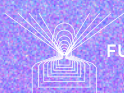


Abstract

STRATEGIC BRIEFINGS FOR SHAPING THE 21ST CENTURY

NEVER ALONE

SHAPING THE ECONOMY AND SOCIETY IN THE AGE OF
UBIQUITOUS GENERATIVE ARTIFICIAL INTELLIGENCE



FUTURE SOCIETY ASSOCIATION

W.I.R.E.

EXECUTIVE SUMMARY

After a decade of dystopian and utopian predictions about the role of artificial intelligence (AI), the hype cooled with a focus on the COVID 19 pandemic, the Ukraine war, and the global recession. Rightly so: studies show that hardly any of the touted AI tools have brought any real benefit in combating COVID.¹ Even the dream of autonomous driving, presaged in UBER's original business plan as the standard by 2020, is no longer a feature of official projections for the future. Elon Musk repeatedly announced the arrival of self-driving cars „next year“ for several years, these moot forecasts led many manufacturers to deprioritize the development of autonomous cars due to costs and complexity.² Many companies – including Swiss entities – increasingly see artificial intelligence as a key driver of innovation and efficiency.³ However, concrete, everyday application and usability in daily life is still rare, and the quality of AI-based tools such as chatbots in quotidian life turned out to be manageable – that is until 22 November 2022.

The launch of the ChatGPT bot, which was developed by the US company OpenAI as a comprehensive language model, now marks a supposed turning point in the tech world with far-reaching consequences for business and society. Seemingly out of nowhere, an artificially intelligent assistance system is available to act as an “ace in the hole” for corporate communications, school essays, love letters, or product and image design, taking over tasks previously reserved for humans. The long-standing popular prediction – the outsourcing of key tasks to machines – seems within reach, and has dynamically reignited even greater dimensions of frenzy around artificial intelligence.

ChatGPT is estimated to be the fastest growing internet service of all time, reaching 100 million users in January 2023, just two months after its launch. The “fear of missing out” narrative, long omnipresent on the world business stage, predicts that companies who fail to hop on the AI fast train, will miss the connection to the future and face complete disruption. Even the monopoly of the mighty Google search engine seems threatened by the integration of generative AI into the Microsoft tool Bing. The failure to fast-launch a rival product, for example, has led to stock market price fluctuations in

the billions. Politicians are also in the grip of ChatGPT fever. In the spring of 2023, the Romanian prime minister announced that he would use artificial intelligence as part of his advisory, using it to analyse the wishes of the people via social media, and recommend the steps in which to fulfil them. Conversely, Italy has blocked access to the tool after a group of tech leaders, including Elon Musk, called for a 6 month pause on AI development. This is surprising because artificial intelligence is a technology that has been in development for decades, and is regularly analysed by experts from the spheres of business, science and politics. The possible societal risks and strategies geared towards them would have to be reflected and pre-formulated. This newly ignited, hectic race for the supremacy of the internet reveals that many of the fundamental issues have not been systematically thought through – whether in the data-filled loft spaces of the large internet companies, or in the carpeted strategy hubs of government.

In view of the enormous expectations, hopes and fears fuelled by the launch of the practical AI tool, it is important to make critical assessments that will enable organisations and leaders to engage profitably and responsibly with the next generation of AI. What is clear is that AI will become an integral part of our daily lives from 2022 onwards, and we must now determine what roles the technology should play in this, particularly in education, marketing and communications – and in the long term, in relation to the fundamental role of machine learning poses in business and society.

This briefing is based on an exchange with partners of the Future Society Association and an in-depth analysis by Think Tank W.I.R.E. It provides a baseline of knowledge on which to take a stand, identifies opportunities and challenges of AI and ChatGPT, and provides concrete suggestions for discussion on what needs to be done – today and for the long-term future.

