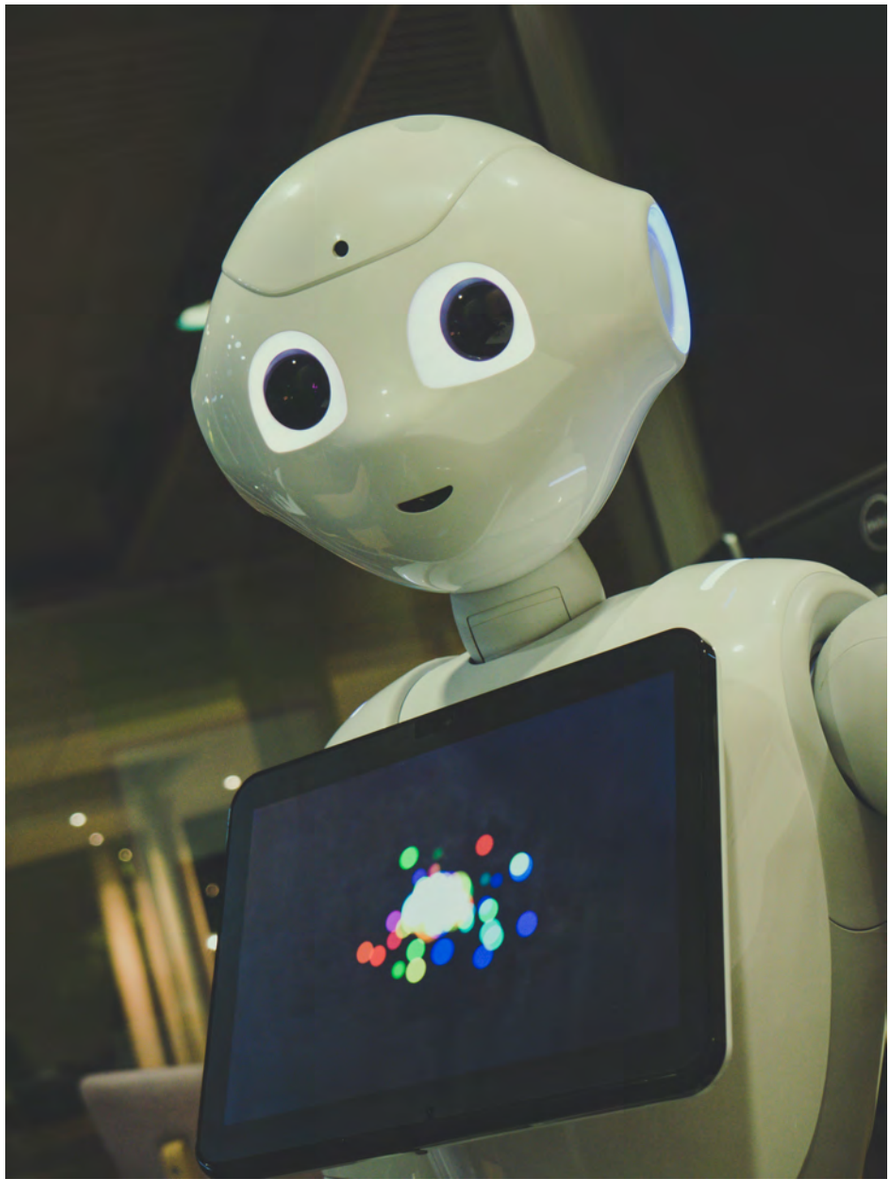
Summary

The development of artificial intelligence has gone through various phases—from periods of great enthusiasm and hope, through so-called "AI winters," when interest and research funding drastically declined due to unmet expectations. Despite these obstacles, continuous progress in mathematics, computer science, and increasing computational power has enabled the development of more advanced AI algorithms and models.

In recent years, thanks to breakthroughs in machine learning and deep neural networks, artificial intelligence has achieved an unprecedented level of capability, from speech and image recognition to self-learning algorithms capable of defeating human champions in complex strategic games such as chess.

Moreover, we are now witnessing the integration of artificial intelligence into everyday life on an unprecedented scale. AI assists in analyzing medical data, optimizing urban traffic, personalizing online shopping experiences, and is present in many other aspects of our lives. This is possible thanks to decades of work by scientists, engineers, and entrepreneurs who have continuously strived to develop and implement innovations in the field of artificial intelligence.

The achievements in the field of AI, although spectacular, are the result of decades of research and gradual progress, not sudden breakthroughs.



A simple explanation of the differences between the models

An artificial intelligence model is essentially a computer program that mimics the human ability to learn, reason and decision. AI models can learn and adapt, performing tasks based on data and experience, without having to program every possible action in detail.

There are many types of AI models, which can be classified in different ways, such as by their capabilities, learning approach or application. Below is one of the classifications.

- Simple algorithmic models

These are early forms of AI that rely on a set of predefined instructions. Although less complex, they are still used in many basic applications.

- Neural networks and deep learning

These are more advanced forms of AI that mimic the way the human brain works. They make it possible to solve complex problems such as speech recognition and image processing.

- Generative vs. discriminative models

Generative models are used to create new data that is similar to that on which they were trained. Discriminative models, on the other hand, are used to distinguish and classify data

- Hybrid and specialized models

These include combinations of different techniques and are tailored to specific, often highly specialized applications.

Applications of different models

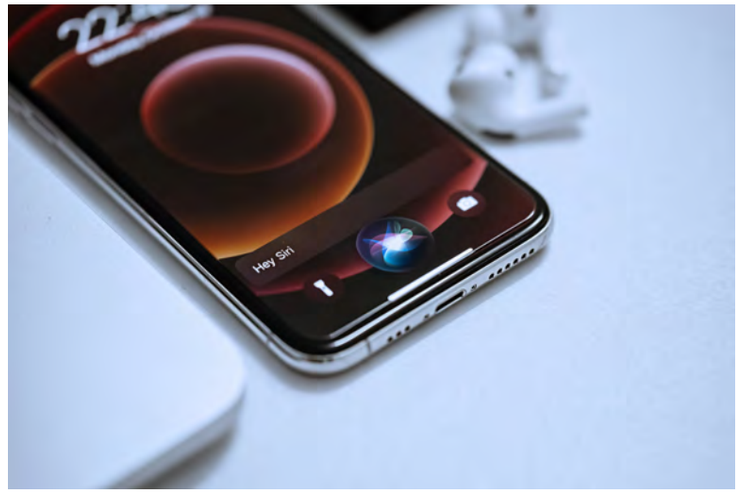
In order to better understand the types of AI models mentioned on the previous page, let's look at their practical applications.

Simple algorithmic models are used in systems where fast and clearly defined answers are required, such as in simple financial applications or quality control systems. While they may seem outdated compared to more advanced AI technologies, they still play an important role in everyday applications. One of the most classic examples is the T9 system used in old cell phones. T9, short for "Text on 9 keys," is a text prediction technology that was revolutionary in its time. It allowed users to type words and phrases on a numeric keypad, pressing each key only once per letter, instead of several times as was required in the traditional multiple-key system. The T9 algorithm was based on a dictionary and a simple statistical model that analyzed the sequence of keystrokes and predicted which word one was most likely to want to type. Although the system was simple, it required a great deal of work in terms of data collection and creating an effective dictionary, which it would suggest the word to the user. With T9, typing on a numeric keypad became much faster and more convenient, which had a huge impact on mobile communications at the time. T9 was also a milestone in the development of text prediction technology, which we now see in much more advanced forms, such as smartphone keyboards and voice assistants.

Another group of categories outlined on the previous page **(neural networks and deep learning)** is finding its way into more complex tasks, such as natural language processing, image recognition, and autonomous vehicles. In the field of digital photography, especially in facial recognition, neural networks and deep learning have brought a real revolution. Today's cameras and smartphones use advanced AI algorithms to identify faces in photos, allowing for automatic focus and exposure. This technology, although it seems complicated, is based on principles that can be easily understood by looking at its basic components.

Face recognition uses deep neural networks that are trained on huge datasets containing human faces. In this way, the networks learn to identify patterns and characteristics of human faces, such as the shape of the eyes, nose or mouth. As a result, when a camera "sees" an image, its AI algorithm can quickly and accurately identify the faces in the photo and adjust camera parameters accordingly. The development of this technology has had a huge impact on the quality of photos. Thanks to automatic face recognition, even amateurs can take high-quality photos in which faces are always sharp and well-lit. What's more, this technology has opened the door to further innovations, such as identifying emotions in faces, which has applications not only in photography, but also in surveillance systems or human-machine interaction.

Voice assistants such as Siri, Alexa and Google Assistant, on the other hand, are excellent examples of the application of both **generative and discriminative models** in AI. Assistant systems need to understand human speech (discriminative model) and generate responses in natural language (generative model). This process starts with analyzing the user's voice. When you ask a question, the system processes the audio and converts it to text using the discriminative model. This model has been trained to discriminate between different sounds and interpret them as words and sentences. Then, once the text is understood, the generative model comes into play. Based on the understood text, the system must generate an appropriate response. It's not a simple matter of finding the answer in a database; the system must create answers that are consistent, natural and fit the context of the question, which requires enormous computing power and advanced machine learning algorithms that can analyze huge amounts of data and learn to generate human responses. Applying these two types of models to voice assistants shows how different AI techniques can work together to create something that appears truly "intelligent"-enabling users to interact with the technology in a smooth and natural way.



Streaming services such as Netflix, Spotify and YouTube are using **hybrid AI models** to deliver personalized recommendations to their users.The systems used combine a variety of machine learning techniques to analyze data from multiple sources and deliver content tailored to individual preferences. The process begins with gathering data about users' interactions with the platform what movies they watch, what music they listen to, what content they rate positively or negatively. Then, using techniques such as natural language processing, image analysis and machine learning algorithms, the systems create complex user profiles. Based on these profiles, recommendation algorithms work to tailor content that can match individual tastes and interests. For example, if the system notices that a user often watches science fiction movies, it will recommend similar titles to him. But it's not a simple matter of searching for every science fiction movie in the database. The algorithms are sophisticated enough to identify subtle patterns, such as preferences for specific directors, narrative styles or themes. It's even possible for the system to detect interest in films from a specific era or region of the world, tailoring recommendations even further.

Hybrid AI models demonstrate how a variety of techniques can be combined to achieve more complex and sophisticated results. In this case, the idea is to provide users with a unique experience tailored to their individual preferences, which is a big step forward compared to traditional, static recommendation methods.

In summary, each of the artificial intelligence models mentioned in the previous pages has its strengths and weaknesses. Let's look at their efficiency, scalability and adaptability.

Effectiveness

Simple models, such as rule-based models or basic machine learning algorithms, can be extremely effective at fast processing and decision-making in less complex scenarios. Their simplicity makes them less "resource intensive," allowing for quick implementation and easy maintenance. However (as the name suggests), their ability to deal with complexity is limited.

Deep learning models show greater efficiency in complex scenarios, such as speech recognition, natural language processing and image analysis. They can extract subtle patterns from large data sets, but their implementation requires significant computational resources and time, which can be a barrier in some applications.

Scalability

Deep learning models are known for their exceptional scalability, their ability to efficiently process and generate valuable insights from increasingly large and complex data sets, making them ideal for applications requiring analysis of large amounts of information, such as large-scale natural language processing or satellite image analysis.

Traditional machine learning algorithms can face difficulties in scaling to very large data sets due to computational limitations and modeling complexity.

Adaptability (customization for specific tasks)

Specialized models, such as expert systems, are highly customized to perform specific tasks in specific areas. Their effectiveness in these areas can be unparalleled, thanks to the application of deep domain knowledge and task-specific rules.

However, this same specialization makes them inflexible and difficult to adapt to other tasks without significant modifications.

Models based on machine learning and deep learning offer greater flexibility, allowing adaptation to a wide range of tasks by changing the training data or adjusting the model architecture. While they may require more time to adapt and optimize, their versatility makes them more practical for a variety of applications.

The choice of AI model should be made taking into account the specifics of the task, available resources, and requirements for efficiency, scalability and flexibility. In some cases, a combination of different model types may offer the best solution, combining their strengths and minimizing their weaknesses.

The future of AI models

Returning to the application examples of artificial intelligence models, we see their great impact on our daily lives. From simple systems like T9 to advanced recommendation algorithms in streaming services, each of these models demonstrates the unique capabilities and limitations of AI. As such, the field of AI is dynamic and constantly evolving, providing more and more new solutions that can be applied to various aspects of our lives. The AI sector is one of the fastest growing technological areas. It is expected that in the future we will see even more advanced and specialized models that will be able to perform tasks that seem impossible today.

Understanding the differences between AI models allows us not only to better understand the current capabilities of this technology, but also to predict the direction of its development. As AI technology evolves, so will its models, opening up new opportunities and challenges.

In what fields of human activity can AI be applied?

Artificial intelligence, once a topic limited to science fiction films and purely theoretical academic discussions, is becoming an integral part of everyday functioning before our eyes.

In the next few pages, we will take a look at how broadly AI is affecting various spheres of human activity from medicine, to education, to business and everyday life.

AI is no longer just a tool for computer scientists and engineers. It has become a ubiquitous technology that shapes the way we work, learn and function in everyday life. Artificial intelligence is being used to solve complex problems that until recently were beyond the reach of human analysis and reasoning. An example of this is in medicine, where AI is helping to diagnose diseases, personalize treatments and even predict future health risks. In education, AI is making it possible to personalize the learning process, tailoring educational materials to individual student needs, which in turn contributes to more effective and engaging learning. In the business world, AI is revolutionizing approaches to data analysis, helping to make strategic decisions, optimize processes and automate tasks. What's more, AI is also having a significant impact on our daily lives, from smart home assistants to personal finance management applications.

Read on for examples of AI applications.

AI in medicine

- Diagnostics and medical image analysis

Artificial intelligence has found significant application in medical diagnostics, particularly in the analysis of images such as X-rays, MRI scans and CT scans. AI systems, thanks to advanced machine learning algorithms, are able to quickly and effectively identify abnormalities that can escape the attention of even the most experienced doctors.

An example is the early detection of breast cancer. AI algorithms are able to scan mammography images, identifying potentially worrisome lesions with greater precision than traditional methods. What's more, AI can analyze data from patients' medical histories, combining information from the images with other relevant data to improve the accuracy of diagnosis.

- Personalized medicine and therapy

AI makes it possible to analyze huge sets of genetic, environmental and clinical data, enabling the development of personalized treatment plans. This allows doctors to tailor therapy to the individual needs of the patient, which is particularly important in treating diseases such as cancer, diabetes and heart disease.

One example is the use of AI to develop customized cancer treatment regimens. Algorithms that analyze the genetic and molecular data of cancers can help select the most effective treatment, while minimizing side effects and improving the overall effectiveness of the therapy.

AI is also being used to monitor patients' health in real time, so that any changes can be responded to quickly. Smartwatches can track vital signs and transmit them to AI systems, which analyze the data and can alert both patients and doctors to potential risks.

AI in education

- Customized educational pathways

AI has great potential in transforming education, offering personalization of the learning process. AI systems can analyze each student's learning style, identifying their strengths and areas for development. Based on this analysis, they create individualized education plans that match the pace and style of learning to the student's needs, significantly increasing learning efficiency.

For example, interactive learning platforms using AI can adjust the difficulty of tasks and topics depending on the student's progress. As a result, students who learn new knowledge quickly can be challenged with more complex tasks, while those who need more time receive additional support and materials tailored to their learning pace.

- Automation and optimization of educational processes

AI also plays an important role in automating and optimizing educational processes. AI tools can help teachers evaluate work, analyze student progress and manage the classroom. With AI systems, teachers can spend less time on administrative tasks and more on working directly with students.

One example is the use of AI to automatically grade written work and tests. These systems can not only grade answers, but also analyze how a student solves tasks, providing valuable information about the learning process.

- Creating innovative teaching materials

Another application of AI in education is the creation of interactive and engaging teaching materials. AI systems can generate educational content tailored to a student's individual interests and knowledge level, making learning more engaging and effective.

AI in business

- Automation of business processes

In the field of business, AI is bringing revolutionary changes, primarily by automating business processes. Using machine learning algorithms and natural language processing, AI can take over routine tasks such as data entry, document management and customer service, freeing up employees to focus on more complex and creative tasks.

For example, chatbots using AI can handle customer inquiries, providing fast and efficient service while reducing the burden on customer service staff. AI systems can also analyze business data, helping to identify market trends, predict demand and optimize supply chains.

- Business decision support

AI plays a key role in business decision support, offering deep analysis and predictions that are unattainable by traditional methods. AI algorithms can analyze vast amounts of data, catching patterns and correlations that can predict market performance, consumer behavior and economic changes.

For example, in finance, AI is used to analyze the stock market, predict market trends and automate trading. In marketing, AI helps optimize advertising campaigns by analyzing customer data and tailoring communications to specific market segments.

- Risk identification (risk optimization)

AI is also being used to identify risks and opportunities in business, allowing companies to react quickly to changes in the business environment. This enables companies to better anticipate future challenges and adjust their business strategies to remain competitive.

AI in everyday life

Artificial intelligence is significantly infiltrating our daily lives, changing the way we communicate, work, learn and relax. From smart homes to personal assistants, from health and fitness to entertainment ... AI is becoming ubiquitous, offering new ways to interact with technology that are both intuitive and revolutionary.

Starting with smart homes, AI technology provides convenience and efficiency that were once considered futuristic. Examples include smart thermostats that learn our temperature preferences and adjust the heating or cooling of the home, even when we're not there. Such devices, such as Nest, not only make life easier, but also contribute to energy savings, which is important in the context of a changing climate and growing environmental awareness. Smart lighting, such as Philips Hue systems, adjusts the brightness and color of light according to the time of day or even our mood, creating the perfect environment for work, relaxation or socializing. In contrast, home security systems like Ring use facial recognition and AI algorithms to monitor the home, providing peace of mind when we are away from home.

AI's role in everyday life is also evident in the form of personal assistants, like Siri from Apple and Google Assistant, which are constantly evolving and learning from our interactions. Assistants allow us to easily manage tasks such as setting reminders, searching for information or even managing smart home appliances. Their ability to understand and process natural language makes interacting with technology more intuitive than ever before.

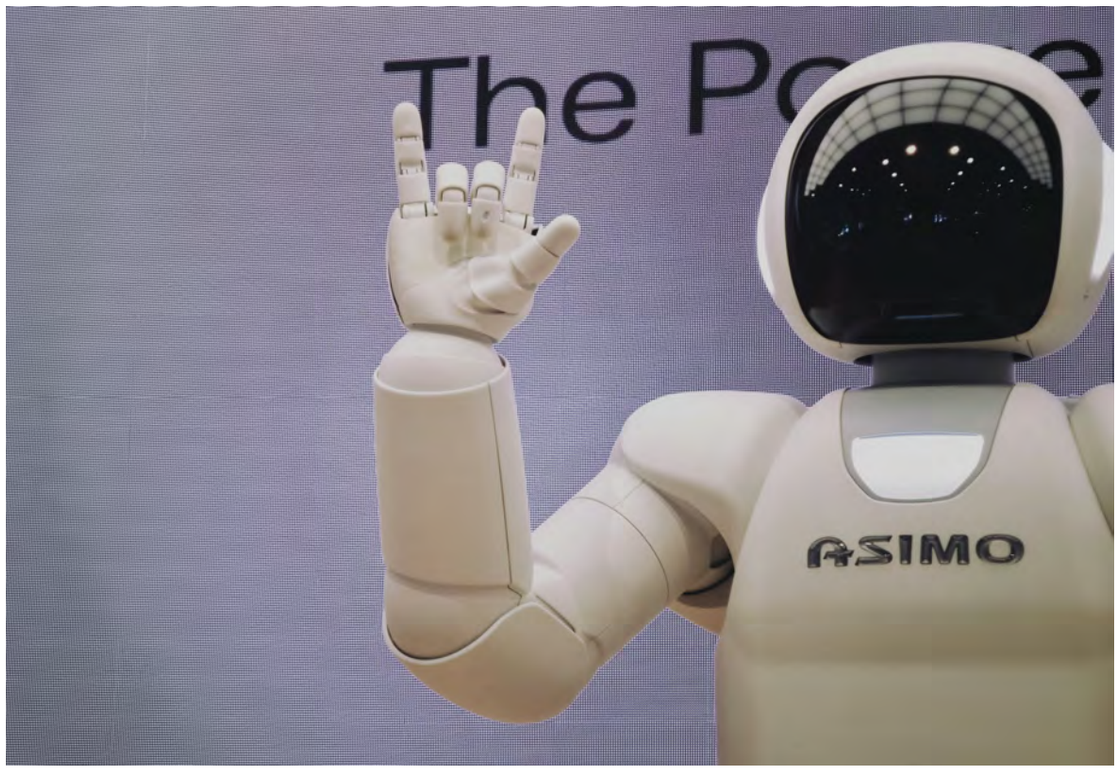
In health and fitness, AI is also finding more and more applications. Health monitoring apps such as Fitbit analyze our physical activity, sleep and other health parameters, providing personalized guidance for improving our well-being. Being able to track our progress and receive tailored advice is not only motivating, but also helps us maintain a healthy lifestyle.

Home entertainment has also undergone a transformation thanks to AI. Streaming services like Netflix and Spotify use machine learning algorithms to analyze our preferences and suggest movies, series or music that might interest us. As a result, each user receives a personalized offering tailored to their tastes and interests. What used to require searching through hundreds of titles is now available almost instantly, making access to entertainment much easier.

AI is also changing the world of video games, creating more realistic and dynamic environments that respond to the player's actions. Games such as The Witcher 3 and Red Dead Redemption 2, for example, use advanced AI algorithms to create NPCs that behave in unpredictable and realistic ways, enhancing the immersion and experience of the player.

AI is also having a significant impact on the world of art and creativity. AI algorithms are being used to create music, digital art and even poetry and prose. One example is Google's Magenta project, which explores the possibilities of creating art and music using AI. Such innovations are opening up new perspectives for artists and creators, allowing them to experiment with new forms of expression.

As a result, AI is not only a technology, but also a tool that makes our daily experiences easier and richer. From simple tasks like managing the home to more complex ones like interacting with creativity and art, AI is becoming an integral part of our lives, offering new possibilities and conveniences that seemed like a distant future just a few years ago.