¹ <https://www.technologyreview.com/2021/07/30/1030329/machine-learning-ai-failed-covid-hospital-diagnosis-pandemic/>

² <https://theprint.in/economy/ford-volkswagen-pop-the-automated-vehicle-bubble-with-exit-from-self-driving-startup-argo/1183780/>

³ https://www.thewire.ch/data/files/Artificial_Intelligence_W.I.R.E._2022_Digital.pdf

BASICS

HOW GENERATIVE AI AND CHATGPT WORK

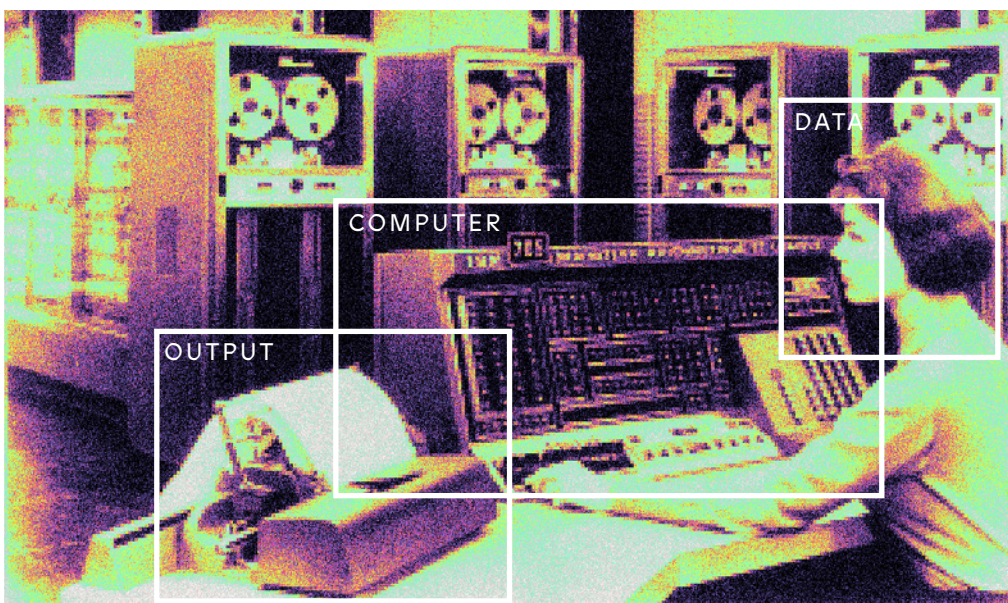
So-called “generative artificial intelligence” makes it possible to generate content such as text, image or sound instead of merely recognising or classifying them. The best-known of the generative algorithms is GPT (Generative Pre-trained Transformer), a language model developed by OpenAI from the USA, which was first presented in 2018 and has been continuously improved.

The technology is not really new. Generative AI was developed in the 1960s with chatbots like Eliza. But it wasn’t until 2014, with the introduction of “generative adversarial” networks or GANs – a type of machine learning algorithm – that generative AI was able to convincingly create authentic images, videos, and audio of real people. The latest version of GPT and its conversational version – ChatGPT-, is able to “generate” very plausible and coherent texts that are often difficult to distinguish from human-written ones. The model has been trained to predict the next word, producing sentences or whole pieces of text. Accordingly, the AI memorises patterns and structures of human language and builds content word by word.

To train GPT-3, an enormous dataset of books, Wikipedia articles, and other text sources was collected via “web scraping.”⁴ The current system uses such training data capped at 2021, and so knows nothing of current events. The bot is able to assemble

facts in myriad forms, but cannot generate new knowledge. GPT-4, an extended version is already available, but its training basis has so far been kept under wraps. It is not primarily the effective scope of the data and images currently taken into account that is central to assessing long-term opportunities and risks, rather the fundamental potential and limits of the technology.

The GPT model is also the basis for the so-called “DALL-E”⁵ applications, trained on millions of images available from the internet, with the ability to generate images based on text descriptions. They do this by translating words from a task into an arrangement of pixels that correspond to the statistical probabilities on which the system is based. In this way, picture elements can be recombined and visualised in any illustrative style. A singing car in the style of Salvador Dali, as an 8-bit representation or as a photo-realistic portrait, can thus be designed with a click within seconds.