Future possibilities for AI applications

Artificial intelligence, which is currently undergoing rapid development, heralds further significant changes in the future, both in technology and in everyday life. Predicting the future of AI is not just a technological issue, but also a social, economic and ethical one. As AI becomes more advanced, its potential applications and impact on society are growing in ways that could transform the world in ways we have not yet experienced. One of the key aspects of AI's future is the continued development of machine learning and deep learning. These technologies, which are already the foundation of many AI systems, will continue to evolve, becoming even more efficient and effective. Future AI algorithms are expected to be able to learn from less data, deal with more complex problems and operate with greater autonomy. This will open the door to new applications, from smarter personal assistants to advanced management systems in industry and transportation.

Another important aspect is the integration of AI with other technologies, such as the Internet of Things (IoT), robotics and biotechnology. The combination of these technologies can lead to the creation of intelligent environments, where AI works with various devices and systems to create integrated and intelligent ecosystems. In medicine, for example, combining AI with advanced medical technologies can lead to the development of more precise diagnostics and treatments. Also, the development of AI in the context of autonomous vehicles has the potential to radically change the way we move and transport goods. Already the subject of intensive research and development, autonomous cars have the potential to reduce traffic accidents, optimize urban traffic and reduce air pollution.

However, the development of AI also brings challenges and ethical issues that must be considered. Issues such as data privacy, security and accountability for decisions made by AI systems will become even more important. As AI becomes more advanced and autonomous, society will face questions about the impact of these systems on labor, social equality and the economic structure.

Another important aspect of AI's future is its impact on the labor market. We will address this issue in the following pages of our publication.

However, the development of AI also brings challenges and ethical issues that need to be considered. Issues such as data privacy, security, and responsibility for decisions made by AI systems will become even more important. As AI becomes more advanced and autonomous, society will have to confront questions about the impact of these systems on work, social equality, and economic structure.

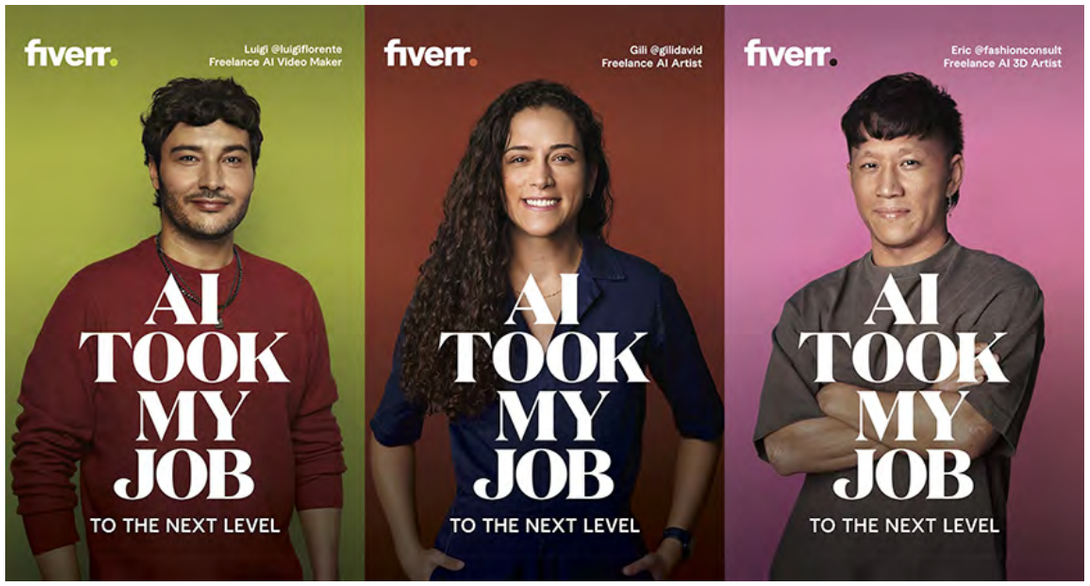
Another important aspect of the future of AI is its impact on the labor market. We will address this issue in the following pages of our publication.

Should we be concerned that AI will take our jobs? Or could it make them easier for us?

In today's rapidly changing world, where technology is advancing at a breakneck pace, one of the most pressing questions humanity faces is the impact of artificial intelligence on the labor market. This question raises many others, related both to concerns about the future of employment and hopes for new opportunities that AI may bring. Understanding how AI affects work requires a deep look at both its potential threats and promising prospects.

The impact of AI on the labor market is multidimensional. On one hand, we see how automation and robotics driven by AI are taking over tasks and job roles that were previously the domain of humans. From factories and production lines to customer service and data analysis—AI demonstrates its ability to perform work faster, more accurately, and often cheaper than humans.

This trend raises concerns about massive job loss, especially in sectors that are more susceptible to automation. Is this concern justified?



Source: https://digitalsynopsis.com/advertising/ai-took-my-job-to-the-next-level/

The Power of Humanity campaign by Fiverr, from which the above posters are derived, emphasizes the harmonious integration of human creativity with artificial intelligence. The campaign presents an optimistic view of the evolving work landscape, where AI technology plays a significant role but is seen as a complement rather than a replacement for human genius.

The campaign highlights that despite AI's powerful capabilities, human potential remains essential for creating truly inspiring works.

According to recent studies, the majority of companies (90%) in the US reported using or planning to use freelancers for projects involving generative AI.

The data indicate an overall optimism toward AI but also underscore the belief that human talent should be an integral part of the process.

The Power of Humanity campaign is part of Fiverr's broader initiatives aimed at adapting to the AI-era workplace, including the introduction of new AI-related service categories.

SPOT FROM THE POWER OF HUMANITY CAMPAIGN:

Equally important is the fact that AI can also create new job opportunities and professional specializations. New roles are emerging, such as data engineers, machine learning specialists, AI analysts, and AI ethics experts. Furthermore, AI has the potential to transform existing professions, requiring workers to acquire new skills and adapt to changing work conditions.

A recurring issue in this debate is the future of job skills and education. What skills will be most in demand in a world where AI plays an increasingly significant role? How should educational systems adapt to these changes to prepare future generations for work in an AI-dominated world? These are questions we need to answer to ensure harmonious and productive collaboration between humans and machines.

In the following pages, we will briefly examine both the challenges and opportunities that AI brings to the labor market. We will analyze how different industries are adapting to new realities, which job roles are at risk, which ones are emerging, and how we as a society can prepare for these changes.

Automation of work by AI

In a world where AI technology is evolving rapidly, one of the most significant and inevitable trends is the automation of work. This transformation affects many sectors, from manufacturing to services, and is becoming a key element in shaping the future labor market. Understanding the impact of automation is crucial for predicting future employment trends and preparing for upcoming changes.

Automation driven by AI has gained significant attention in the manufacturing sector, where robots and algorithms are able to perform tasks with greater precision and efficiency than human labor. From assembling electronic components to packaging products, machines are taking over an increasing number of tasks that were once done manually. Companies like Tesla demonstrate how advanced automation can contribute to increased productivity and reduced production costs.

A similar trend is observed in the service sector, where AI and automation are beginning to play a larger role. For example, in the banking sector, chatbots and automated customer service systems are able to handle standard customer inquiries without human intervention. Ticket vending machines, restaurant ordering kiosks, and automated hotel reservation systems are other examples of how AI is transforming customer service.

However, AI-driven automation is not limited to simple, repetitive tasks. The development of machine learning algorithms allows for the automation of more complex tasks, such as analyzing financial data, forecasting market trends, or even diagnosing diseases based on medical images. This shows that AI has the potential to transform work even in industries that were previously considered less susceptible to automation.

AI-driven automation raises important questions about the future of the labor market. On one hand, it increases productivity and efficiency, which is beneficial for businesses and the economy. On the other hand, it raises concerns about job loss, particularly among low-skilled workers. In the short term, automation may lead to higher unemployment and social inequality, as workers displaced by automation may struggle to find new employment in a rapidly changing environment.

Long-term effects of automation, however, are harder to predict. Historically, automation and technological breakthroughs have created new industries and jobs while eliminating outdated ones. For example, the Industrial Revolution, although it led to the disappearance of some traditional jobs, contributed to the emergence of new sectors and an overall increase in employment. Similarly, the current development of AI and automation may pave the way for new job opportunities that are difficult to envision today.

In the context of these changes, a key question is about the future of job skills and worker adaptation. What skills will be needed in a world where many tasks are automated? What training and education will be necessary to prepare the current and future workforce for work in a changing environment?

Creating new jobs through AI

In light of concerns about AI-driven automation, it is also important to understand how artificial intelligence can contribute to the creation of new jobs. Paradoxically, while AI replaces some roles, it simultaneously generates demand for new skills and professions, opening up new horizons for the labor market.

One direct effect of AI development is the increased demand for technology specialists, such as data engineers, AI programmers, big data analysts, and machine learning experts. These new roles require specialized knowledge and skills in data analysis, programming, and software engineering. AI development also creates demand for professions indirectly related to technology, such as AI ethics experts, lawyers specializing in technology law, and cybersecurity specialists.

Additionally, AI opens doors to new opportunities in industries that were traditionally not associated with technology. For example, in the healthcare sector, AI enables the development of new diagnostic and treatment methods, creating demand for digital health specialists, medical data analysts, and biomedical engineers. In the financial sector, AI contributes to the evolution of the financial market, creating new roles such as AI-based risk analysis specialists and financial advisors using AI algorithms.

Another aspect is that AI can support the development of small and medium-sized enterprises by automating business processes, allowing entrepreneurs to focus on innovation and growth. For example, AI tools for customer relationship management or marketing automation can enhance the efficiency and competitiveness of companies.

In the long term, AI has the potential to contribute to the creation of entirely new industries and markets. Examples such as autonomous vehicles, personalized medicine, and smart cities are just the beginning of what is possible as AI technologies continue to advance. New industries will require not only technology specialists but also a wide range of supporting professions, from logistics to municipal services, from design to management.

Nevertheless, adapting to these changes will not be straightforward or automatic. It will require both employees and educational systems to be flexible and ready for continuous learning and skill development. Additionally, businesses and organizations will need to adjust their strategies to leverage AI's potential while supporting their employees in adapting to new realities.

Impact of AI on skills and education

In an era where AI is gaining prominence in every aspect of our lives, a key issue is adapting skills and education to the new demands of the labor market. As AI automates more and more tasks, both simple and complex, there is a growing demand for skills that are resistant to automation and that support the development and application of AI technology.

Firstly, technological skills, such as programming, data analysis, software engineering, and specialized knowledge related to AI and machine learning, are becoming increasingly valuable. However, soft skills, such as creativity, problem-solving, critical thinking, and the ability to adapt and continuously learn, are also becoming important. In a world where AI can take over routine tasks, unique human abilities, such as empathy, negotiation, and teamwork, become irreplaceable.

At the same time, the development of AI presents new challenges for educational systems worldwide. Education must adapt not only to teaching new technological skills but also to developing soft skills and creative thinking. Schools, higher education institutions, and other educational bodies are compelled to rethink their curricula to better prepare students for work in a rapidly changing environment.

In the context of vocational and continuing education, AI also opens new opportunities. Online educational platforms, such as Coursera and Udemy, offer courses and specializations related to AI, allowing employees to develop skills needed for new job roles. Companies are increasingly investing in training for their employees to align their skills with the demands of the modern job market. This not only helps mitigate the effects of automation but also leverages AI's potential to create value and innovation.

However, aligning skills and education with the needs of an AI-driven job market is not just a technological issue. It also requires consideration of social and ethical concerns. For example, how can we ensure equal access to education and training in new technologies? How can we prepare workers for a changing job market in a way that is fair and inclusive of diverse social groups?

In the long term, education is expected to evolve toward a more integrated approach, combining technical knowledge with soft skills and creativity. Such a holistic education will be crucial in preparing future generations to effectively coexist and collaborate with AI, both in the workplace and in everyday life.

Adapting education to the demands of the AI era

Given the increasing role of AI in various sectors of the economy, a key challenge is adapting educational systems, both formal and informal, to ensure workers have the skills necessary to effectively function and adapt in a changing work environment. Education, as the foundation of future careers, must now focus on developing both specialized technical skills and mental flexibility that allows for continuous adaptation to new conditions.

On one hand, it becomes extremely important to educate in technological skills, such as programming, data analysis, cybersecurity, and handling advanced IT tools. Schools and higher education institutions should offer courses and degree programs focused on these aspects, while also incorporating real-world projects and collaborations with businesses to provide students with practical experience.

Equally important, if not more so, is the education of soft skills, which are crucial for adaptability. Skills such as creativity, critical thinking, problem-solving, communication, and teamwork are harder to automate and form the foundation upon which further professional adaptation can be built.

Alongside formal education, the significance of informal education and continuous learning is growing. Online platforms, workshops, short-term courses, and vocational training provide opportunities for quick responses to changing job market demands and the development of specialized skills.

A key aspect is also the collaboration between educational institutions and industry. Cross-sector partnerships can contribute to a better understanding of current job market needs and the adaptation of curricula to better prepare graduates for entering the workforce. Internships, apprenticeships, and projects conducted in collaboration with businesses are not only excellent ways to gain experience but also to understand how AI technologies are implemented and used in the real business world.

It is also important that education is accessible to all generations of workers, not just young people entering the job market. Reskilling and upskilling programs should be available for current employees who may need to develop new skills in response to changing professional requirements.

Summary

The introduction of AI into the job market, like any innovation, brings both challenges and opportunities. While concerns about job loss due to automation are valid, history shows that technological revolutions often lead to the emergence of new industries, professions, and development opportunities. In the AI era, the key to success is adaptation—both at the individual level (for employees and future workers) and across entire organizations and broader educational systems.

Employees must be prepared for continuous learning and the development of new skills, particularly those that are difficult to automate, such as soft skills, creative thinking, and problem-solving abilities. At the same time, educational systems need to be dynamic and flexible, adapting to the rapidly changing demands of the job market.

In the future, we can expect workplaces to feature greater collaboration between humans and machines. AI can handle tasks requiring the analysis of large amounts of data and repetitive processes, while humans can focus on more creative, strategic, and interactive aspects of work. This symbiosis could lead to more efficient and innovative work environments.

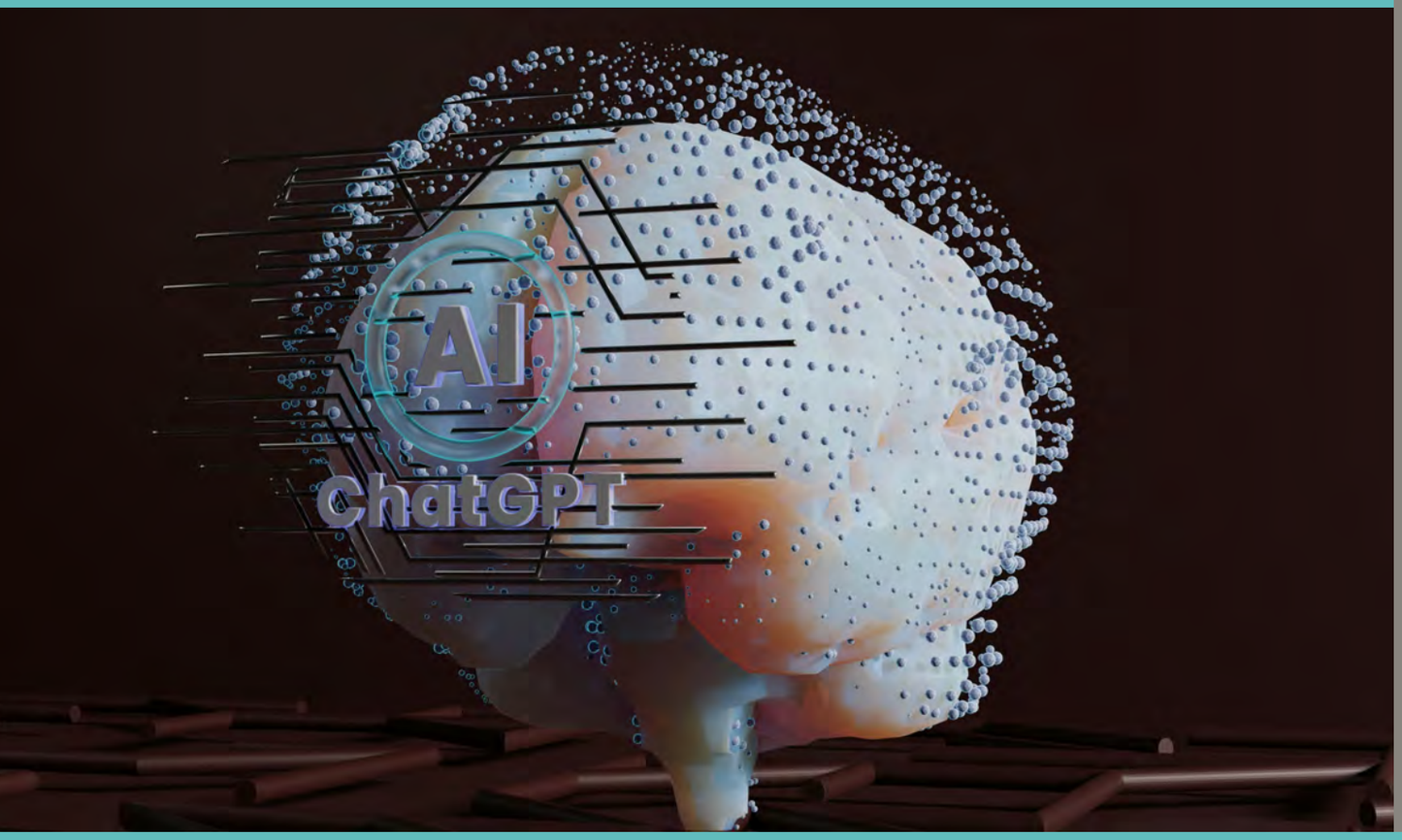
To ensure that future generations are prepared for a job market dominated by AI technology, investing in education and skill development becomes crucial. This is not only the responsibility of educational systems but also of policymakers, business leaders, and society as a whole, to support a culture of learning and adaptation.

Approaching AI from a perspective of opportunity rather than threat can reveal new ways to improve work, increase productivity, and create value. The future of work with AI does not have to be a scenario where machines take over, but rather a future where human creativity and innovation are enhanced by technological support.

In the following sections of this script, we will show you how to use AI for working with text, video, images, and sound. We will demonstrate how to teach creativity and critical thinking when dealing with AI-generated content.

We see potential in artificial intelligence—for a more efficient, engaging, and optimized approach to solving problems. At the same time, we caution against overly "carefree" use of technology—remember that even the best tool in the hands of fools will not find its purpose.

Let us together explore the main areas of application for "technology of tomorrow." We invite you to continue reading.



Part 1

AI in Text Work

In recent months, every trainer working with young people has encountered ChatGPT. For teachers, the introduction of this tool has, in a sense, become a "new problem" due to the need to verify another source of plagiarism in student work.

However, we want to convince you that using AI in working with text can bring many benefits—it can enhance your students' work skills, help them learn argumentation—provided that you know (or at least learn) how to wisely use the available tools.

In the following pages, we will explore the functionality of AI in text editing. We hope to show youth trainers how to integrate artificial intelligence into their daily methodological practices in the context of preparing texts.

Artificial intelligence is revolutionizing the way we work with text, introducing changes that impact nearly every aspect of our lives—from communication and education to business and entertainment. AI, with its ability to analyze, generate, and process language on an unprecedented scale, provides users with new editing capabilities. Technologies based on advanced algorithms and vast data sets enable machines not only to understand human language but also to create coherent, persuasive texts that increasingly mimic human writing styles.

Below are some applications of artificial intelligence in working with text across various fields of our lives:

- In communication, AI significantly impacts how we create and disseminate information. Tools like chatbots, which use AI to engage in conversations with users, are revolutionizing customer service by offering quick and personalized responses to queries.

- In business, AI-assisted content generation allows companies to create high-quality product descriptions, blog articles, or market reports with unparalleled speed and cost efficiency.

- Importantly for our considerations, AI also finds applications in the education of young people—AI has the potential to completely transform traditional teaching and learning methods. AI systems can tailor educational materials to individual students' needs, offering personalized learning paths and assisting in language learning through interactive exercises and immediate feedback. Additionally, automatic text summarization tools enable rapid analysis of large amounts of educational content, which can be invaluable for students preparing for exams.

- In the entertainment sector, AI contributes to the creation of new forms of storytelling. Text-generating algorithms enable the development of complex plots and vivid dialogues in video games or assist authors in generating ideas for books and screenplays. The ability to support the creative process opens new possibilities for writers and creators who can use AI as a tool to enhance creativity.

However, we must be aware that the impact of AI on text work is not without challenges. Issues related to copyright, ethics, and the credibility of AI-generated content remain subjects of debate. There is a valid concern that machine-generated texts may be difficult to distinguish from those created by humans, which raises questions about the authenticity and originality of content in the digital age—"who is the true author?"

Despite these challenges, the potential of AI in text work is immense. With ongoing technical advancements, we can expect further innovations that will blur the lines between machine and human methods of creating and processing text. The key to fully harnessing AI's potential will be finding a balance between innovation and ethical, responsible use of the technology, which will allow us to benefit from its capabilities. This balance should be the foundation of educating the younger generation. It seems crucial to impart principles of critical and ethical use of available models. We will return to the topics of ethics and copyright at the end of the chapter.

Advanced algorithms and vast data sets used by AI technology are significantly transforming how we create and process text, revolutionizing text work on an unprecedented scale.

At the heart of this transformation are generative models, such as GPT (Generative Pre-trained Transformer) from OpenAI, which simulate human writing styles, offering capabilities that would have seemed impossible just a few years ago.

Generative models, using advanced machine learning algorithms, analyze enormous amounts of text, learning structures, styles, and linguistic contexts from various sources, from literature to scientific articles. This enables them to generate texts that not only sound natural but also are coherent and contextually relevant. The ability of these models to simulate human writing styles opens new possibilities for content creators, allowing for the automatic generation of articles, essays, and even literary works.

The use of generative models for text work is significant not only for efficiency but also for content personalization. Companies and creators can now produce content tailored to specific needs and preferences of their audiences with unprecedented precision. This not only increases user engagement but also opens the door to new forms of interaction and communication.

However, the transformation of text work through AI is not without challenges. One major issue is ensuring that generated content is not only technically accurate but also ethically responsible and free from biases. Machine learning models, which underpin generative algorithms, learn from available data, meaning they may unintentionally propagate existing stereotypes or biases contained within these data. Addressing this issue requires continuous refinement of algorithms and selection of training data to ensure that generated content is fair and objective.

Additionally, the ability of AI to generate high-quality text raises questions about the future of traditional writing-related roles. As AI tools become more advanced, many content creation tasks may be automated, forcing writers and content creators to adapt and find new ways to utilize their skills.

Despite these challenges, the potential of AI in text work is immense. It not only offers the opportunity for automation and optimization of content creation processes but also opens new possibilities for creativity and innovation.

The impact of artificial intelligence on communication and content creation is profound and multifaceted, especially in the context of creative and media industries. With advanced natural language processing (NLP) algorithms, AI enables more efficient and personalized content creation, revolutionizing how brands, creators, and media engage with their audiences.

NLP algorithms analyze vast amounts of textual data, learning from language patterns, user preferences, and the context in which words and phrases are used. This allows them not only to understand the meaning of text at a level previously reserved for humans but also to generate new, coherent, and engaging content that resonates with audiences on a more personal level.

In practice, using AI for content creation opens up countless possibilities in creative industries. For marketers, this means the ability to automatically generate compelling product descriptions, personalized email messages, and advertising content tailored to individual preferences and interaction histories of each customer. This can make brand communication more personalized, potentially increasing audience engagement and improving the effectiveness of marketing campaigns.

For writers and content creators, AI offers tools that assist in the creative process, from generating ideas and initial drafts to editing and refining text. AI algorithms can suggest alternative phrasings, help maintain stylistic consistency, and detect potential grammatical and stylistic errors, allowing creators to focus on more creative aspects of their work.

However, the use of AI in content generation is not without challenges. Issues such as authenticity and originality of machine-generated content are subjects of debate. There is concern that excessive reliance on AI in the creative process may lead to homogenization of content and the erasure of the creator's individual voice. Therefore, it is important to find a balance between using AI as a tool to support the creative process and preserving the human element necessary for creating content that truly resonates with the audience.

Ultimately, the impact of AI on communication and content creation is a dynamically evolving area that offers as many opportunities as it presents new challenges. As AI technologies develop, so too will the ways in which we create and interact with content. The key to maximizing the potential of these tools will be their conscious use, always considering the added value that human creativity and sensitivity bring.

In the field of education and science, artificial intelligence is revolutionizing the way we learn and conduct research. The use of AI in working with text opens new possibilities for personalizing the teaching process, delivering interactive educational experiences, and supporting scientists and researchers in their work. The use of AI in personalizing educational materials allows for tailoring content to the individual needs and learning styles of each student. By analyzing data on learners' progress and preferences, AI can recommend materials that best match their current level of knowledge, interests, and educational goals. Personalization contributes to increased student engagement and motivation, which is crucial for the effectiveness of the teaching process.

AI also plays a significant role in offering interactive educational experiences. AI-based systems can conduct simulations, educational games, and interactive quizzes that help in acquiring knowledge in a more engaging way.

In the field of science and research, AI significantly accelerates and facilitates the analysis of scientific literature. AI tools can review and analyze thousands of documents in a short period, helping researchers identify relevant publications, trends, and gaps in research. This allows researchers to focus on the most promising directions for their studies, minimizing the time spent on manual literature searches.

Additionally, AI supports scientists and researchers by automating many aspects of text work. These tools can generate abstracts, assist in editing and proofreading scientific texts, and identify and analyze patterns and relationships in research data. AI also enables the creation of more complex research models, which can contribute to breakthroughs in various scientific fields.

However, AI in education and research is not without challenges. It is crucial to ensure equitable access to AI-based technologies and educational resources so that all students have equal educational opportunities. This requires not only investments in technological infrastructure but also in training teachers and educators to effectively utilize the opportunities offered by AI.

Artificial intelligence has the potential to significantly enrich education and research by offering personalized approaches to teaching, interactive educational experiences, and support in research work. The key to success, however, is responsible implementation and use of AI, considering the ethical and social aspects of this technology. As we move forward, it is important to maintain a balance between utilizing innovative tools and ensuring that education remains accessible and inclusive for everyone.

Issues of copyright and originality of AI-generated content present further ethical and legal considerations. As AI models become more advanced in generating coherent and persuasive texts, the question arises of who is the true author of these contents—whether it is the person who designed and trained the model, the user who provided the prompt, or the machine itself. This ambiguity surrounding authorship leads to further questions about intellectual property rights and the economic aspects of using AI in content creation. To address these challenges, it is necessary to define new legal frameworks that consider the specifics of working with AI-generated texts while protecting the rights of human creators.

Defining the boundaries between human and machine creativity becomes increasingly complex as AI demonstrates the ability to create content that is difficult to distinguish from that created by humans. This raises questions about the value and uniqueness of human creativity in the context of machine capabilities. This dilemma touches on both philosophical aspects and practical applications of AI in literature, journalism, and other forms of expression. It is crucial to find a way for human and machine creativity to coexist and collaborate, so that technology supports and enhances human creativity rather than replacing it.

The challenges described on the previous page highlight the need for an approach to the development and implementation of AI in text work that considers not only technological aspects but also ethical, social, and legal ones. Addressing these challenges will require collaboration among scientists, lawyers, creators, and technology users to ensure that AI serves the common good while respecting human rights and values.

The future of text work in the era of artificial intelligence presents an exciting blend of promises and challenges. As AI technologies become increasingly advanced, their potential to transform traditional processes of writing, editing, and text analysis seems limitless. From automatic article generation to the creation of new literary forms, AI promises to significantly enhance the way we work with texts while opening doors to new, unexplored forms of expression and communication.

Moreover, it will also be crucial to cultivate and develop critical thinking and creativity skills, particularly among young people. Teenagers should not forget that AI is a tool designed to assist their work, not to "relieve them of it." Although AI-generated texts are becoming increasingly better and more precise, they still cannot replace the human perspective on a topic—they require the user to perform selection.

In summary, the future of text work in the AI era is very promising, especially if we consider its ongoing development. AI technology has the potential to revolutionize the way we create, edit, and analyze texts, offering new opportunities for expression and communication. However, to fully harness these possibilities, we must simultaneously address emerging ethical and practical challenges, working together towards a future where AI technology supports the development of human creativity and innovation while upholding ethical standards and the human dimension of text work.

Examples of currently available models

In this section, we briefly introduce examples of AI models currently available for text work. It is important to note that this is a dynamic field, continually improving—below are a few facts current as of the first quarter of 2024.

In 2024, the development of artificial intelligence language models has reached new levels of sophistication, offering tools with unprecedented capabilities. Among these, GPT-3.5-turbo, GPT-4, Google's Gemini, and Anthropic's Claude are particularly noteworthy for revolutionizing text work.

- The GPT-4 model from OpenAI, a continuation of the Generative Pre-trained Transformer series, impresses with its ability to generate coherent and complex texts, answer questions, and create programming code. It features an immense number of parameters, which contributes to its high-level text understanding and generation. Although the technical details of GPT-4, such as its size, remain undisclosed, its versatility and power make it applicable in various tools and services.

- Google's Gemini is a family of AI models designed to operate across a range of devices, from smartphones to servers. These models are capable of generating text as well as processing images, audio, video, and code. Available in Nano, Pro, and Ultra versions, Gemini Pro is already powering some queries in Google's chatbot, Bard, and is available to developers through Google AI Studio.

- Claude, developed by Anthropic, stands out for its approach to creating AI assistants that are helpful, honest, and safe. Claude demonstrates better performance than PaLM 2 in MMLU and MT-Bench tests, reflecting its high level of natural language understanding and generation. Anthropic was the first company to offer a model with the largest context window—100k tokens—allowing up to 75,000 words to be loaded in a single window.

- Cohere, founded by former Google employees, offers AI models primarily aimed at enterprises and addressing use cases in generative AI. The Cohere Command model stands out for its accuracy and reliability, with its performance rated higher than other LLMs, making it an attractive choice for businesses.

The aforementioned language models represent only a fraction of what contemporary AI technologies offer in text work, demonstrating significant progress in the field and opening new possibilities for natural language processing.

Prompt what is it and how to create one in text work? Its impact on the quality of eesponses

A prompt can be seen as a direct instruction for AI that guides the response generation process. The precision, context, and clarity of the prompt significantly influence the relevance and usefulness of the output generated by the AI model.

The effectiveness of prompts is addressed by prompt engineering. Prompt engineering is a relatively new but rapidly evolving field focused on crafting effective instructions for artificial intelligence, such as ChatGPT or Google Bard, to achieve their assigned goals effectively.

A key assumption is that the quality of results obtained from AI directly correlates with the quality of the provided prompt (the better you frame the question/issue, the better the response you will receive).

Below are some tips on how to formulate prompts to achieve the most effective results (more information can be found at: https://www.promptopedia.pl).

- Define the goal

Before you start writing a prompt, consider what exactly your goal is. Do you want to obtain specific information, generate creative text, or something else? A clear goal will help you construct a prompt that directly leads to the desired outcome.

- Be precise

The more detailed the information in the prompt, the better and more precise the response will be. If you have specific requirements regarding style, tone, or format of the response, make sure they are clearly stated in the prompt.

- Use simple language

Although AI models are advanced, they respond best to clear and simple instructions. Avoid unnecessary complications or specialized jargon unless it is essential for understanding the question.

- Structure and organization

If your prompt requires several points or steps, organize them logically. Using bullet points or numbered lists can help maintain clarity.

- Adjust length

Match the length of the prompt to the complexity of the task. Simple queries may only need a few words, but more complex topics might require detailed instructions.

- Avoid ambiguity

Try to avoid words or phrases that can be interpreted in multiple ways. If a prompt can be understood in different ways, the model might not respond in the way you expect.

- Provide context

If your question relates to a specific context or requires specialized knowledge, ensure that you include the relevant information in the prompt.

- Use examples

If possible, include examples of what you expect as a response. Examples can significantly improve the quality and relevance of the generated content.

- Request specific formats

If you have preferences regarding the format of the response (e.g., list, paragraphs, bullet points), clearly indicate this in the prompt.

- Test

Practice makes perfect. Don't be afraid to experiment with different versions of prompts to see which ones work best. Analyzing responses will help you adjust and improve future prompts.

The key to effective communication with AI is iteration and adaptation. It may be challenging to meet needs and expectations perfectly at first, but over time and with practice, prompt creation skills will improve. Therefore, we encourage you to practice—experiment with commands and seek your own "prompting" style.

On previous pages, we presented some tips for creating prompts. The way prompts are formulated significantly impacts the quality of the response received (in this case, the text generated by AI). However, it should be noted that the limitations of artificial intelligence in providing answers to questions can also arise from the technical aspects of AI systems and their design assumptions. Below are some determinants of these limitations that are worth keeping in mind when working with AI to create text.

- Availability and currency of Information

AI models are trained on large datasets that are collected up to a specific point in time. This means that they do not have access to information or events that occurred after their last training, which affects the content they generate.

- Understanding context and linguistic subtleties

Although language models are advanced in processing and generating natural language, they may have difficulties fully understanding context, irony, humor, and other linguistic subtleties, which impacts the quality of interactions.

- Subjectivity

AI relies on the data it has been trained on, which means it may not be able to express its own opinions or make subjective judgments. Responses may be more neutral and based on generally available information.

- Understanding and generating creative content

Although AI can generate texts that seem creative or innovative, its abilities are limited to patterns and information contained in the training data, which limits its use in creating entirely new ideas or concepts that have not been previously expressed in the data on which the model was trained.

- Understanding specialist questions

Questions requiring deep specialist or technical knowledge may exceed the understanding of AI, especially if they pertain to very narrow fields of knowledge.

- Interpretation of visual and nonverbal data

Language models are limited in interpreting images, gestures, and other forms of nonverbal communication unless they are specifically designed and trained for that purpose.

- Ethics and safety

AI is programmed to avoid generating content that could be harmful, unethical, or misleading. This restricts the models' ability to respond to some questions or generate content on controversial topics.

- Errors and inaccuracies

Despite their sophistication, AI can make mistakes, including inaccuracies or misinterpretations of questions, which can lead to incorrect answers. Therefore, a critical approach to the received content is necessary.

- Dependency on question formulation

The way a question is formulated can significantly impact the AI's response. Ambiguous or poorly phrased questions can lead to unclear or inappropriate answers.

- Technical limitations

Hardware limitations, such as computational power or memory, can affect the speed and complexity of the responses generated by AI, especially under heavy query loads.

In summary, the limitations of AI in answering questions stem from various technical and structural factors. The most important include limited timeliness of information, difficulties in fully understanding context and language subtleties, lack of ability to express subjective opinions, limitations in generating entirely new ideas, challenges in understanding highly specialized or technical questions, and issues related to interpreting nonverbal data.

Additionally, AI models are programmed to adhere to ethical and safe practices, which affects the range of available answers. There may also be errors and inaccuracies in the generated responses, which are partly dependent on the precision of the questions posed.

Finally, technical limitations, such as computational power, can impact the effectiveness of AI responses. All of these factors contribute to a comprehensive view of the challenges that AI models face when trying to respond to diverse and sometimes complex user questions.

Who is the author of text written in collaboration with AI?

In the previous section, we focused on the technical aspects of creating texts in "collaboration" with AI (providing some useful tips on prompt creation).

Let us now return to the ethical considerations and consider the fundamental question: Who is actually the author of text generated by artificial intelligence? Could it be the machine? Or should authorship be attributed solely to the human behind the machine? If so, is it the user who created the prompt, or should we view the issue more broadly—perhaps the person responsible for creating the program?

Let us begin with issues related to copyright, which is part of the broader category of intellectual property. Copyright aims, in short, to protect human intellectual creations. According to international conventions, such as the Berne Convention, authorship is granted to individual creators of literary, artistic, and scientific works, providing them with rights to use their works and protection against unauthorized use. Traditionally, for a work to be protected by copyright, it had to be original and bear a clear mark of the creator’s personal contribution.

In the context of AI, a fundamental issue is whether and how these criteria can be applied to content generated by algorithms. Can algorithmically generated content be considered "original" if the personal contribution comes not from a human but from a machine? Copyright law in many jurisdictions is based on the assumption that only humans can be authors, which questions the legal status of works created with the help of AI.

This challenge leads to two main lines of inquiry: first, whether existing legal frameworks are sufficient to address new forms of creativity, and second, whether and how these frameworks should be modified to reflect the changing creative landscape. The discussion touches on both the concepts of "authorship" and "originality," requiring lawyers, creators, and lawmakers to deeply reflect on these concepts.

One of the first significant cases of using AI in literature was the publication of a book whose text was co-created by an artificial intelligence algorithm. The project creator used AI to generate content based on data from existing literature. The controversy revolved around who should be recognized as the author—whether only the human who programmed and "trained" the AI, or whether the machine itself should be mentioned as a co-author. The solution was to indicate in the book's preface the role that AI played in the creative process while maintaining copyright with the human. This approach highlights the use of AI as a tool, without attributing it legal co-authorship status.

The main challenge in the context of authorship of AI-co-created works is determining where the boundary lies between using AI as a tool and recognizing it as a co-author. The traditional concept of authorship assumes a human creative contribution that is conscious and intentional. AI, operating based on algorithms and data provided by humans, generates content that may seem innovative and unique, but can it be considered the result of a conscious creative process?

The distinction between using AI as a tool and recognizing AI as a co-author is crucial. In the former case, AI is treated like any other tool (e.g., a computer that facilitates writing), where authorship is attributed to the human user employing the tool. In this view, copyright belongs to the person directing the creative process, while AI is seen as a medium facilitating expression.

In the second case, considering AI as a co-author raises questions about the possibility of assigning part of the copyright to the machine. This perspective introduces a range of legal complications, including how to divide rights and profits related to the work, whether AI (or its creators/owners) should receive recognition or compensation for their "contribution," and what consequences this has for further use and licensing of the works.

Case analyses from practice show that most legal systems are currently unprepared to recognize non-human entities as authors in the legal sense. However, ongoing discussions and emerging precedents could influence future interpretations and changes in copyright law.

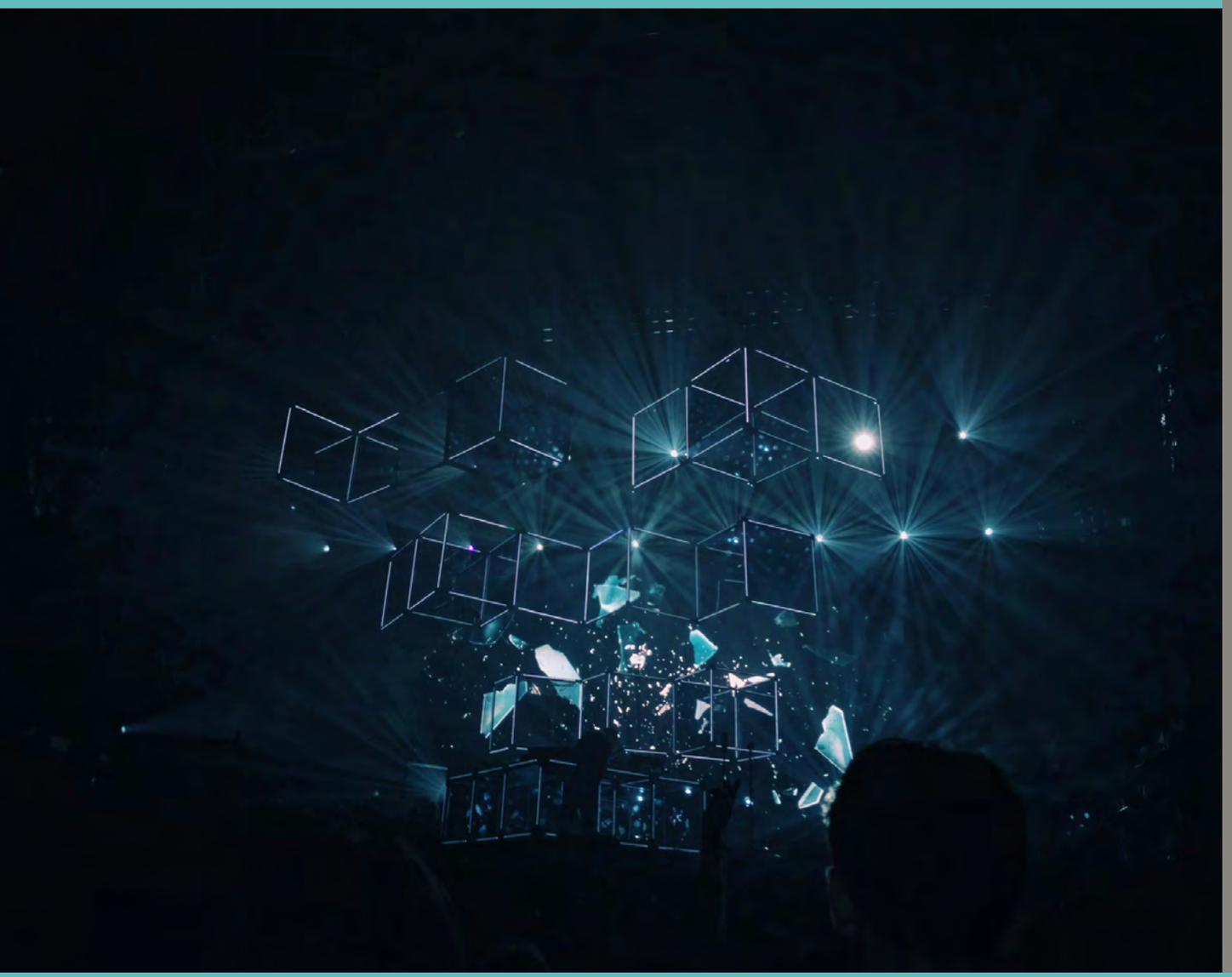
The challenge of determining authorship of AI-generated content directly impacts creators and copyright holders. This issue touches on the foundations of copyright law, including protection, exploitation, and management of intellectual property rights. For creators using AI as a tool in the creative process, it becomes crucial to secure their role as authors and ensure that they retain rights to the resulting works. The problem arises when trying to determine how much of the work must be the result of human contribution to be protected by copyright, and whether the mere concept or initiative of using AI in the creative process is sufficient to attribute full authorship to a human.

In addition to challenges related to copyright protection, there is also the issue of exploitation of works. In the context of the growing presence of AI-generated content in the market, creators and rights holders must navigate a complex environment where traditional models of distribution and licensing may no longer be suitable. This requires not only an understanding of new technologies but also adaptation to changing business models that these technologies introduce.

Considering future directions, it is important for the industry and legislators to work on creating clear guidelines and legal frameworks that will enable fair exploitation and protection of works created with the assistance of AI. This may include the development of new types of licensing agreements that specifically address issues of authorship and AI contribution, as well as a review of existing legal provisions to better reflect the changing creative landscape.

One potential solution could be the introduction of a category of 'collaboration with AI' in copyright law, which would allow creators and rights holders to clearly specify which parts of the work are the result of human input and which can be attributed to AI's actions. Such an approach would not only simplify the process of determining authorship but also help in precisely defining rights and obligations related to the exploitation and management of works.

The implications of authorship for works co-created with AI for creators and rights holders are significant and multifaceted. Addressing these challenges requires collaborative efforts from creators, legal professionals, and legislators to ensure that copyright laws keep pace with technological advancements while protecting the interests of all parties involved in the creative process. Future directions in this field will need to balance technological innovations with the need to protect human creativity, ensuring that the copyright system remains appropriate and effective in the new context of co-creation with AI.



Part 2

AI in Image Work

In the previous section, we shared fundamental knowledge regarding the use of artificial intelligence for co-creating text. We addressed both the technical aspects, such as available models and prompts, and the ethical norms associated with using AI to generate content.

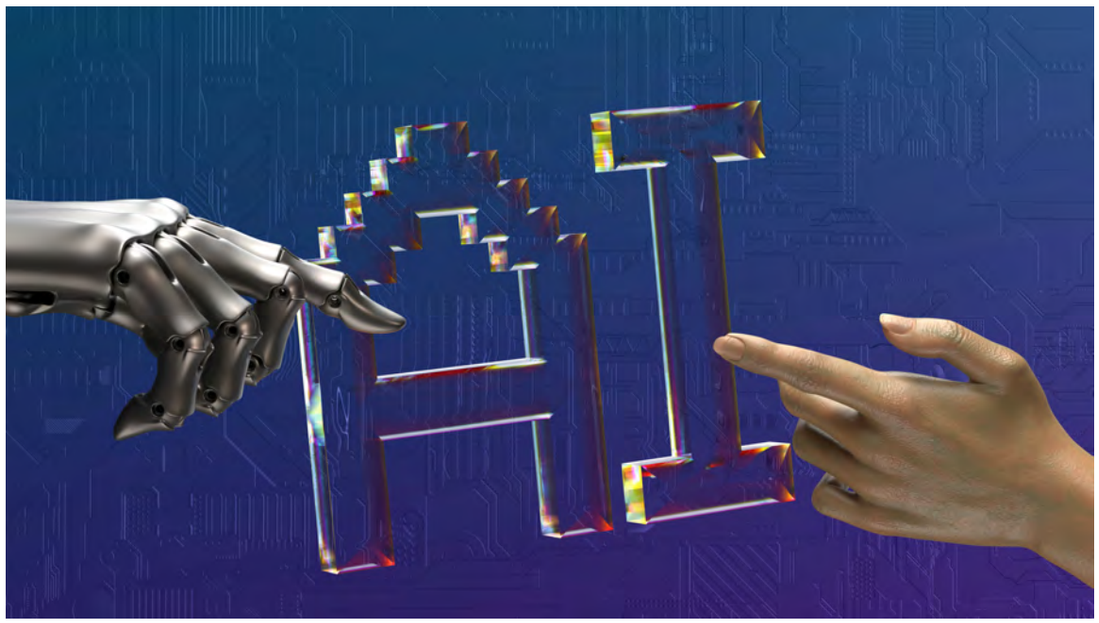
In Part 2, we will focus on the implementation of AI in working with images. On one hand, engaging artificial intelligence to generate images creates extraordinary possibilities for users (allowing the creation of unique and original illustrations). On the other hand, it also poses significant risks related to the misuse of AI in creating so-called deepfakes.

The structure of Part 2 is analogous to the previous chapter—in the following sections, you will learn about existing models, how to effectively write a prompt to generate the desired image, and additional discussions on deepfakes, which will be further elaborated upon in Part 5.

When we talk about AI technologies used for working with images, we enter a fascinating world where machines learn to "see" and interpret the world in a way similar to our human perspective. However, instead of delving into complex technical details, we will look at more accessible aspects of these technologies that transform how interactions with images become possible thanks to AI.

At the outset, it's worth mentioning Convolutional Neural Networks (CNNs), which are the real workhorses in the field of image recognition. CNNs are specifically designed to process data in the form of images, allowing machines to identify patterns such as edges, shapes, and textures. This enables them to, for example, recognize a face in a photo or distinguish between animals in a wildlife photograph. It is CNNs that power features we encounter daily on our phones or social media, such as automatic photo tagging or content filtering based on object recognition.

Another interesting technology is Generative Adversarial Networks (GANs), which can be described in an accessible way as a technology where two algorithms learn from each other in a kind of internal competition. One algorithm tries to generate new images that are good enough that the second algorithm, whose task is to distinguish real images from generated ones, has difficulty telling them apart from actual ones. Thanks to GANs, we can view realistically looking images that never existed in reality or create new, unique fashion or interior designs.



We must also not forget about Diffusion Networks, a relatively new but increasingly popular technology in image generation. Diffusion Networks work by gradually adding small random changes to initial noise, guiding towards the generation of a final image that represents what we aim to achieve. This process is often compared to reversing the blurring process of an image, where a clear image gradually emerges from a vague outline. This method is used not only for generating high-quality images but also for creating animations or special effects in films, providing creators with new tools to explore creative visions.

The examples of using the technologies mentioned on the previous page are versatile, ranging from simple applications on our smartphones, through systems aiding medical diagnostics, to advanced design tools. CNNs enable quick and effective searching of photo databases for identifying people or objects, GANs open up new possibilities in digital art and design, and Diffusion Networks provide tools for creating complex visualizations and special effects that might be unattainable with traditional methods.

The introduction to working with images in the context of AI sheds light on how these technologies not only change the way we create and interpret images but also how they impact various aspects of our lives, from entertainment to security. Understanding fundamental technologies such as CNNs, GANs, and Diffusion Networks is crucial for grasping the possibilities and challenges of the AI era in image work.

Image recognition is one of the key aspects of working with AI in the visual context. AI technologies are capable of identifying objects, people, animals, or even scenes in photos with astonishing accuracy. For example, photo management apps utilize these capabilities to assist users in organizing their photo collections by automatically tagging and classifying images based on recognized elements.

Image classification is another crucial function, enabling AI to sort images into various categories. This can include distinguishing between different types of animals in photos, identifying types of vehicles in urban traffic, or even analyzing medical images to support diagnosis. With this capability, systems can automatically organize large visual datasets, facilitating their review and analysis.

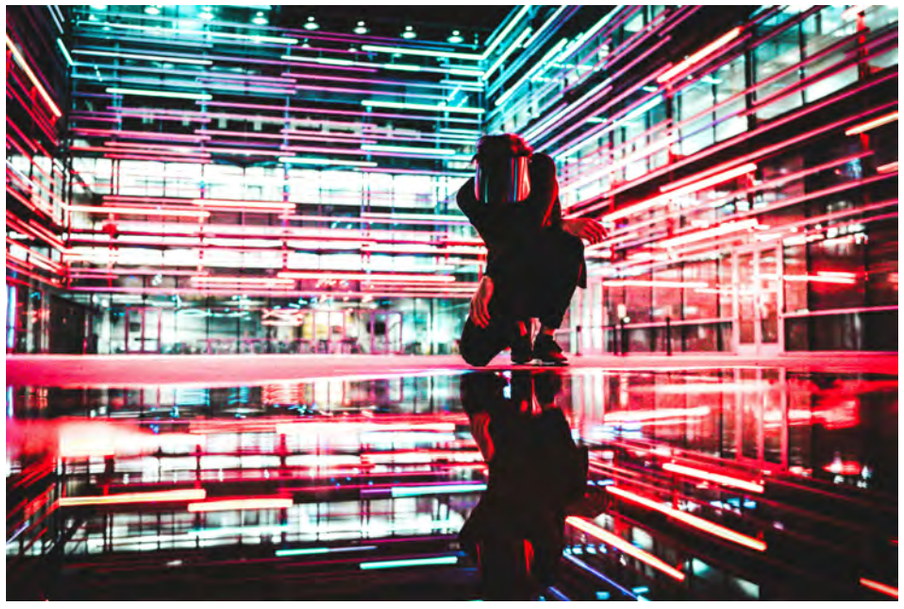
Working with images in AI also involves video, adding an extra layer of complexity—time. Systems can analyze and interpret dynamic sequences of images, which is crucial for security monitoring, where AI can continuously identify and respond to potential threats. Another example is sports, where video analysis helps assess players' techniques and strategies.

In the fields of recognition and classification, AI is also applied in more specialized areas. In medicine, algorithms can assist in diagnosing diseases based on X-ray images or microscope photos, providing valuable diagnostic tools for doctors. In retail, visual analysis enables automation of inventory management and real-time monitoring of store shelves.

A fascinating example is the LEGO brick recognition app. The app analyzes a pile of scattered bricks, recognizes which bricks and colors are present, and then suggests new structures that can be built with those bricks.

More about the Brickit app can be read here:

However, it is not only professional and industrial applications that benefit from AI's work with images and videos. Consumers are increasingly offered AI-based tools, such as photo editing apps that automatically enhance image quality, add effects, or even change the background of photos, opening up new possibilities for creativity and expression. These technologies are evolving rapidly, providing tools that were unattainable just a few years ago. From automatic photo tagging to advanced real-time video analysis, working with images in the context of AI is becoming increasingly sophisticated, opening new doors for innovation and improvements in virtually every area of life.



Examples of currently available models

In the following section, we briefly introduce examples of available AI models used for working with images. Similarly to the review of text models, it is important to remember that companies are competing in a "technological war" regarding artificial intelligence and its applications the data provided below is current as of the first quarter of 2024.

- GANs (Generative Adversarial Networks)

Generative Adversarial Networks, known as GANs, are among the most powerful tools in image generation. GANs consist of two neural networks: a generator and a discriminator, which work together to create images. The generator tries to produce realistic images, while the discriminator evaluates whether the image is real or generated. As a result of this process, images are created that are often difficult to distinguish from actual photographs.

- VAEs (Variational Autoencoders)

Variational Autoencoders (VAEs) are another type of AI model used for image generation. VAEs differ from GANs in that instead of competition between networks, VAEs use a probabilistic approach to encode input data in a more comprehensible manner, allowing for the generation of new images based on the encoded information.

- Transformers

Transformers, which gained popularity due to language models like GPT-3, are also used in image generation. Models such as DALL·E from OpenAI and Imagen from Google use transformer techniques to process textual descriptions and generate images based on them. They are capable of producing complex and detailed graphics from simple textual prompts.

Prompt what is it and how to create it in image generation? Its impact on the quality of generated images

Recall that a prompt is a command or instruction for AI that directs the process of generating responses, in this case, responses in the form of images. Similar to working with text, precision and clarity in formulating the prompt significantly impact the adequacy and usefulness of the output generated by the AI model, and consequently, the resulting image's alignment with our needs.

To create an effective prompt, it’s useful to follow a few guidelines:

- Precision and clarity: The more precise the prompt, the more accurate the generated image will be. For example, instead of writing "cat," it's better to use "black cat sitting on a red carpet."

- Details and context: Adding details and context helps the AI better understand what needs to be generated. By describing the background, colors, artistic style, or even the time of day, you can achieve more complex and expectation-aligned images.

- Experimentation: It’s worth experimenting with different prompt variations. Sometimes, minor changes in phrasing can lead to significantly better results.

- Understanding model limitations: Each AI model has its limitations and strengths. Knowing these can help tailor the prompt to achieve optimal results.

Examples of well-formulated prompts might be:

"A picturesque mountain landscape at sunset with lakes and forests in an impressionistic style."

Example response:

"A realistic portrait of a young woman with short blonde hair, wearing a green dress, against the backdrop of a modern city."

Example response:

The quality and precision of the prompt directly affect the quality of the generated image. A well-formulated prompt allows the AI to better understand user expectations and deliver results that align more closely with them. For instance, a vague prompt may result in an image that is unclear or inconsistent with the user's intentions, whereas a detailed prompt increases the likelihood of obtaining a satisfying outcome.

It is also worth noting that prompts can be used not only to create new images but also to modify existing ones. For example, by providing a photo as part of the prompt, one can ask the AI to add specific elements, change the artistic style, or improve the image quality.

Who is the author of AI-generated images?

Much like with text generated by AI, the question of authorship in the context of images created by artificial intelligence is complex and somewhat controversial. Different perspectives arise regarding who should be considered the author of such "produced" images—whether it is the creator of the AI model, the person who crafted the prompt, or the broad entity of the "machine" itself.

- An argument for recognizing the AI model creator as the author is that they developed the tool that enables image generation. The AI model is the result of a complex process of programming, training, and optimization, which requires significant technical skills and creativity.

- On the other hand, the argument for considering the user who creates the prompt as the author stems from the creative and unique input they provide, which directly influences the final outcome. It is their vision and instructions that lead to the creation of the specific image, and these are introduced by the user.

- Some argue that AI might be treated as a co-author since its ability to generate images relies on complex processes and algorithms that enable the creation of unique works. In this context, AI acts as a tool but also contributes a creative element.

Regardless of which perspective is deemed appropriate, it is important to recognize that these views complement each other—without both the model creator and the user's concept, the final work would not exist.

AI in image processing opens new possibilities for creating and editing graphics. Advanced models, such as GANs, VAEs, and transformers, make it possible to generate images of unprecedented quality and complexity. A key element of this process is a well-formulated prompt that precisely defines the user's expectations. However, the issue of authorship remains open, requiring further discussion and legal regulation to determine how best to divide the credit between AI model creators, users, and the AI systems themselves.

Security in the context of AI and images

Artificial intelligence, especially in the context of image generation, brings numerous benefits but also serious security challenges and risks. As technology utilizing artificial intelligence becomes increasingly advanced, it is crucial to address various security aspects to minimize the risk of misuse.

Fake news, or false information spread to mislead, becomes particularly dangerous when supported by AI-generated images. These images can look very realistic and convincing, which increases their potential to deceive people. Moreover, compared to "fake" images with untrue text, there is an additional important issue—images can spread more quickly and widely, potentially becoming "viral" and causing panic among a large audience.

The generation of fake news using AI poses dangers on several fronts, including:

- AI-generated images can be used to create false evidence in political contexts. They can depict politicians in compromising situations, which can have a real impact on election outcomes and, consequently, destabilize politics at various levels, including national or European.

- False images can be used to damage the reputations of public figures, companies, or organizations. For instance, a photo montage depicting a celebrity in a scandalous situation can ruin their career, but this can also affect private individuals, such as teachers or government officials.

- Generated images can be used to incite hatred and violence. False images depicting acts of violence can lead to social tensions and riots. For example, a fake report of a crime committed by individuals from an ethnic or national minority can fuel hatred and hinder their daily functioning within the local community.

- False images can also be used in financial frauds, such as falsely presenting products or services, which can lead to financial losses for consumers.

There are many such examples; let's examine some of the most prominent cases from recent months.

Remember—there is no such thing as a "harmless" fake news! Every generated image that is not true should include information about its creation using AI. There are no funny fake news stories; we never know how they might be received by others, especially if the false content concerns the safety of their loved ones or sensitive information.

In recent months, there have been several high-profile cases of AI-generated fake news, particularly involving false images that quickly spread across social media worldwide. We've all heard about the "burning Eiffel Tower" or manipulations in the U.S. election campaign. What other "false facts" can you encounter while browsing the internet? Here are a few examples:

- Fake celebrity photos

The internet increasingly features fake photos of celebrities depicted in compromising situations. Celebrities are shown abusing alcohol or drugs, or committing crimes. Such images are widely spread on social media. While seemingly harmless, they actually impact reputations.

- Fake evidence in election campaigns

During elections, fake photos of politicians appear online, supposedly proving their involvement in illegal activities. The goal of such actions is to discredit candidates and influence the election outcome. Again, seemingly "harmless" rumors can have a real impact on important areas of our lives, like politics.

In the photo, an example of one of the most well-known fake news stories—the burning Eiffel Tower.

- Fake news about natural disasters

In recent years, social media has been plagued by fake images depicting supposed natural disasters such as massive forest fires and floods. This type of fake news is particularly dangerous as it generates misinformation and societal panic.

- Fake medical reports

During the COVID-19 pandemic, false images allegedly from medical reports surfaced, claiming to show new, dangerous mutations of the virus. These images were widely disseminated to induce fear and confusion among the public.

Why Is this so dangerous?

With the use of artificial intelligence, it is increasingly common to encounter very realistic-looking fake news. Their goals may range from simply gaining "popularity" or social media reach to spreading misinformation and manipulating public opinion. Such false information is often spread through social media, where it quickly gains traction and is shared by unsuspecting users.

Example fake news scenario

- Appearance of the fake news

Someone creates a photo or video depicting the Eiffel Tower in flames using graphic software (increasingly AI-based today—this is the danger, as nowadays, no significant graphic skills are needed; simply input a prompt and AI will generate the image). The material looks realistic, which enhances its credibility.

- Spread on social media

The false news is shared on platforms such as Facebook, Twitter, Instagram, or TikTok. Seeing dramatic images, people quickly react and share them further.

- User reactions

In a short time, the news becomes viral, and users begin to comment, expressing their concerns, sympathy, or outrage. This increases its credibility but also its reach (through algorithmic positioning). Some may call emergency services, and news media might attempt to verify the information, which, in extreme cases, can lead to widespread panic.

- Corrections and clarifications

When legitimate media or official sources (e.g., Paris authorities, fire department) realize that it is fake news, they issue statements that the Eiffel Tower is not burning and that it was misinformation.

Seems harmless, right?

Now, imagine your loved ones had tickets to the Eiffel Tower that day. They are now unknowingly strolling around Paris with no phone signal, so you don't know if they are safe. It's not so harmless now, is it?

Effects of fake news

- Panic and anxiety

False information can trigger mass panic, especially among those with loved ones in the affected area.

- Reputational damage

Cities or institutions targeted by fake news can suffer negative reputational impacts.

- Disinformation

Spreading false news undermines trust in media and information online.

- Operational costs

Emergency services might be unnecessarily mobilized, creating additional costs and delaying assistance to those who truly need it.

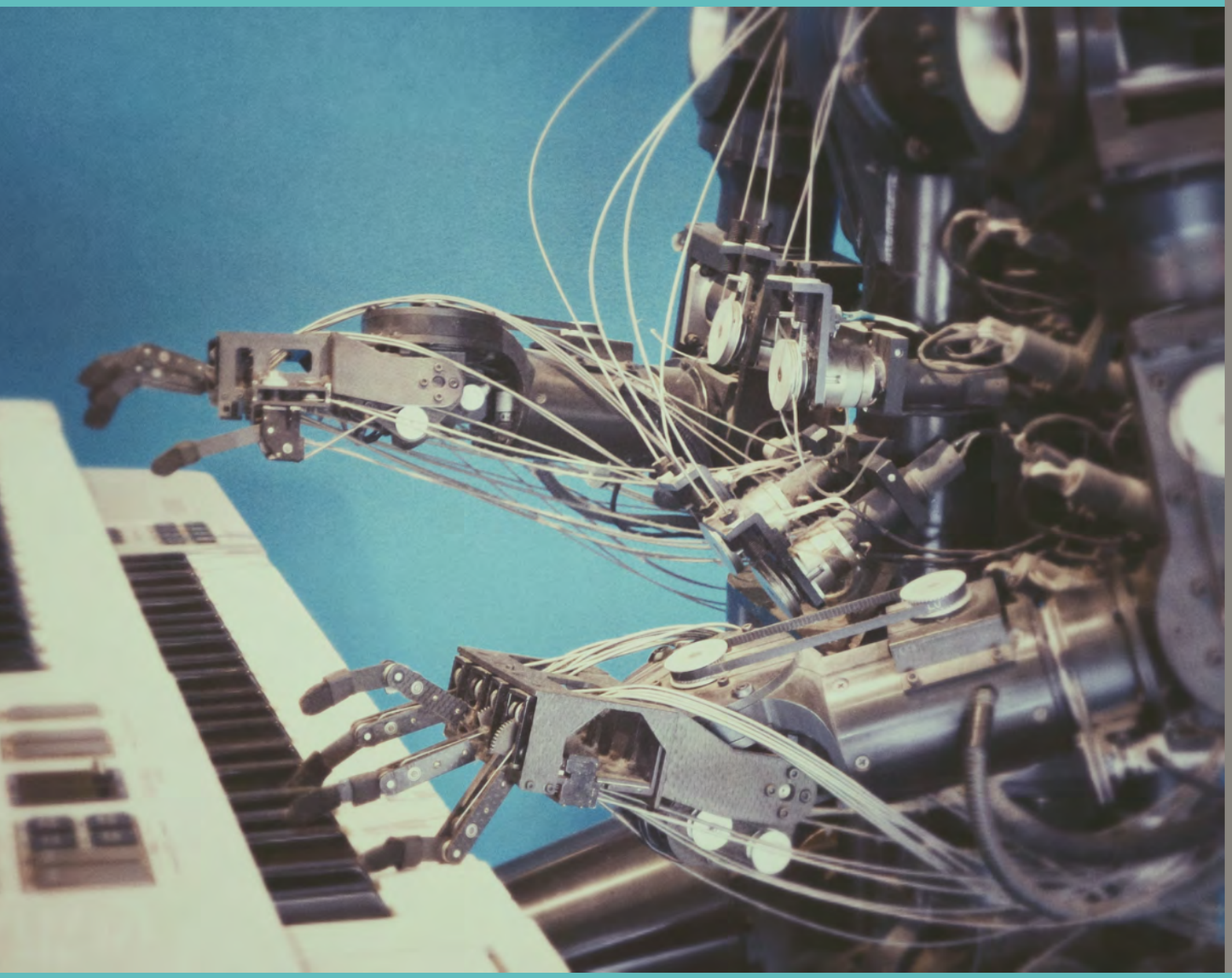
How to protect yourself from fake news

- Always verify information through multiple, reliable sources. Don’t react instinctively.
- Think critically. Consider if the information is even plausible.
- Use fact-checking services like Snopes or PolitiFact.
- Exercise caution when sharing. Before you share news, ensure it is accurate.
- Examine the shared image. Artificial intelligence, while nearly perfect, can also make mistakes (e.g., check for spelling errors, and in the case of people, look at their hands—AI sometimes distorts them).

- To effectively combat disinformation, it's crucial to develop skills for recognizing its signs and to share this knowledge, especially with youth and others who may be more vulnerable.

- Actively reporting misinformation—whether to social media platforms, municipal services, or directly in the comments—helps prevent harmful content from spreading and reaching those it might hurt.

For a deeper dive into recognizing and addressing fake news, refer to Part 5 of our publication, where we explore this topic in greater detail. Stay informed and proactive in ensuring the information shared is accurate and trustworthy.



Part 3

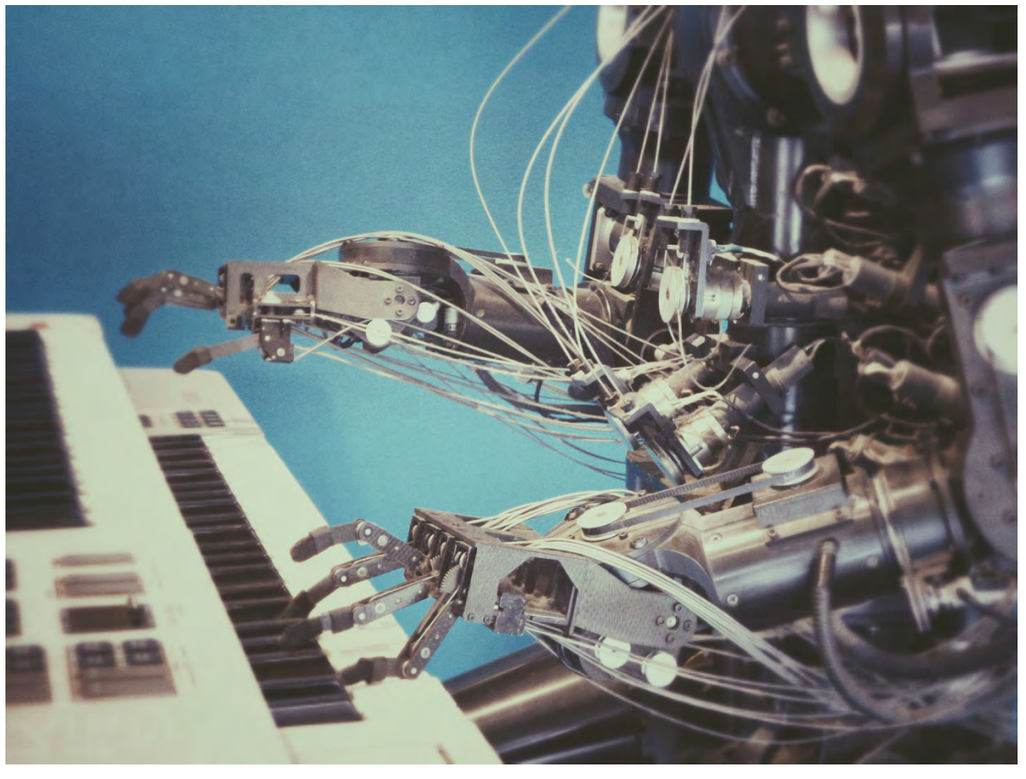
Other Interesting Examples
of AI Services

In previous sections, we have explored the use of artificial intelligence in two of the most common applications: working with text and working with images. However, AI has many other fascinating applications. Artificial intelligence is playing an increasingly significant role in artistic fields such as music, film, and other forms of art. It is used in preparing dubbing, radio broadcasts, creating animations, and more. The widespread availability of free tools means that even as youth trainers, you can successfully create educational materials incorporating AI-generated music or film.

In this section, we will look at some of the most popular AI music generators. We will then present two other examples of "human-machine" collaboration: how AI can be used to prepare and conduct an effective webinar and, as a curiosity, how AI can be used to "animate" photographs. We invite you to read on.

AI music generators

The implementation of AI affects every aspect of the music creation process, including generating music, mastering sound, and streaming music. For our purposes, we will focus on the practical aspect of creating your own compositions using free tools available online.



One of the main benefits AI brings to amateur musicians is an innovative way to streamline the creative process. The music industry, like many other fields, uses artificial intelligence as a complementary tool rather than a replacement for human artists. Many experts, musicians, and record labels are exploring new ways to integrate AI technology with music. Some programs can create works in the style of various composers, while others use machine learning algorithms to generate entirely new songs and sounds.

Many of these tools are "open source," meaning that anyone can access them and begin enhancing existing technologies. This allows for the creation of personalized music on demand and experimentation with new styles and techniques. Both young people and you, as their educators, can benefit from these tools.

Using AI music generators in educational work offers many advantages. AI music generators can be an excellent tool for introducing your students to modern technologies. You can organize classes where students learn how artificial intelligence algorithms work and how they can be used in various fields, including music.

AI can help in developing students' creativity by offering new and innovative ways to create music. Students can experiment with different musical styles, generate their own compositions, and discover new sounds. With AI, they can easily modify and adapt generated pieces to their preferences, stimulating their creative thinking. You might encourage them to create a class song, collaboratively compose a group anthem, or simply inspire them to interpret a poem or story as a song. The possibilities are truly vast.

You can also assign individual projects to students, where they will use AI music generators. For example, students could be asked to create a soundtrack for a film, a computer game, or a multimedia presentation. Thanks to AI, they can do this even without advanced musical knowledge or "talent."

AI can also be used to create educational scenarios where music plays a key role. You can prepare lesson plans or workshops where students use AI to create music that illustrates the topics being discussed, such as historical, literary, or scientific subjects.

Now that you know the benefits of using AI as a music generator—including fostering students' creativity, enriching your teaching toolkit, and providing an interactive, innovative approach to interpretation through music—we would like to present some widely available, free online tools that can be used by your students to create their own music.

Many teenagers still use artificial intelligence in a very limited way. Their "experience" with AI is confined to help with writing essays or creating illustrations. By incorporating other creative uses of AI into your teaching work, such as creating unique music, you can show teenagers how to harness the potential of AI tools. Artificial intelligence should be a helper, a technical solution, a convenience, but the user's idea is key.

We remind you that, just like with text and image generation, technological advancements in music-related solutions are very dynamic—what we present here is current as of the first quarter of 2024, when we conducted our project.

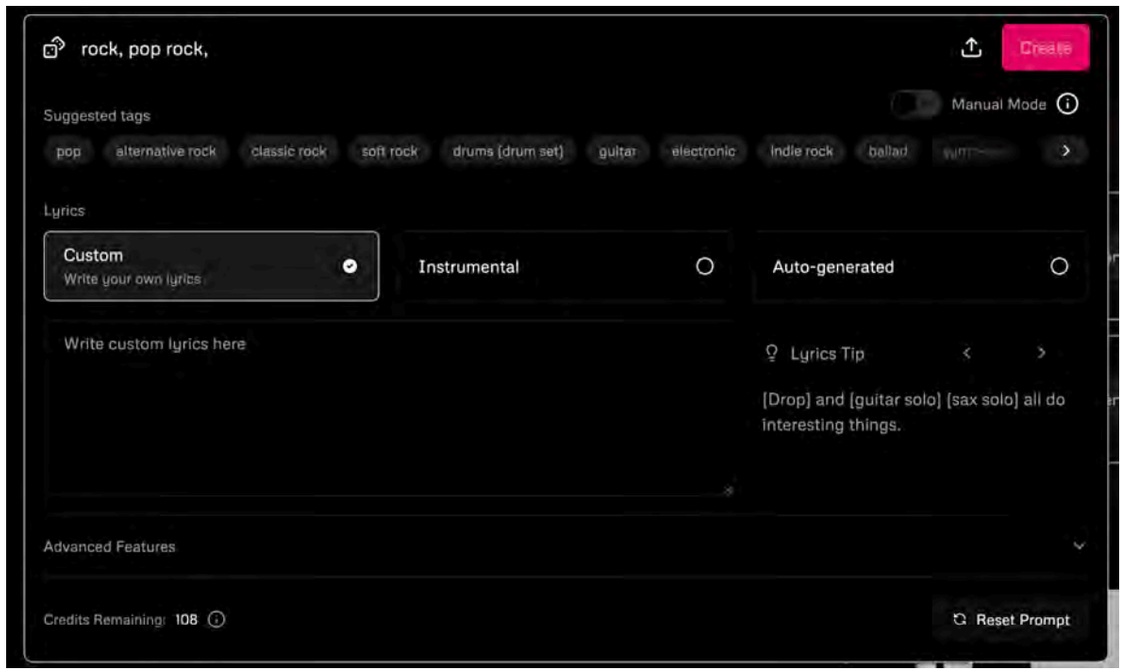
- **Udio (https://www.udio.com/)**

The first very useful tool is the Udio platform. Udio is a unique AI music generator that uses artificial intelligence to create custom musical compositions. Often referred to as the "ChatGPT for music."

Udio simplifies the music creation process by allowing users to describe the desired tracks in terms of genre, instruments, and other details. The platform converts text data into complete, high-quality musical compositions.

This solution is particularly useful as it does not require users to have any musical knowledge or talent. The process of preparing a track comes down to formulating a prompt for the generator, where one can specify the musical style and input text.

The tool is available for free (after logging in—based on a certain number of free credits that renew daily) and is very intuitive to use—users can take advantage of suggestions or ready-made styles.



Udio interface

Summary:

- Udio converts textual descriptions into full musical compositions using artificial intelligence.
- Udio is referred to as the "ChatGPT for music", available to non-musicians, features a simple and intuitive interface, and can be used for group projects or short assignments.
- Udio creates sophisticated, high-quality compositions.
- Udio makes music creation accessible to everyone.
- Udio can be used to create personalized tracks for presentations, semester projects, and personal videos.

AIVA (Artificial Intelligence Virtual Artist) (https://creators.aiva.ai/)

AIVA is an advanced music generator that uses artificial intelligence to create original musical compositions. The platform is available for free to both professionals and amateurs, allowing them to create music in various styles and genres. With its intuitive interface and advanced algorithms, AIVA enables users to easily generate and edit music.

AIVA was established in 2016 with the goal of creating a tool capable of composing music at a level comparable to human composers. Supported by investors and AI experts, AIVA quickly gained recognition in the music industry.

Features and Capabilities of AIVA:

- AIVA allows for music creation based on textual descriptions. Users can specify the genre, mood, tempo, and instruments, and the system will generate a corresponding composition (similar to the Udio generator).
- Users can choose from various musical styles, such as classical, pop, rock, jazz, and many others. AIVA can also emulate the style of specific composers, such as Bach or Mozart.

- AIVA offers tools for editing generated compositions. Users can modify melodies and change arrangements to suit their needs.

- The platform is compatible with popular digital audio workstations (DAWs), allowing for further editing in professional music production software such as Ableton Live, Logic Pro, or FL Studio.

AIVA utilizes advanced machine learning algorithms and neural networks to analyze and generate music. The system has been trained on a vast database containing thousands of musical pieces, enabling it to create realistic and sophisticated compositions. AIVA also employs natural language processing technology to interpret textual descriptions and convert them into music.

Examples of Generator Applications:

- AIVA can be used to create music for films, video games, advertisements, and other media. With its ability to quickly generate music in various styles, it is an ideal tool for content creators who lack experience as professional music producers. For example, students can successfully create a soundtrack for a school play or their own film.

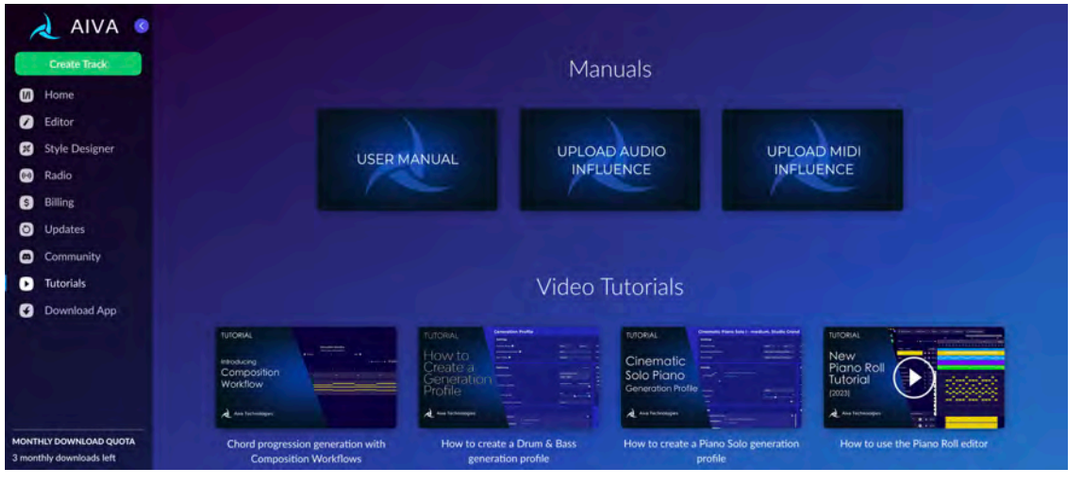
- AIVA can serve as an educational tool for music students or beginner creators, helping them understand compositional structures and techniques. If you are working with musically talented youth, the generator (thanks to its extensive range of musical styles) can be a useful tool for taking their first steps in the industry and analyzing their own work.

- Your students can create personalized pieces for special occasions—class holidays or birthdays.

Summary:

AIVA is a powerful yet still intuitive tool for anyone looking to create music, regardless of skill level. By leveraging artificial intelligence, it allows for the easy and quick generation of high-quality musical compositions. This platform is an excellent example of how technology can support creativity and open new possibilities in the field of music.

Helpful tutorials for beginners are included within the generator.



Soundful (https://my.soundful.com/)

Soundful is another advanced music platform using artificial intelligence to create original musical compositions. Like the two previously presented generators, Soundful is designed for both professional musicians, producers, and amateurs who want to explore new creative possibilities.

Similar to previous tools, Soundful allows users to generate musical pieces based on specified parameters such as genre, mood, tempo, and instruments. AI algorithms analyze the user's preferences and create appropriate compositions. The platform offers editing tools for generated pieces, allowing changes to melodies, harmonies, arrangements, and adding sound effects. Users can customize the music to their needs. Soundful has an extensive library of sounds and loops that can be used in the created compositions. The variety of tones and effects enhances musical pieces. The platform is also compatible with popular music editing tools, allowing more advanced users to further refine their material.

We have presented three examples of AI music generators. There are many more free solutions available. You can also create compositions using Canva, which you may already be familiar with, and then immediately incorporate the prepared piece into a larger project, such as a presentation. There are also several other effective tools online, including Ecrett Music, Amper Music, and JukeBox by OpenAI. We strongly encourage their use during workshops and lessons – these simple and effective tools can help capture the attention of young audiences, as they are still not widespread among youth and may intrigue your target group.

How Does Safety Relate to Creating Music with AI Generators?

In previous parts of this publication, we discussed safety issues related to generating images and text with AI, focusing on fake news, which, thanks to AI, is becoming increasingly realistic, and its preparation does not require professional editing or graphic skills from the user.

What About Safety in Creating Music with AI Assistance?

Creating musical compositions using AI music generators presents several potential risks and challenges worth considering. Here are some of them:

- Data Security:

When using AI music generators, users may share personal data and creative content. There is a risk that this data could be intercepted or misused by third parties.

Many AI tools operate in the cloud, which may pose a risk of attacks on the servers where user data and their compositions are stored. Without proper security measures, data breaches could occur.

- Copyright and intellectual property:

There is a risk that generated compositions may unintentionally infringe on copyright by resembling existing works. Challenges may also arise in determining intellectual property ownership when multiple users collaborate with AI.

Users may have difficulty assessing how AI generates music and what sources are utilized. This could lead to the inadvertent use of protected materials.

- Fake news and manipulation:

AI could be used to create false works attributed to well-known artists, potentially misleading fans and music consumers.

AI music generators might be used to create music that manipulates listeners' emotions for commercial or political purposes, which could have unethical implications.

- Ethics:

The increased use of AI in music creation could lead to reduced demand for human composers and musicians, negatively impacting the job market in the music industry.

There is concern that widespread use of AI in music might limit human creativity, leading to homogenization of musical output.

- Summary:

AI music generators offer many opportunities, but it is important for users and creators to be aware of potential risks. Proper regulations and precautions are necessary to ensure data security, copyright protection, and ethical use of AI technology in music. However, the intuition of the end user remains crucial—songs should not contain sensitive data, and their content should be critically analyzed, similar to how one would carefully verify the source of musical material before sharing.

Most generators will not allow users to input offensive text, but still remember that AI is not a perfect tool—users may "smuggle" messages, so special attention should be given to the dissemination of music created with the assistance of AI. Anyone can become a creator quickly—the availability of tools brings benefits but also challenges.

Using Artificial Intelligence for creating webinars

Artificial intelligence plays an increasingly significant role in preparing and conducting webinars, introducing innovations that significantly enhance the quality and effectiveness of online events. AI can support organizers at every stage—from planning and promotion, through execution, to analyzing results and follow-up of the webinar. However, with these opportunities come new challenges related to security and participant privacy.

1. Planning and preparing content

Step 1: Defining the goal of the webinar

First, determine what you want to teach participants and what the main points of the program will be. AI can assist in analyzing market trends and identifying popular topics, which helps tailor the webinar content to the needs of the audience.

Step 2: Creating the agenda

AI can assist in creating the agenda by analyzing best practices from similar webinars and suggesting the order of topics to be presented.

Grammarly is a free tool for checking grammar and style that can help in creating professional and clear materials for the webinar.

2. Preparing the presentation

Step 3: Creating slides

AI to create visually appealing and effective slides. Tools like Canva have automatic design features that can generate professional slide templates.

Step 4: Adding content

AI can assist in generating content for the slides based on the given topics and points. Natural language processing tools can suggest optimal phrasing and layout of content.

Canva offers a free plan that includes features for creating professional presentations. You can use pre-made templates and graphics that support the slide creation process.

3. Promoting the webinar

Step 5: Creating promotional materials

AI can help in creating attractive posts and graphics for social media. Tools like Lumen5 can automatically generate short promotional videos based on text.

Step 6: Optimizing the advertising campaign

AI can analyze demographic data and online behaviors to optimize advertising campaigns. Tools like Facebook Ads Manager with AI can help in targeting the right audience.

4. Conducting the webinar

Step 7: Automating tasks

AI can automate many tasks related to running a webinar, such as participant registration, sending reminders, or managing the Q&A session.

Step 8: Analyzing participants

During the webinar, AI can analyze live data, such as participant engagement, questions asked in the chat, and their responses. It can also provide real-time data on the number of participants and their interactions.

Zoom offers a free plan that allows webinars with up to 100 participants. Zoom also has automation features, such as participant registration, email reminders, and post-webinar analytics.

5. Post-webinar analysis

Step 9: Data analysis

AI can analyze data from the webinar, such as the number of participants, session duration, participant engagement, and feedback. Tools like Google Analytics can provide detailed reports and analyses.

Step 10: Improving future webinars

Based on the collected data, AI can suggest improvements for future webinars, such as changes to the agenda, content optimization, or better methods for engaging participants.

Google Analytics is a free tool that can provide detailed data and analyses regarding webinar participants and their behaviors.

How does security look when using AI tools in the process of preparing a webinar?

Security when using AI tools in the process of preparing a webinar is a key issue that must be considered at every stage, as similar to text, images, and music, which we discussed earlier, there are certain risks associated with personal data security. Here are the main security issues and practices to consider:

1. Protection of personal Data

Ensure that the tools you use comply with data protection regulations, such as GDPR in the European Union. Check the privacy policies of the tools to understand what data is collected and how it is processed.

Collect only the data necessary for conducting the webinar, and always inform participants about the purpose of data collection and obtain their consent.

2. Communication security

Choose webinar tools that offer end-to-end encryption, which secures communication between you and the participants from unauthorized access.

Use strong passwords and, if possible, two-factor authentication for logging into webinar platforms and AI tools.

3. Content security

Set appropriate permissions and access controls for webinar content so that only authorized users can view and edit materials.

Share webinar links only with registered participants and use password protection options if available.

4. Security of AI platforms

- Regularly check the security settings of the tools you use, and ensure that they are updated and meet the latest security standards.

Using AI to animate photos

Another interesting application of artificial intelligence is animating old photos. One of the tools that can be used to bring photographs to life is the MyHeritage Deep Photos platform (https://www.myheritage.pl/deep-nostalgia), offered by MyHeritage, a company specializing in genealogy and DNA testing. The tool is free in its basic version.

Thanks to the technology used in MyHeritage, it is possible to animate old photos where the figures start moving their heads, smiling, and even blinking their eyes. It uses artificial intelligence and deep learning algorithms to create realistic animations that bring historical photographs to life. This allows users to gain a more emotional and dynamic connection with their ancestors and loved ones.

How can animating photos be used in working with youth, particularly in education?

The MyHeritage Deep Photos platform can be successfully used in educational work, for example:

- The platform can be an extremely valuable tool in teaching family history and genealogy. Animated photos can attract students' attention, make lessons more engaging, and help in understanding the history of ancestors. Students can better understand what life was like for their ancestors, which may spark greater interest in family history.
- Teachers can use animated photos to bring historical figures to life, which can help students better understand and remember key figures and events from the past. For example, animating portraits of well-known historical figures can make history lessons more interactive and interesting.

- In cultural and artistic education, MyHeritage Deep Photos can help students understand and appreciate the significance of portraits and other forms of visual art. Animations can add a new dimension to the analysis of artworks, showing how the movements and facial expressions of the depicted individuals might have looked.

- From a technical perspective, computer science teachers can use MyHeritage Deep Photos to teach about artificial intelligence, deep learning algorithms, and image processing. They can discuss how this technology works, its applications, and its limitations.

Is it secure?

Security is a crucial issue, especially when it comes to processing personal data and family photos. MyHeritage ensures that their services are designed with user privacy protection in mind. The company employs various security measures such as data encryption and physical as well as digital safeguards to protect information from unauthorized access.

However, as with any technology, there are a few aspects worth paying attention to:

- Before using MyHeritage Deep Photos, it is advisable to review the company's privacy policy to understand how data is collected, processed, and stored.

- Users should be aware that using this technology involves processing their photos. It is important to obtain appropriate consents from all individuals whose photos are animated, especially when it comes to photos of minors. Users should ensure that their data is stored securely and have access to options for deleting data if necessary.

How to stay safe?

To ensure safety when using MyHeritage Deep Photos, it is worth following a few basic principles:

- Use strong, unique passwords for your MyHeritage account and change them regularly (this applies not only to this platform).

- Ensure that only trusted individuals have access to your account and data.

- Regularly update software and security systems to protect against potential threats.

- Be aware of potential threats such as phishing or other forms of cyberattacks, and learn how to recognize and avoid them.

Benefits for users

Using MyHeritage Deep Photos offers many benefits, both emotional and practical:

- Animated photos can help users revive memories of loved ones who have passed away, which can be very emotionally enriching.

- Sharing animated photos with family can help build bonds and create a shared experience of family history.

- As mentioned earlier, MyHeritage Deep Photos can be used as an educational tool that helps students better understand history and culture.

- Users have the opportunity to experience advanced AI technology, which can be fascinating and inspiring, especially for younger generations.

MyHeritage Deep Photos is an innovative technology that can significantly enrich both education and personal experiences related to family history. Despite potential data security challenges, proper precautions can help users enjoy the benefits of this technology in a safe manner. For educators, this tool opens new possibilities for engaging students and conveying knowledge in a more interactive and emotional way.

Part 4

AI – What Else Should We Know?

Generative Artificial Intelligence (Generative AI) is a field of technology that focuses on creating systems capable of generating new content, such as text, images, music, or video, based on provided input data. Generative models, such as GPT-4 from OpenAI, are examples of this type of technology. One of the key aspects of modern AI is the ability to self-improve, or the ability to "learn" from new data and experiences, allowing models to continuously enhance their performance.

Generative AI operates by processing input data and generating new content based on it. These models often rely on machine learning algorithms, particularly neural networks, which are trained on large datasets. For example, the GPT-4 model has been trained on billions of words from various sources, enabling it to generate coherent and meaningful text in response to given prompts.

There has been significant progress in the field of artificial intelligence, pushing the boundaries of what is possible in natural language processing and user interaction. Particularly noteworthy is the development of AI models with direct access to the Internet, which opens up new possibilities but also presents new challenges, especially concerning security and cybersecurity. The evolution of these models, from GPT-3 with plugins to GPT-4 with direct internet access, represents a breakthrough in this field.

Earlier approaches, such as GPT-3 with plugins, were pioneering attempts to extend AI models' capabilities by allowing them to utilize external data sources. However, the latest advancements, represented by GPT-4, have revolutionized this area by offering direct internet access without the need for additional plugins. This evolution opens new horizons for AI models, enabling them to draw from the freshest information available online in real-time, integrate and process knowledge from various sources more easily, generate responses that are current and contextually rich, and gain a deeper understanding of user queries. All of this contributes to a significant improvement in the quality and relevance of generated content.

The development of these technologies has a significant impact on various sectors. In education, AI models can serve as dynamic textbooks, updating in real-time to enable the personalization of educational materials and support in lesson preparation. In customer service, such models can revolutionize interactions with customers by providing responses that include the latest information about products, services, or company policies, leading to increased efficiency and customer satisfaction. The entertainment and media sectors can leverage these technologies to generate personalized content, create interactive experiences, and analyze trends and audience preferences in real-time. In the field of scientific research and market analysis, AI models with internet access can accelerate data analysis, generate preliminary conclusions and summaries, and identify new trends and research opportunities.

In addition to GPT-4, there are other artificial intelligence models with internet access. Bard/Gemini from Google utilizes Google's vast knowledge base to generate responses and analyze data. Claude AI offers capabilities for analyzing and interpreting data from various internet sources. Anthropic's Constitutional AI focuses on ethical and secure use of online resources. Each of these models has its unique features and applications, contributing to the diversity and richness of the AI ecosystem.

Assisting with online search has become a crucial element in today’s digital toolset, helping users navigate through vast amounts of data available online. These tools include browser plugins and extensions that assist with bookmark organization, automatic form filling, and result filtering. Advanced algorithms utilizing artificial intelligence (AI) and machine learning personalize search results by tailoring them to user preferences. For example, Microsoft Bing's AI-powered search offers summaries of answers, visual stories, and interactive guides through search results. Specialized search engines like Wolfram Alpha provide computational answers to queries across various fields of knowledge, generating charts, tables, and statistics based on the input data.

There is a perception that Google's dominance as a search engine could be threatened by AI-assisted search technologies. In response, Google is investing significant resources in developing its own AI solutions to maintain its leading position. This competition drives innovation in the field of web search, ultimately benefiting users with more advanced and intuitive tools for finding information.

With the development of AI models that have internet access, new challenges related to security and cybersecurity emerge. One of the primary concerns is data privacy. There is a risk of unauthorized access to users' personal data and the possibility of tracking search history and preferences. Misinformation poses another serious threat, as AI models can be used to generate and spread false information, making it increasingly difficult to distinguish between AI-generated content and human-created content.

Social engineering attacks may take on a new dimension with AI being used to create convincing phishing messages and automate large-scale attacks. There is also the risk of manipulating search results, which could lead to the promotion of specific content or viewpoints and the creation of “information bubbles.” Additionally, AI could be used to automate DDoS attacks or generate malicious code or exploits, presenting a serious threat to cybersecurity.

In response to these threats, various security measures are being implemented. End-to-end encryption is used to secure communication between users and AI models and to protect data transmitted over the Internet. Multi-factor authentication adds an extra layer of security when accessing advanced AI features, reducing the risk of unauthorized access. Behavioral monitoring and analysis help detect unusual usage patterns that may indicate misuse, allowing for real-time blocking of suspicious activities.

Sandboxing techniques are employed to isolate the AI model's execution environment, limiting potential damage in case of malicious exploitation. Regular security audits enable systematic checks for vulnerabilities and the implementation of updates and security patches. User education also plays a crucial role by increasing awareness of potential threats and teaching safe usage of AI tools.

Ethical issues and accountability are other important aspects of developing AI models with internet access. Algorithmic transparency is key; users should be clearly informed when interacting with AI, and information about the data sources used by the model should be accessible. Content moderation is essential for filtering harmful or illegal content, and collaboration with experts helps in defining security standards.

Legal accountability for actions taken by AI is an area that requires careful delineation. The development of legal frameworks regulating the use of AI with internet access is necessary to ensure safety and protect user rights. Ethical data use, adherence to data protection principles, and obtaining informed consent from users for data processing are fundamental to responsible AI development.

Addressing biases in AI models is another significant challenge. Regular audits of models for potential biases and striving to create inclusive and fair AI systems are essential to ensure that this technology serves the entire society, not just selected groups.

The development of AI models with internet access opens up exciting possibilities but also presents new challenges. Finding a balance between innovation and safety is crucial. The future of these technologies will depend on our ability to address ethical, legal, and security issues while fully leveraging AI's potential to improve quality of life and societal development.

Companies and organizations working on these technologies must prioritize security and ethics, collaborating with experts from various fields to create responsible and secure solutions. At the same time, users should be aware of both the opportunities and potential risks associated with using AI models with internet access.

As these technologies evolve, we are likely to see the emergence of new standards and regulations aimed at protecting users and ensuring the responsible development of AI. Education and increasing public awareness about these technologies will be key to their safe and effective use.

AI models with internet access have the potential to significantly change the way we interact with information and technology. However, their full potential will only be realized if we can effectively manage the associated risks and challenges. The future of these technologies is promising but requires careful and responsible approaches from all stakeholders. Through continuous collaboration, innovation in security and ethics, and public education, we can fully harness AI's potential while minimizing associated risks. In this way, we can create a future where AI with internet access serves as a tool to enhance quality of life, support scientific progress, and foster development while respecting the rights and safety of all users.

Part 5

Safety and Countering Disinformation in the Context of Working with AI

Based on previous sections, it can be inferred that artificial intelligence (AI) technology is becoming increasingly ubiquitous. Young people are utilizing it not only for working with text or images but also as co-authors in music, films, animations, presentations, and webinars.

In a world where technology plays an ever-growing role, security and combating misinformation become crucial aspects of its responsible use.

The fifth part of our publication focuses on outlining fundamental principles for the safe use of AI technology and strategies for combating misinformation. Our goal is to equip readers with the knowledge and tools necessary for the responsible use of AI, while emphasizing both its potential and the risks associated with its use, which aligns with the main objectives of the project we have been working on for the past 8 months.

Fundamental principles of security

Protection of sensitive data

Artificial intelligence often processes vast amounts of data, including personal and sensitive information. Protecting this data is a priority in any AI system. There are several key methods to help secure data from unauthorized access and leaks:

- One of the most important measures for data protection is encryption. Data should be encrypted both during transmission (in transit) and while stored (at rest). Encryption ensures that even if data is intercepted by unauthorized individuals, it cannot be read without the appropriate decryption key.

- Anonymization involves removing or obscuring information that can identify an individual. This allows data to be used for analysis and research without violating individuals' privacy.

- AI systems should employ advanced security protocols, such as TLS (Transport Layer Security) or SSL (Secure Sockets Layer), to protect data during transmission across computer networks.

Protection of image and privacy

Protecting the image and privacy of individuals whose data is used by AI systems is equally crucial. In this context, several key tools and practices are worth noting:

- Informed consent: Every individual whose data is processed should give informed consent. This means users must be clearly informed about what data is being collected, how it will be used, and what rights they have concerning the processing of their data.

- User control: Users should have the ability to control their data, including reviewing, modifying, and deleting it. Providing such control helps build trust in AI systems and their operators.

- Privacy protection mechanisms: AI systems should implement privacy protection mechanisms such as pseudonymization, data minimization (collecting only necessary data), and regular security audits.

AI as a tool, not a panacea

Although artificial intelligence is increasingly advanced, it is important to remember that it is a tool created by and for humans. It is up to us, the users, to determine how we will harness its potential. It is essential to approach the design and implementation of AI systems with responsibility and ethical awareness.

Designing and implementing AI systems should adhere to ethical principles. This means that AI creators and users should strive to ensure their actions align with societal and moral norms. Key considerations include:

- Transparency

- Informing Users: Users should be informed about how AI systems work, what data is used, and how decisions are made. Transparency helps build trust and understanding among users.

- Responsibility

- Accountability: AI developers should be accountable for the functioning and impact of their systems. This means monitoring and controlling their systems to ensure they operate as intended and do not cause unintended harm.

- Equality and fairness

- Non-Discrimination: AI systems should be designed and used in a manner that does not discriminate against any social groups. It is crucial to avoid biases and stereotypes that could lead to unfair treatment of individuals or groups.

As AI technology continues to evolve, addressing these ethical concerns is essential for creating systems that not only advance technological progress but also respect and uphold fundamental human values. By ensuring transparency, accountability, fairness, and a thoughtful approach to social implications, we can foster the responsible use of AI, maximizing its benefits while minimizing potential harm.

Combating disinformation

In the digital age, disinformation is becoming an increasingly significant problem. AI can be both a tool for combating it and a source of it. Therefore, it is crucial to understand how AI can be used to counteract disinformation.

- Identifying false information

AI can be used to identify and verify false information. There are several techniques that can help in recognizing false content, including:

- Text analysis

AI algorithms can analyze texts for signs of false information, such as unusual vocabulary, lack of sources, or inconsistent facts.

- Image analysis

AI can also be used to analyze images to detect changes and manipulations. Techniques such as deepfake detection can help in identifying fake photos and videos.

- Education and digital awareness

One of the most effective ways to combat disinformation is through education and increasing digital awareness. In this context, it is important to develop critical thinking skills, especially among young people. This means teaching young people how to recognize false information, how to verify sources, and how to use AI tools for analyzing and evaluating online content.

Deepfake, or new challenges for cybersecurity

As highlighted in previous sections, deepfake is a technology that uses artificial intelligence to create realistic but false images, videos, and recordings.

While this technology may have positive applications, such as in the film industry, advertising, computer games, or education, it can also be used for disinformation, fraud, and other unethical activities.

The rise in popularity of deepfakes presents a serious challenge for cybersecurity, as it can lead to widespread disinformation, privacy breaches, and loss of public trust. Therefore, combating deepfakes is a crucial component of the strategy to counteract disinformation.

Methods for detecting deepfakes

Detecting deepfakes is challenging but not impossible. There are several methods that can help identify fake content. Here are some of them:

- Pixel analysis

Pixel analysis techniques can detect subtle differences in an image that may indicate manipulation. Algorithms can analyze pixel structures, colors, and patterns, looking for inconsistencies that suggest the image has been altered. Differences in lighting, shadows, or resolution in different parts of the image can be indicators of deepfakes.

- Audio analysis

Audio analysis can help detect unnatural changes in speech that may be signs of a deepfake. This technology can identify inconsistencies in tone, rhythm, and speech tempo that do not match natural sound patterns. Deepfakes may struggle with naturally conveying emotions and intonation, which can be detected through advanced audio analysis.

- Motion and facial expression analysis

Deepfakes may also have difficulty accurately replicating natural movements and facial expressions. Motion analysis can detect anomalies in facial, eye, and mouth movements that do not fit natural patterns. For example, unnatural eye movements or delays in lip-syncing with sound can indicate manipulation.

- Biometric techniques

Biometric techniques can be used to verify the authenticity of video materials. Facial biometrics, voiceprints, and other unique biological traits can be analyzed to determine if a recording is genuine. These technologies can compare biometric patterns with a database of known physical features of a person to detect potential manipulations.

Similarly to other forms of disinformation, education is crucial in combating deepfakes. Users should be aware of the existence of this technology and learn how to recognize fake images and videos. Education should cover both technical and ethical aspects so that users can make informed decisions in the digital age.

Increasing public awareness about deepfakes is essential. Educational campaigns, seminars, workshops, and online courses can help the public understand what deepfakes are, how they are created, and what consequences they may have. Tips on recognizing fake content can be distributed through social media, schools, universities, and non-profit organizations.

Technical knowledge is necessary for effective detection of deepfakes. Users should be trained in using image and audio analysis tools as well as biometric techniques. These trainings can be aimed at IT professionals, media workers, teachers, and students to ensure a broad skill base in society.

Education should also address the ethical aspects related to deepfake technology. Users need to be aware that creating and spreading deepfakes for disinformation or harmful purposes is unethical and can have serious legal and social consequences. Understanding the ethical implications of AI technology is crucial for its responsible use.

Users should be encouraged to verify the sources of the content they view and share. Teaching critical thinking and information analysis skills can help in recognizing credible sources and identifying potential deepfakes. Fact-checking and using trusted information sources are key to combating disinformation.

Combating deepfakes requires international cooperation. Countries should share knowledge, technologies, and best practices for detecting and countering deepfakes. International collaboration can help develop effective global strategies that will protect society from the threats associated with deepfakes.

Deepfake technology will continue to evolve, which means that methods for detecting deepfakes must also advance. Scientists and engineers will need to continue researching new detection techniques to keep pace with developments in this field. Additionally, legal regulations regarding the creation and distribution of deepfakes will need to be updated to ensure adequate protection against their misuse.

In the future, we can expect increasingly advanced tools for detecting deepfakes to become available to a wide range of users. The development of AI technology to combat deepfakes will be crucial in ensuring digital security and combating disinformation.

Deepfake technology represents one of the most serious challenges to cybersecurity in today's world. While it has many positive applications, its potential for disinformation and fraud is significant. Detecting deepfakes and educating about this technology are key elements in the fight against disinformation. By combining advanced analysis techniques, technical and ethical education, and international cooperation, we can effectively counter the threats posed by deepfakes and protect society from their negative effects.

In summary, safety and countering disinformation in the context of working with AI are crucial issues in today's digital world. Artificial intelligence, while offering immense opportunities and benefits, also carries risks related to its misuse, including the generation and dissemination of false information. It is essential for both creators and users of AI systems to be aware of potential threats and be equipped with the necessary tools and knowledge to address them. Education, an ethical approach to technology, and the development of critical thinking skills are the foundations for safe and responsible use of artificial intelligence.

Education on AI technology and its potential risks is essential. It should cover the basics of how AI works, understanding algorithms, the data used, and the decisions made based on that data. It is also important to discuss threats such as deepfakes, algorithmic manipulation, privacy breaches, and cybersecurity. Learning how to use tools for information verification, source analysis, and recognizing digital manipulation is a key element in combating disinformation.

Implementing ethical standards in the design and use of AI systems is crucial. AI creators must be transparent about how their technology works and be responsible for its impacts. Algorithms that could discriminate based on race, gender, age, or other personal characteristics should be avoided. Securing users' personal data and ensuring that it is used in accordance with legal and ethical standards is equally important.

Developing critical thinking skills is necessary so that AI users can recognize and counteract disinformation. Learning critical information analysis, recognizing false news, and using independent verification sources are essential. Understanding the context in which information appears and its potential social and political implications is key. Using technological tools for analyzing images, videos, and texts, which can help detect deepfakes and other forms of disinformation, is an important part of this process.

Combating disinformation and threats related to AI requires cooperation at various levels. International collaboration between countries to develop global standards and strategies for countering disinformation, as well as cross-sectoral cooperation involving governments, industry, education, and civil society, is essential for creating an integrated approach to digital security.

In this way, we can ensure that AI will be a tool supporting societal development rather than a source of new problems and threats. Joint educational and informational efforts are crucial for building a secure and informed digital future. By combining education, ethical approaches, and the development of critical thinking skills, we can create an environment where artificial intelligence is used responsibly and benefits the whole society.

Summary

About the project

From October 2023 to May 2024, two organizations, AGIFODENT from Spain and Fundacja Enabler from Poland, conducted an 8-month partnership. The project aimed to address educational challenges related to the rapid development of artificial intelligence tools. The year 2022 marked a breakthrough in this field, necessitating prompt action to develop educational tools for youth trainers responsible for preparing their trainees to use AI safely, consciously, and wisely.

The main objectives of the project were:

1. To increase the knowledge of 12 trainers working in the field of digital youth education about safety standards in working with AI, legal norms, and a critical approach to AI-generated content.

2. To raise awareness about ethical and conscious use of AI among 90 teenagers from Spain and Poland.

3. To develop a comprehensive educational offer for youth trainers that includes safe AI use and showcases the possibilities that artificial intelligence offers.

As part of the project, three key activities were carried out:

1. Youth trainers mobility

From November 3-8, 2023, a meeting was held in Granada with 12 trainers (6 from each country). This was the first project event, which allowed for planning work on the educational script concerning AI. The mobility program included presentations, debates, workshops, and study visits aimed at exchanging experiences and knowledge among participants from the partner organizations.

2. Development of best practices script

After the mobility, teams from both countries worked on an educational script dedicated to cybersecurity in working with AI and practical applications of AI. The publication was prepared in three language versions (Spanish, Polish, and English) and widely disseminated by the partners. The script consisted of five main parts: working with text, working with images, other AI services, security and disinformation, and a summary analyzing potential risks and opportunities related to AI.

3. Workshops for youth

In January 2024, a total of 90 teenagers (45 from each country) were recruited to participate in a series of AI-focused workshops. The workshops provided an opportunity to test the content included in the script and introduce necessary improvements. Each group participated in seven three-hour workshops covering topics from an introduction to AI, working with text and images, to advanced AI applications and safety principles.

The subject of artificial intelligence proved to be extremely dynamic, requiring significant flexibility and engagement from the project teams. Updating knowledge and adapting educational materials to the latest trends and discoveries in the field was essential. The educational script was continuously updated, necessitating numerous additional meetings and discussions. Partners had to monitor the latest achievements in AI, which involved the ongoing adjustment of educational content to ensure it was current and relevant.

As part of the project, a range of best practices was developed for working with youth on AI topics. Key elements to consider include:

1. Security

Security in the use of AI tools is crucial. Trainers should emphasize educating youth about data protection, recognizing threats, and avoiding dangerous online situations. It is important for youth to be aware of the risks associated with using AI, including privacy and data security threats.

2. Critique and ethics

Critical thinking and ethics are integral parts of AI education. Youth should be taught how to analyze and assess information generated by AI and how to use these tools in an ethical and responsible manner. Encourage youth to ask questions, seek sources of information, and verify their authenticity.

Advice for youth trainers

Dear Trainers,

Education on artificial intelligence is not only important but necessary in today's world. Here are some tips that may help you in working with youth:

- Keep your knowledge updated

AI is a rapidly evolving field. Keeping up with the latest trends and research is crucial to ensure that your knowledge is current and relevant. Regular participation in AI conferences, webinars, and courses will help maintain a high level of competence.

- Teach critical thinking

Help youth develop the ability to critically analyze information. Encourage them to ask questions and seek sources of information, rather than accepting everything generated by AI uncritically. Organizing debates and discussions about the ethics and consequences of using AI can be a great way to foster critical thinking.

- Promote ethical behavior

Education about the ethics of using AI should be a priority. Young people need to understand the consequences of irresponsible use of these technologies and how to use them in ways that benefit the community. Examples of real situations where AI has been used unethically can serve as instructive material for discussion.

- Ensure digital safety

Teaching cybersecurity principles is essential. Make sure that young people know and understand the risks associated with AI and how to protect themselves from them. Regular exercises and emergency scenarios can help young people better prepare for potential threats.

- Support collaboration and communication

Collaboration and exchange of experiences among trainers from different countries can bring many benefits. Organizing international workshops and exchange programs can help in developing skills and knowledge about AI.

The project we carried out was not only an opportunity to develop digital competencies among young people but also to strengthen cooperation between partners. The developed materials and experiences will assist you in further educational work, helping to prepare young people for the challenges and opportunities that artificial intelligence brings.

Thank you for your commitment and I wish you success in your continued work with young people!

Are we in the midst of a revolution?

Today, in the face of dynamic changes, we might ask ourselves: "Are we in the midst of another revolution?" All signs point to artificial intelligence and its associated technologies representing a new, groundbreaking stage in the development of civilization. The pace and scale of changes brought by AI are comparable only to the greatest breakthroughs in human history.

In previous sections of the publication, we have argued that AI is a field focused on creating systems capable of performing tasks that normally require human intelligence. AI "can" perform tasks such as speech recognition, natural language understanding, image recognition, decision-making, and even learning and adaptation.

From the first part, you know that AI is not essentially a new discovery. Its history dates back to the mid-20th century when Alan Turing proposed the idea of a machine that could simulate every aspect of human intelligent behavior. In the 1950s and 1960s, research on AI was intensively developed, though initial successes were modest. It was only in recent decades, thanks to advances in machine learning, increased computing power, and the availability of large datasets, that AI began to play a significant role in many areas of life.

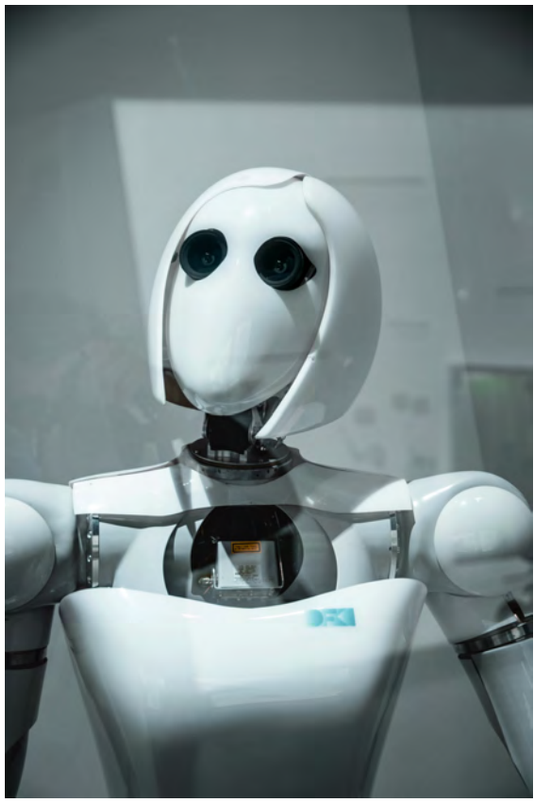
To recap:

- Machine learning is a subfield of AI that allows computers to learn from data. Algorithms learn patterns and make decisions based on provided information. Examples of applications include spam filtering, product recommendations, and even disease diagnosis.

- Deep learning, an advanced form of machine learning, uses neural networks with multiple layers (deep neural networks). This technology underpins many contemporary breakthroughs in AI, such as image recognition, natural language processing, and autonomous vehicles.

- Natural language processing enables computers to understand, interpret, and generate human language. Chatbots, machine translation, and sentiment analysis are just some of the applications of this system that are revolutionizing the way we communicate with technology.

- Finally, robotics, integrated with AI, enables the creation of intelligent machines capable of interacting with their environment. Autonomous drones, industrial robots, and medical robots are examples where AI combined with robotics is bringing about revolutionary changes.



Examples of revolutionary applications of Artificial Intelligence

When discussing "revolution," we must look at the applications of the technologies presented in the previous section. Here are some examples of sectors where they can be applied (remember, more about the use of AI can be read in the first part of the publication):

- Healthcare

AI is now widely used for analyzing medical images, diagnostics, preparing personalized therapies, and managing patient data. AI systems can recognize patterns in data that are invisible to the human eye, leading to earlier disease detection and more precise treatment.

- Finance

In the financial sector, AI is used for risk analysis, fraud detection, investment portfolio management, and automating accounting processes. Algorithms based on artificial intelligence can process vast amounts of financial data in real-time, predicting trends and assisting in investment decision-making.

- Education

Education is essentially the sector that interests us the most in the context of AI applications, due to the thematic scope of the project. In this publication, we aimed to convince you that artificial intelligence is revolutionizing modern education primarily through the personalization of learning. AI-based systems can tailor educational material to the individual needs of students, monitor progress, and provide real-time support, leading to a more effective and engaging learning process.

- Industry

In industry, AI is used to optimize manufacturing processes, manage supply chains, and forecast demand. Intelligent systems analyze data from various sources and can propose solutions to increase efficiency.

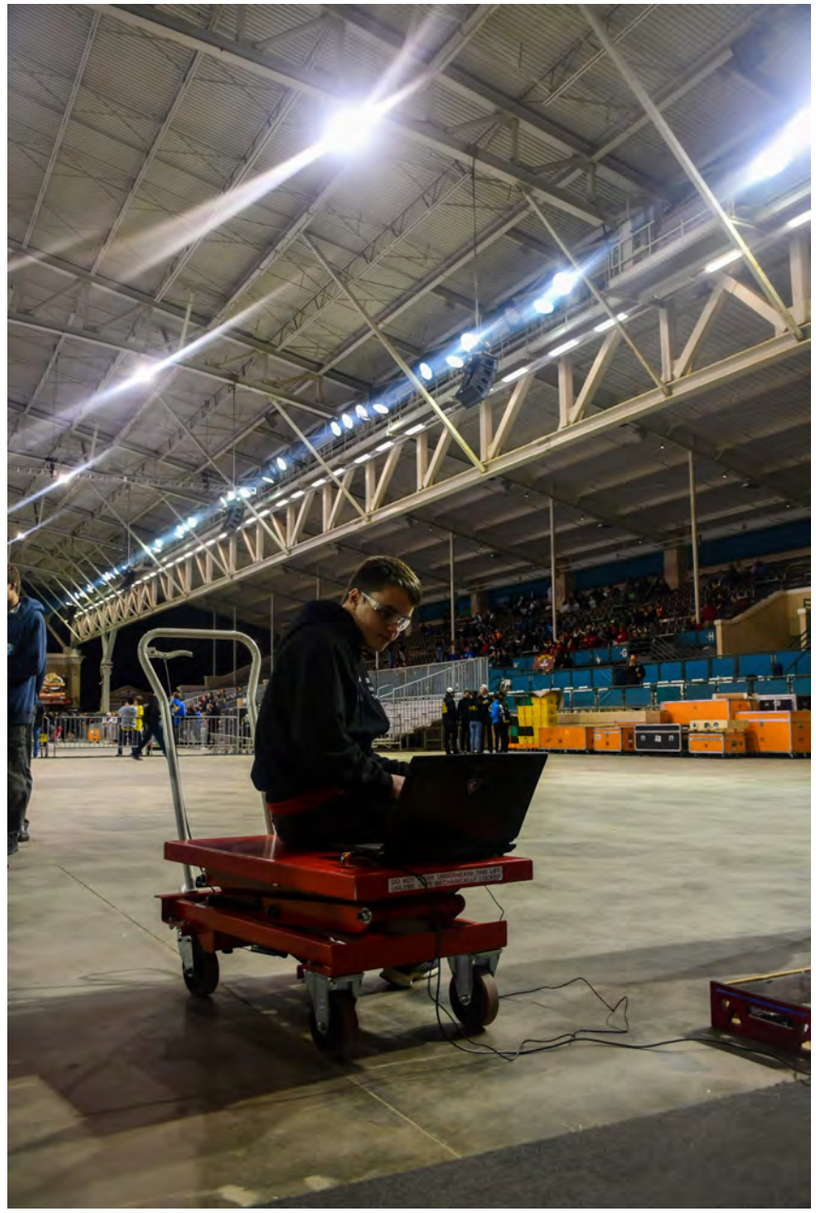
- Entertainment and media

Finally, AI is changing the way we "consume" media content. Recommendation systems in streaming services, automatic content generation, and trend analysis are just some examples of how AI is impacting the entertainment industry. As a result, the end user receives personalized content.

The AI revolution brings with it immense economic and social changes. The automation of processes leads to increased efficiency and cost reduction, but it also raises concerns about the future of work. In many sectors, especially those based on routine tasks, artificial intelligence can replace human labor, leading to the need for worker retraining and the search for new career paths.

On the other hand, one of the most fascinating aspects of AI is its potential to support human creativity. AI can generate music, art, literary texts, and support creative processes in ways that were previously unattainable. Algorithms can analyze vast amounts of data and identify patterns that inspire artists and creators to discover new forms of expression.

The future of AI is thus full of promises but also challenges. The development of technology will require not only technical advancements but also responsible management and ethical regulations. As AI becomes more advanced, there is an increasing need to understand its impact on society and the economy and to create legal frameworks that ensure its safe and ethical use.



As AI becomes increasingly ubiquitous, the European Union, national governments, and non-governmental organizations should unite to develop appropriate regulations (legal and ethical) that protect citizens' rights, ensure safety, and promote ethical practices.

Educational systems need to adapt to the new realities by preparing future generations for collaboration with AI. Retraining workers will be crucial to meet the demands of the new job market and prevent unemployment.

Equally important in the face of this "revolution" is the attempt to mitigate digital exclusion, as technological progress related to AI deepens the social disparity between those with access to technology and those with low basic digital skills or economic exclusion.

We must remember that the development of AI brings serious ethical dilemmas. It is crucial for technology creators, scientists, and policymakers to work together to establish ethical norms that will guide the development and implementation of AI. The role of educators is also very important; they can and should instill in young people a wise and critical approach to using AI. AI should not be demonized or feared; it is a tool that should be taught to use wisely.

In summary, there is no doubt that we are in the midst of a technological revolution driven by artificial intelligence. AI is changing our lives in many ways, bringing both immense benefits and challenges. A key element of this revolution is responsible management of technology and educating society, especially young people, about its potential and risks. The future, in which AI will serve humanity, depends on our ability to adapt, innovate, and approach its development ethically.

Potential threats and opportunities

To summarize our considerations, let us once again examine the potential threats and opportunities associated with the development of AI technology.

Among the potential threats, we can include:

- Privacy and data security risks

AI, especially in the form of machine learning systems, processes vast amounts of personal data. Mismanagement of this data can lead to privacy breaches, identity theft, and other forms of cybercrime.

Widespread accessibility of systems

- Ethical dilemmas

With the development of AI, ethical questions arise. Decisions made by algorithms can be biased or discriminatory, potentially leading to social injustices.

- Replacement of human labor

The automation of many jobs by AI could lead to job losses. In the long term, this could cause economic and social crises if appropriate retraining programs are not implemented.

WORKSHEETS FOR YOUTH

Worksheet No. 1
Creating effective prompts for text generation

A prompt, or instruction, can be viewed as a direct guideline for AI that directs the process of generating a response. The precision, context, and clarity of the prompt significantly affect the adequacy and usefulness of the output generated by the AI model.

Familiarize yourself with the guidelines on how to write a good prompt, and then use them to complete the following five tasks.

1. Clear goal

Define exactly what you want to achieve with the prompt.

- Unclear: “Write something about space.”

- Clear: “Write a short article about the Apollo 11 mission.”

2. Specificity

Be as specific as possible with your expectations.

- General: “Write me a story.”

- Specific: “Write me a story about a pirate searching for treasure in the 17th century.”

3. Simple language

Use understandable and straightforward language.

- Complicated: “Please provide an elaboration on photovoltaic technology.”

- Simple: “Explain how solar panels work.”

4. Organized structure

Arrange your thoughts in a logical order.

- Disorganized: “Talk about dinosaurs, their extinction, and types.”

- Organized: “1. Describe different types of dinosaurs. 2. Explain how they went extinct.”

5. Appropriate length

Adjust the length to the complexity of the topic.

- Too short: “Tell me about World War II.”

- Appropriate: “Provide three key facts about the Battle of Stalingrad.”

6. Avoid ambiguity

Express yourself precisely.

- Ambiguous: “Write about poles.”

- Clear: “Describe the differences between the North and South Poles of Earth.”

7. Context

Provide necessary background if it is important for understanding.

- Without context: “Write about the future of transportation.”

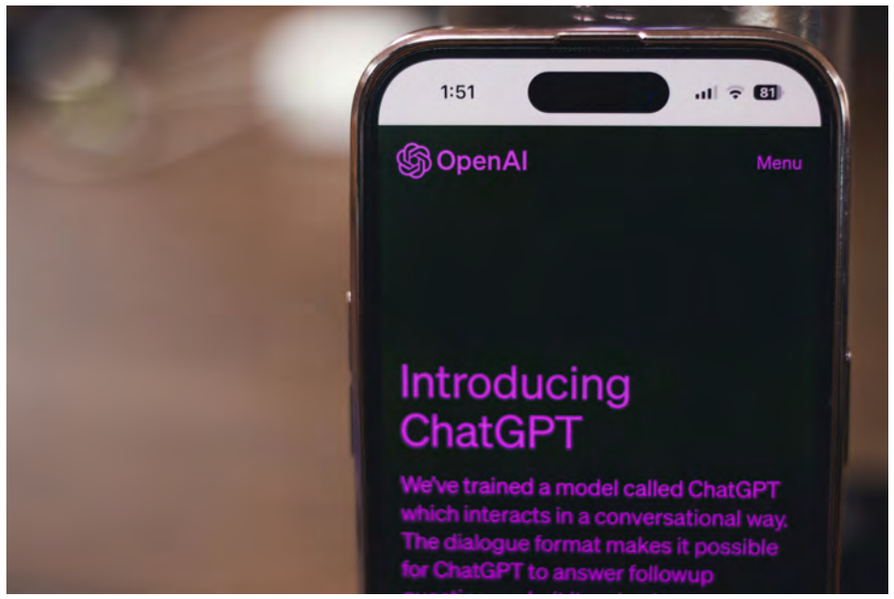
- With context: “In the context of climate change, how do you see the future of urban transportation by 2050?”

8. Examples

Include examples of desired responses.

- Without examples: “Create a title for my book.”

- With examples: “I need a title for a time travel book, something like Time Keepers or Forgotten Epochs.”



9. Response format

Specify the format in which you want to receive the answer.

- Without format: “Tell me something about bees.”

- With format: “Provide 5 interesting facts about bees in a bulleted list.”

10. Iteration

Test different formulations of the prompt and learn from feedback.

- Initial prompt: “Write a speech.”

- Modified prompt after iteration: “Write an inspiring speech for high school graduates, focusing on the importance of continuous learning.”

Additional tips:

- **Consider limitations**

Be aware of the limitations of the AI model.

- Without consideration: “How can I fix the engine in my car?”

- With consideration: “Provide general tips on diagnosing engine problems in a car.”

- **Optimize for the audience**

Tailor the language and style to the audience if known.

- General: “Write a guide.”

- For the audience: “Write a guide on indoor plant care for beginners.”

Use questions

Questions can help clarify what you are looking for.

- Statement: “Write about the importance of water for the human body.”

- Question: “Why is water so important for the human body?”

Highlight priorities

If something is particularly important, clearly indicate it.

- General: “Write an article about healthy eating.”

- With priorities: “Write an article about healthy eating, focusing mainly on the importance of fruits and vegetables and their impact on health.”

Remember some AI ;imitations!

- Data may be subjective.
- Questions requiring deep specialist or technical knowledge may exceed the AI's understanding, especially if they are related to very narrow fields of knowledge.
- Despite its advancement, AI may make mistakes, including inaccuracies or incorrect interpretations of the question, which may lead to providing incorrect answers.

Task 1: Warm-Up image description

- Objective: Learn to create detailed descriptions.

- Instruction: Choose a photo or image that you like. Write a prompt that accurately describes what you see so that someone who cannot see the image can imagine it. Focus on details such as colors, emotions, context, and elements in the background.

Task 2: Creating stories with word inspiration

Objective: Developing skills in creating creative prompts that lead to story generation.

Instructions: Draw three words (e.g., using an online random word generator). Write a prompt that incorporates these three words naturally, encouraging AI to create an engaging story. Try to create different scenarios that will captivate the reader.

Task 3: Writing poetry emotions and images

Objective: Practicing creating prompts that lead to poetry generation.

Instructions: Choose an emotion you want to explore (e.g., joy, sadness, surprise). Write a prompt that includes a description of a situation or image that might evoke this emotion. Ask AI to create a poem reflecting this emotion based on your prompt.

Task 4: Reviews and opinions persuasive challenge

Objective: Practicing creating prompts that lead to persuasive text generation.

Instructions: Choose a product or film you know and have opinions about. Write a prompt asking AI to write a positive or negative review of this product/film. Be as specific as possible, including particular features that should be highlighted in the review.

Task 5: Educational prompting teaching and explaining

Objective: Developing skills in creating educational prompts.

Instructions: Choose a topic that interests you but about which you would like to learn more. It could be anything from the history of a certain invention to explaining a scientific phenomenon. Write a prompt asking AI to explain this topic in an accessible and engaging way, potentially including examples or analogies.

GOOD LUCK!

Worksheet No. 2
Creating effective prompts for image generation

Generating images using artificial intelligence is becoming increasingly popular with tools like DALL-E, MidJourney, and Stable Diffusion.

The key to obtaining high-quality images is the ability to create effective prompts, which are text commands that precisely describe the desired outcome.

Below is a detailed guide on how to create effective prompts, including examples of good and bad prompts.

Basic principles for creating prompts

- Conciseness and precision

Use specific keywords that precisely describe what you want to achieve.

Avoid vague or overly general statements.

- Context and details

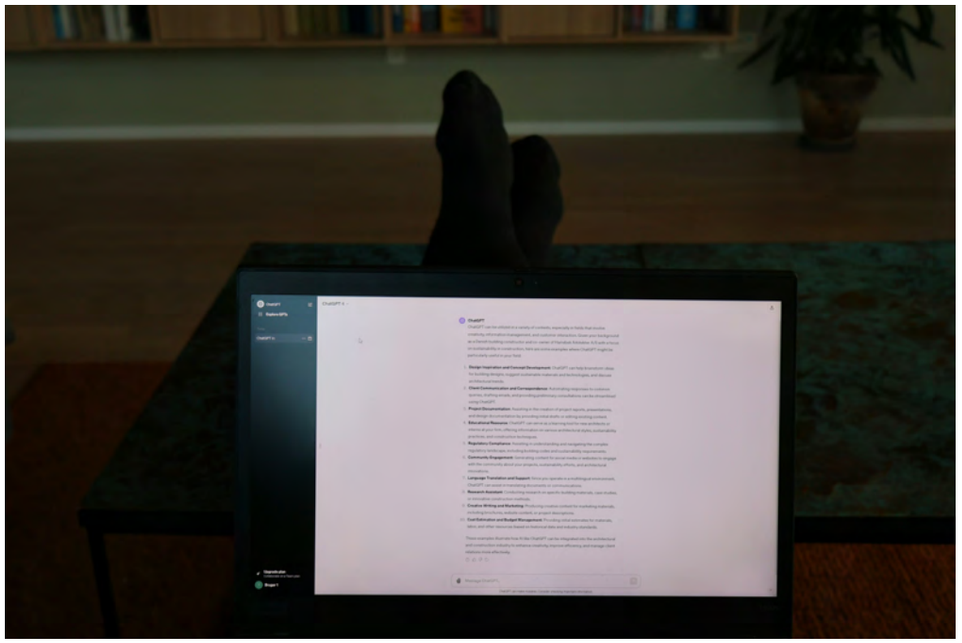
Add context that will help AI better understand what needs to be generated.

Use detailed descriptions regarding style, color scheme, composition, and other elements of the image.

- Avoiding ambiguity

Ensure the prompt is clear and unambiguous.

If you expect a specific effect, describe it precisely.



Structure of an effective prompt

- Main subject

What you want to see in the image (e.g., character, landscape).

- Artistic style

Specify the style in which the image should be generated (e.g., realistic, abstract, retro).

- Color scheme

Which colors should dominate the image.

- Composition

Description of the arrangement of elements in the image.

- Additional details

Additional specifics that may affect the final outcome (e.g., mood, lighting).

Examples of prompts

- "Bad prompts”

Beautiful landscape.

Too general, lacking details about the type of landscape, style, color scheme, etc.

Character.

Unclear, no information about what kind of character, in what style, context.

- "Good prompts"

Realistic mountain landscape at sunset with a lake and coniferous trees, warm colors, dramatic lighting.

Specific keywords (realistic, mountain landscape, sunset), details about color scheme (warm colors), and lighting (dramatic lighting).

Character of a warrior in anime style, wearing armor with futuristic elements, in a dynamic pose, against the backdrop of burned city ruins.

Precise description of the character (warrior, anime style, armor with futuristic elements), context (dynamic pose, burned city ruins).

Practical tips

- Testing and refining

Generate images using different versions of prompts.

Analyze results and make adjustments to achieve the most satisfying outcome.

- Using synonyms

If the first prompt does not yield the desired effect, try using synonyms and changing the word order.

- Adding context

Try to add context that helps the AI understand what effect you want to achieve (e.g., time of day, mood).

Image generation tools utilizing Artificial Intelligence

- DALL-E (OpenAI)

Website: https://www.openai.com/dall-e/

Features: Generates images based on text descriptions, various styles and configurations.

- MidJourney

Website: https://www.midjourney.com/

Features: Generates images in artistic style, ability to create unique visualizations.

- Stable Diffusion

Website: https://stability.ai/stable-diffusion

Features: Generates realistic images, extensive customization options for prompts.

In summary, creating effective prompts is key to achieving high-quality images generated by AI. Remember to focus on conciseness, precision, and adding context to your descriptions. Test different versions of prompts and adjust them to achieve the best results. Utilize the available tools and explore the possibilities they offer.

Worksheet No. 3
Music generated by AI

Music generated by artificial intelligence is becoming increasingly popular among creators worldwide. With tools like Udio (https://www.udio.com/), even individuals without advanced musical training can create professionally sounding tracks. The "Music Generated by AI" work card will show you how to effectively use Udio for generating music, the benefits of using AI in music creation, and how to avoid pitfalls associated with this process.

What is Udio?

Udio is an online platform that uses artificial intelligence to generate music. It allows users to create new musical pieces, remix existing songs, and experiment with different musical styles.

Why Use Udio?

- The intuitive user interface makes music creation accessible even for beginners.
- Udio offers a wide range of music genres, from pop and rock to classical and electronic music.
- The ability to customize various elements of a track to personal preferences.
- Creating music with AI is much faster than traditional methods.

How to use Udio?

To start working with Udio, you first need to create an account. Go to the website udio.com and click "Sign Up." Fill out the registration form with your details and choose a password. After completing the registration, log in to your account.

The Udio user interface includes the following elements:

- Dashboard: The main page where you'll find your projects, available tools, and recently added tracks.
- New project: A button that allows you to start a new music project.
- Library: A library of sounds and instruments that you can use in your tracks.
- Mixing console: A tool for mixing and editing tracks.

How to start creating a new project?

Click the "New Project" button on the dashboard. A window will appear where you can choose the musical style, tempo, and key of the track. You can also add your own sound samples if you have any.

Udio offers a wide range of musical styles. Choose the style that best suits your project. You can select from genres such as pop, rock, hip-hop, electronic music, jazz, classical, and many more.

In the Udio sound library, you'll find a variety of instruments and sound samples. You can drag and drop these elements into your project to create unique sound combinations.

Udio allows you to create melodic and rhythmic lines using a simple interface. You can add notes, adjust their length and pitch, and change the tempo of the track.

After adding all the elements to your project, you can proceed to mix the track. Use the mixing console to adjust the volume of individual tracks, add sound effects, and improve the sound quality.

When you finish working on your track, you can export it in MP3 or WAV format. Click the "Export" button and choose your preferred file format.

Time for some practice!

Exercise 1

Objective: Create a 1-2 minute music track in your chosen style.

Instructions:

1. Log in to your Udio account.
2. Click "New Project."
3. Choose a musical style, tempo, and key.
4. Add instruments and sounds from the library.
5. Create a melodic and rhythmic line.
6. Mix the track and export it.

Exercise 2

Objective: Create a remix of an existing song.

Instructions:

1. Log in to your Udio account.
2. Click "New Project."
3. Import an existing song into the project.
4. Add new instruments and sounds.
5. Mix the track, adding sound effects.
6. Export the remix.

Exercise 3

Objective: Create a music track with lyrics.

Instructions:

1. Log in to your Udio account.
2. Click "New Project."
3. Choose a musical style, tempo, and key.
4. Add instruments and sounds from the library.
5. Write the song lyrics.
6. Add a melodic and rhythmic line.
7. Import the recorded lyrics into the project.
8. Mix the track and export it.

Pitfalls and how to avoid them?

Udio is just a tool and may not always work perfectly—learn what user behaviors can hinder Udio's effectiveness:

- Too short lyrics: Writing a very short lyric can make the song sound disjointed and incomplete. Ensure the lyrics are of appropriate length, fitting the structure of the song.
- Lack of understanding of musical structure: Creating music requires a basic understanding of song structure elements like intro, verses, chorus, and bridges. Familiarizing yourself with these elements will help you create more cohesive and engaging tracks.
- Mismatched tempo and key: Tempo and key are crucial for the overall sound of the track. Make sure they are properly adjusted to fit the musical style you have chosen.

- Too many elements
  Adding too many instruments and sounds can make the track sound chaotic. Aim to maintain balance and avoid overloading the track.

- Lack of testing on different devices
  Ensure your track sounds good on various devices, such as headphones, speakers, or phones. This will help ensure that the sound quality is appropriate.

Despite the mentioned pitfalls, there are many benefits to using AI in music creation, including:

- Speed and efficiency: AI can significantly reduce the time needed to create a music track, allowing creators to experiment with more ideas in a shorter time.

- Creativity: AI tools can inspire the creation of music in new styles and genres that may have previously been out of reach for the creator.

- Accessibility: AI makes music creation accessible to individuals without advanced musical training, allowing for greater inclusivity in the creative environment.

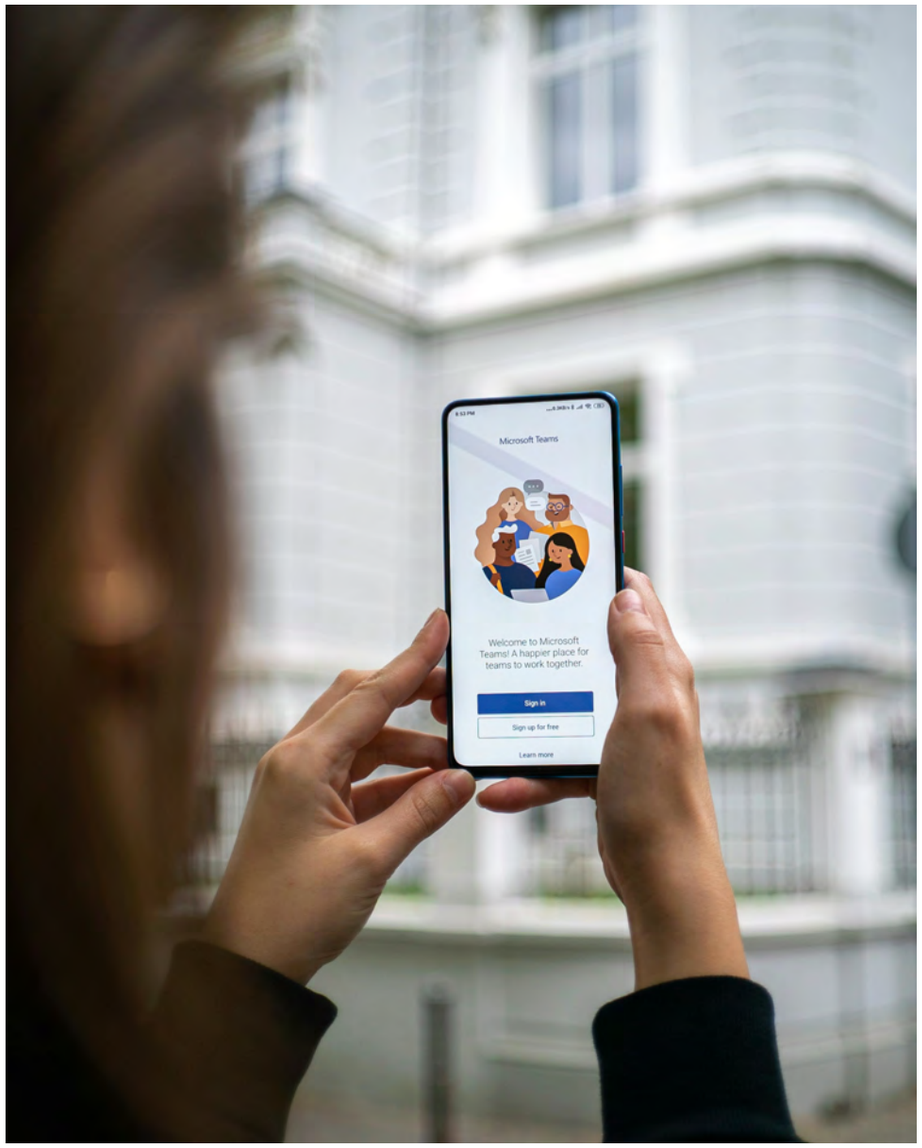
- Technical support: AI can automatically correct errors and provide suggestions for improving tracks, which is especially useful for beginner creators.

AI-generated music is a modern and powerful tool that opens new possibilities for music creators. With the Udio platform, you can try your hand at creating music, remixing existing tracks, and experimenting with various musical styles and genres.

However, remember to avoid common pitfalls and continuously improve your skills using the available tools and resources.

GOOD LUCK!

Worksheet No. 4
Preparing a webinar with the help of Artificial Intelligence



As you know, webinars are becoming one of the most popular educational and business tools in the digital age. Lessons, university lectures, workshops... are increasingly moving to virtual reality.

The use of artificial intelligence in preparing and conducting webinars can significantly improve their quality, engaging participants and saving organizers' time.

In this work card, we will show you how to prepare an effective webinar using AI, including how to create a virtual presenter, use programs that support the content creation process, and analyze interactions with participants.

We invite you to work together on your ideal webinar!

Step 1: Choosing the webinar topic

The topic should be interesting and relevant to your target audience. Consider what problems you can solve or what skills you can teach your participants.

Check what topics are currently popular in your industry. You can use tools like Google Trends to see what is most frequently searched.

Define what you want to achieve with the webinar. It could be education, product promotion, community building, or other goals.

Step 2: Creating the webinar script

Divide your webinar into sections such as introduction, main presentation, Q&A session, and conclusion. Determine how long each of these segments should last.

Use AI tools, such as ChatGPT, to generate content for your presentation. You can ask AI questions about the topic and get ready-made text fragments, which you can then adjust to your needs.

Create slides to accompany your presentation. Tools like Canva or Prezi can be very helpful in creating visually appealing slides. Remember, Canva also allows you to collaborate with artificial intelligence.

Step 3: Choosing tools for conducting the webinar

Select a platform that best meets your needs. Popular options include Zoom, Microsoft Teams, Google Meet, GoToWebinar. Each of these platforms offers different features that can be useful depending on the specifics of your webinar.

Many webinar platforms offer integration with AI tools. For example, Zoom has features for automatic transcription and meeting analysis, which can help with post-webinar analysis.

Choose tools that allow for interactivity with participants, such as polls, quizzes, and live Q&A sessions.

Step 4: Creating a virtual presenter to replace you during the webinar

Synthesia, Replika, or Voki allow you to create a virtual presenter. You can customize its appearance, voice, and gestures to best fit the theme of your webinar.

Choose the appearance of your presenter, including its attire, background, and other visual elements. Then select a voice that best matches your message.

Write a script for your virtual presenter. Use simple and understandable language. You can also use AI to generate a script based on the main points of your presentation.

Use a tool to record your virtual presenter reading your script. Ensure that the recording is smooth and professional.

Step 5: Preparing the presentation

Combine the recording of your virtual presenter with your slides and other visual materials. You can use video editing tools like Adobe Premiere Pro or Camtasia.

Add interactive elements to your presentation, such as links to surveys, quizzes, or live Q&A sessions. Ensure they are easily accessible to participants.

Test your presentation before the webinar. Check that all elements are working correctly and that the presenter's recording is well synchronized with the slides.

Step 6: Promoting your webinar

Use tools like Eventbrite or your own website to create a registration page for your webinar.

Leverage social media platforms such as Facebook, LinkedIn, Twitter, and Instagram to promote your webinar.

Send email invitations to your contact list. Make sure they include all essential information such as the date, time, topic, and registration link.

Step 7: Conducting the webinar

Log in to the webinar platform a few minutes before the start. Greet the participants, present the agenda, and inform them about the interactive elements that will be available during the webinar.

Play the recording of your virtual presenter and monitor the webinar's progress. Be ready to answer participants' questions in real-time.

After the presentation, conduct a Q&A session. Respond to questions asked by participants in the chat or via microphone.

Thank the participants for their attendance, remind them of the option to contact you with any additional questions, and invite them to future events.

Step 8: Evaluating the webinar using AI

Use AI tools to analyze data from the webinar. Review statistics related to the number of participants, engagement, questions asked during the Q&A session, and results from interactive elements.

Send out surveys after the webinar to gather feedback from participants. Ask about their impressions, what they liked, and what could be improved.

Based on the collected data and feedback, implement improvements to your future webinars. Ensure you are continually refining your skills and techniques.

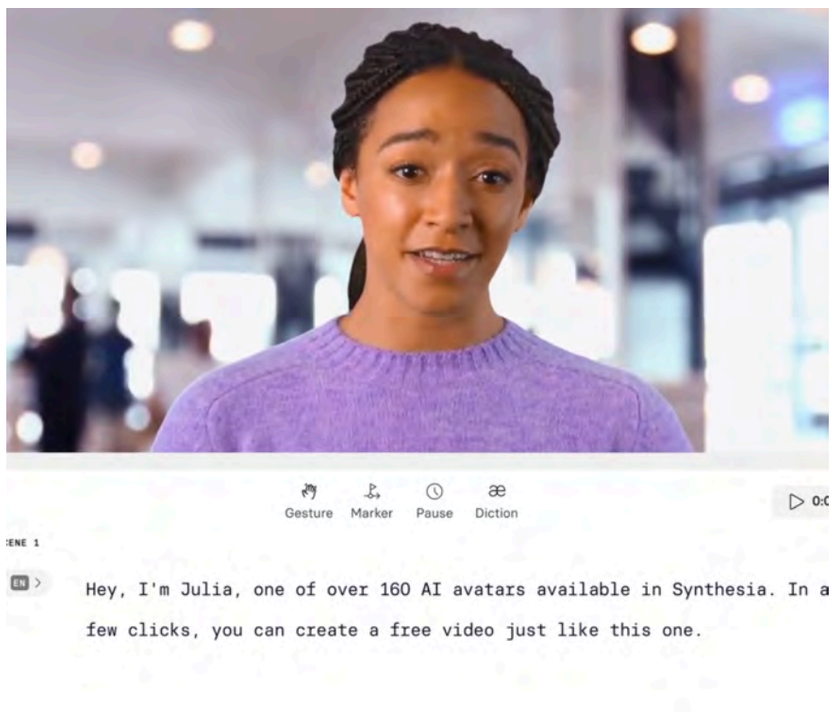
Programs and tools for preparing webinars with AI

- ChatGPT (OpenAI): For generating content and scripts for webinars.

Website: openai.com

- Synthesia: For creating virtual presenters.

Website: synthesia.io



- Canva: For creating visually appealing slides.

Website: canva.com

- Zoom: Popular platform for conducting webinars, with AI integration features.

Website: zoom.us

- Prezi: Tool for creating dynamic presentations.

Website: prezi.com

- Adobe Premiere Pro: Professional video editing tool.

Website: adobe.com

- Camtasia: Tool for screen recording and video editing.

Website: techsmith.com

Sample webinar script

Introduction (5 minutes):

Welcome participants.

Present the webinar agenda.

Introduce the topic.

Main Presentation (30 minutes):

Play the recording of the virtual presenter.

Present the main points of the topic.

Introduce interactive elements, such as polls or quizzes.

Q&A Session (15 minutes):

Answer participants' questions.

Discuss the topics covered.

Conclusion (5 minutes).

Summarize key points.

Thank participants for their attendance.

Provide information about upcoming events.

Preparing and conducting a webinar using AI can be extremely effective and engaging. With the right tools and techniques, you can create a professional and attractive webinar that captures participants' attention and provides valuable information. Remember to continually improve your skills, use feedback, and stay up-to-date with new technologies that can enhance your webinars.

Worksheet No. 5
Create your own family tree with AI

Creating a family tree is a fascinating endeavor that allows you to explore your family roots and learn about your ancestors. You can use MyHeritage, one of the leading platforms offering tools to build detailed family trees using advanced technology and a vast genealogical database. Below, we outline the steps to create a family tree using MyHeritage.

1. Registration

Go to the MyHeritage website.

Click the "Sign Up" button and fill out the registration form with your details, such as first name, last name, email address, and password.

You can also register using your Facebook or Google account.

The basic version of the platform is free. Besides creating a family tree, you can also, for example, animate old family photos.

2. Logging in

After completing the registration, log in to your account using the email address and password you provided during registration.

3. Creating a family tree

Once logged in, click on the "Family Tree" tab in the main menu.

Click "Add New Person" to start creating your family tree.

Add your parents: Click “Add Parent” and enter your parents' information. Continue adding family members such as grandparents, siblings, children, and distant relatives.

4. Editing and updating Information

Click on any person in the tree to edit their information. You can add photos, documents, and notes to each person's profile.

5. Using MyHeritage's database

MyHeritage has a vast genealogical database that you can use to find ancestors and relatives. Click on the “Search” tab and enter a surname or other details to search the database. MyHeritage offers a “Smart Matches” feature that automatically compares your tree with other trees in the database. When the system finds potential matches, you will receive a notification and can confirm or reject the match. Similarly, “Record Matches” matches profiles from your tree with historical records and documents. You can browse these records to add more details to your tree.

6. Security

MyHeritage employs advanced security measures to protect user data, including data encryption and regular security audits. Users have full control over the privacy of their family tree. You can decide which information is public and which is private. You can also invite family members to collaborate on the tree and grant them different levels of access.

Benefits of creating your own family tree:

- Creating a family tree allows you to better understand your heritage and lineage. You can uncover fascinating stories and learn more about your ancestors.

- Sharing the family tree with your family can help in building connections and celebrating family history together.

- The process of creating a family tree also serves as an education in history, geography, and culture. It can be an inspiring and enriching experience that broadens your knowledge and horizons.

So, get started! Work together with your family to create your family tree—try to gather as much data and as many generations as possible.

GOOD LUCK!

Worksheet No. 6
Ethical or not?

Artificial intelligence offers tremendous possibilities, but it also comes with ethical challenges.

Below you will find 40 examples of AI usage. Your task is to evaluate which of them are ethical and which are not.

Creating educational applications for learning programming using AI.

Evaluation: _____

Generating realistic images of people who do not exist and using them to create social media profiles.

Evaluation: _____

Using AI to analyze sports results and create training strategies.

Evaluation: _____

Using AI during exams to write essays for students.

Evaluation: _____

Creating music using AI and sharing it online without acknowledging the source of inspiration.

Evaluation: _____

Using AI to monitor mental health and provide advice.

Evaluation: _____

Creating deepfakes for entertainment purposes, such as parodies of famous people, without their consent.

Evaluation: _____

Using AI to enhance old family photos and animate them.

Evaluation: _____

Using AI to create fake profiles on dating sites.

Evaluation: _____

Using AI to analyze public health data and develop disease prevention strategies.

Evaluation: _____

Using AI to manipulate election results in a school student council.

Evaluation: _____

Creating AI tools to support the organization of social and cultural events.

Evaluation: _____

Using AI to create content that promotes hatred or discrimination.

Evaluation: _____

Creating AI applications to monitor academic progress and adjust educational materials.

Evaluation: _____

Using AI to access private information without the owner's consent.

Evaluation: _____

Using AI to create personalized workout and diet plans.

Evaluation: _____

Creating fake academic credentials, such as course completion certificates, using AI.

Evaluation: _____

Using AI to analyze environmental data and develop environmental protection strategies.

Evaluation: _____

Using AI to automatically generate blog content that is plagiarized from existing articles.

Evaluation: _____

Creating AI tools to support charitable and volunteer activities.

Evaluation: _____

When evaluating each of the above examples, consider the potential consequences and moral aspects of using AI. Ethical use of AI contributes to the development and welfare of the community, while unethical use can lead to harm and abuse. Education on responsible use of AI technology is crucial for future generations.

Worksheet No. 7
How to recognize a deepfake image

Recognizing deepfakes can be challenging as the technologies used to create them are becoming increasingly advanced. However, there are several tips that can help students identify fake images. Here's a step-by-step approach to tackle this task:

1. Pay Attention to Details

Deepfakes often have subtle but recognizable flaws. Examine the following elements closely:

- Eyes and Blinking: Deepfakes often struggle with realistic depiction of eyes and blinking. Eyes may appear unnatural, lack light reflections, and blinks may be too infrequent or unnatural.

- Skin and Texture: Deepfakes may have trouble realistically rendering skin texture. Look for unnatural smoothness, blurriness, or overly uniform texture that does not match reality.

- Edges of the Face and Hair: Check if the edges of the face and hair are sharp and clear. In deepfakes, these areas might be blurry or look as if they are pasted onto the background.

Here is a generated image showing a person with unnaturally smooth skin texture, subtle but noticeable imperfections such as overly smooth areas, mismatched skin tones, and slight blurring at the edges of the face, particularly where the face meets the background.

2. Analyze Lighting and Shadows

Lighting and shadows in deepfakes may appear unnatural:

- Inconsistent Lighting: Check if the lighting on the face matches the rest of the scene. Unnatural shadows or incorrect light angles may indicate manipulation.

- Face Shadows: Look at whether the shadows on the face and around it are consistent with the rest of the image. Unnatural shadows can be a sign of a deepfake.

3. Look for Digital Artifacts

Deepfakes often have artifacts, or "digital errors," that can reveal manipulation:

- Pixels and Distortions: Look for areas that are pixelated, blurred, or have unusual distortions. These are often visible at the boundary between the face and the background.

- Unnatural Colors: Pay attention to unnatural color changes on the face, especially around the eyes, mouth, and edges of the face.

Here is a generated image showing a subtle deepfake of a person. The image contains minor pixelation and slight blurring, especially at the edges where the face meets the background. There are also subtle, unnatural color changes around the eyes, mouth, and edges of the face. Subtle digital artifacts require careful inspection to notice, making the manipulation hard to distinguish from a real image.

4. Use Image Analysis Tools

There are tools and software that can help analyze images and detect deepfakes:

- Image Analysis Programs: Utilize available online tools that analyze images for manipulation. They can detect artifacts and inconsistencies that are difficult to see with the naked eye.

- Mobile Apps: Some smartphone apps are designed to detect deepfakes and can be helpful for quick image analysis.

An example of an effective deepfake detection app is Deepware - an advanced app that analyzes video, images, and audio files, providing detailed reports on potential manipulations. The app is available for both computer and mobile device users.

5. Check the Image Source

It is always worth checking where the image comes from:

- Trusted Sources: Ensure the image comes from a reliable source. Images shared by official websites, known media, and trusted organizations are less likely to be deepfakes.

- Image Metadata: Check the image metadata (file information such as creation date, editing, etc.). Inconsistencies in metadata may suggest that the image has been modified.

6. Use Common Sense

Finally, always use common sense:

- Too Good to Be True: If something seems too unusual or sensational, it might be a deepfake. Always approach such images with a degree of skepticism.

- Context and History: Consider whether the image fits the context and history from which it originates. Deepfakes are often taken out of context, which can help in identifying them.

Recognizing deepfakes requires attention to detail, technical analysis, and common sense. Education on identifying fake images is crucial for young people to effectively counter misinformation and protect themselves from its effects. Remember, deepfake technology is continually evolving, so it's important to stay updated with the latest methods and tools for detecting these manipulations.

Exercise 1: Finding Deepfakes on the Internet

Objective: Find examples of deepfakes on the internet and prepare an analysis of their features.

Instructions:

- Search the internet for popular deepfake examples. You can use Google search, YouTube, or other social media platforms.

- Choose three different deepfakes for analysis. These can be images or videos that have gained significant attention in the media.

- Copy the links to the selected deepfakes and save them on your worksheet.

Sample search phrases:

“popular deepfake examples”

“celebrity deepfake videos”

“viral deepfake images”

Exercise 2: Analyzing Image Details

Objective: Analyze the details of selected deepfakes for subtle errors.

Instructions:

- Examine each of the chosen deepfakes very carefully.

Pay attention to the following elements:

- Eyes and blinking: Do the eyes look natural? Are there realistic reflections of light? Are the blinks natural?
- Skin and texture: Does the skin look natural? Are there visible unnatural smoothness or blurring?
- Edges of face and hair: Are the edges sharp and clear, or do they look like they are pasted onto the background?

Record your observations for each of the selected deepfakes on your worksheet.

Exercise 3: Analyzing Lighting and Shadows

Objective: Recognize inconsistencies in lighting and shadows in deepfakes.

Instructions:

Focus on analyzing the lighting and shadows in the selected deepfakes.

Pay attention to:

- Inconsistent lighting: Is the lighting on the face consistent with the rest of the scene?
- Face shadows: Are the shadows on the face and around it natural and consistent with the rest of the image?

Record your observations on the worksheet, noting any inconsistencies you find.

Exercise 4: Look for Digital Artifacts

Objective: Identify digital artifacts that may reveal image manipulation.

Instructions:

Examine the selected deepfakes again, this time focusing on searching for digital artifacts.

Good luck!

Pay attention to:

- Pixels and distortions: Are there areas that are pixelated, blurred, or have strange distortions?

- Unnatural colors: Are there unnatural color changes on the face, especially around the eyes, mouth, and edges of the face?

Record your observations on the worksheet, describing the found artifacts.

Summary

After completing the exercises, compare your observations with other participants (if working in a group) or analyze them on your own. What elements were most commonly identified as signs of deepfakes? What was the hardest to notice? What conclusions can you draw from these exercises?

Remember that deepfake technology is constantly evolving, so it is important to stay updated with the latest detection methods and always use common sense.

Materials: Computer or smartphone with internet access, worksheet, notebook.

Worksheet

Name: _____

Date: _____

Links to 3 deepfakes:

Exercise 2: Image detail analysis

Eyes and blinking:

Deepfake 1:_____

Deepfake 2:_____

Deepfake 3:_____

Skin and texture:

Deepfake 1:_____

Deepfake 2:_____

Deepfake 3:_____

Edges of face and hair:

Deepfake 1:_____

Deepfake 2:_____

Deepfake 3:_____

Exercise 3: Lighting and shadows analysis

Inconsistent lighting:

Deepfake 1:_____

Deepfake 2:_____

Deepfake 3:_____

Face shadows:

Deepfake 1:_____

Deepfake 2:_____

Deepfake 3: _____

Exercise 4: Search for digital artifacts

Pixels and distortions:

Deepfake 1: _____

Deepfake 2: _____

Deepfake 3: _____

Unnatural colors:

Deepfake 1: _____

Deepfake 2: _____

Deepfake 3: _____

Summary:

Good luck!

If you have suggestions regarding our work, please feel free to contact us:

cooperation.office@agifodent.es

kontakt@fundacjaenabler.pl

We wish you success in working with young people - remember, AI is the "technology of tomorrow."