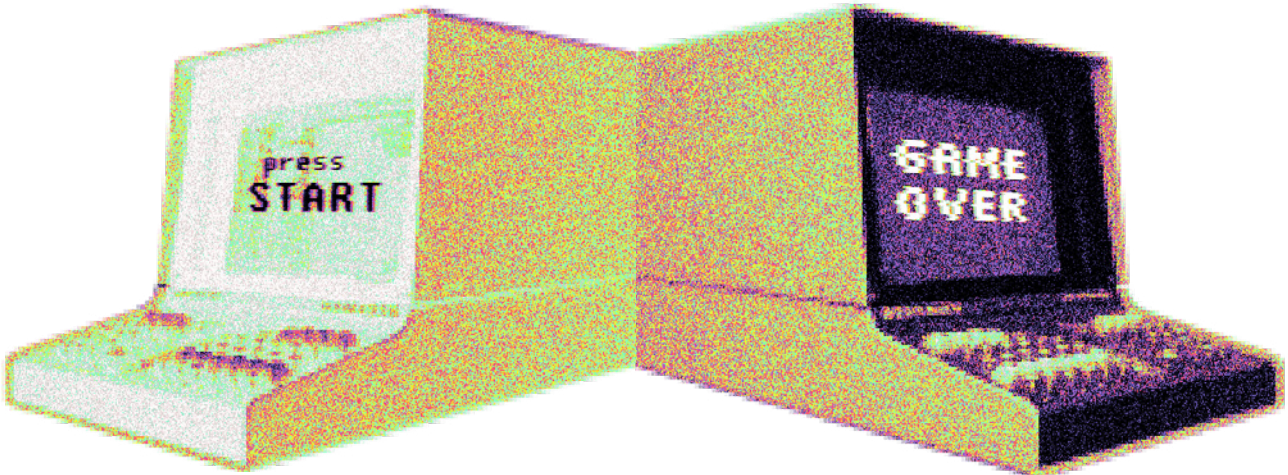
⁴ Automatically reading the contents of a website.

⁵ Inspired by the robot in the Pixar film Wall-E and the Spanish surrealist Salvador Dalí

CLASSIFICATION

FIELDS OF APPLICATION AND LIMITS OF GENERATIVE AI

The range of applications for GPT systems spans all industries and affects virtually all areas of life. In order to create a realistic understanding of the areas in which generative AI systems effectively deliver sustainable added value, and what challenges need to be taken into account, a differentiated analysis of the potentials and limitations is required.



POTENTIALS

Creating texts

Generative AI can create different types of texts: from news articles, to school essays and poems, to blog posts. It can also answer general search or customer queries. In addition, the bots are capable of summarising, correcting, or translating texts.

Defining processes

The technology enables the definition of processes for different tasks in organisations, e.g., for communication, customer service, or application processes. Likewise, travel or training plans can be compiled.

Support for programming

ChatGPT can assist in the creation of computer programmes by developing basic codes that are later detailed by humans. The programme can also identify errors in existing programmes.

Creating images and designs

A major field of application is the creation of photorealistic images, the so-called “deep fakes,” which can be used in place of photographic imagery, as avatars, or in marketing materials. Furthermore, generative AI can create images based on existing illustration styles or imitate the style of artists. In addition, it can compose music, create multiple variants of products, from which the most suitable can be selected.

LIMITATIONS

Limitations of referencing

Because ChatGPT gives answers based on statistical probabilities based on large data sets, the individual sources used for creating output cannot be referenced. This lack of transparency makes copyright compliance impossible. While newer versions are able to map certain references, a complete representation of sources is likely to be limited even in the long term, when training on incompletely structured data.

Untruths and distortions

The quality of ChatGPT’s outputs is based on the training data used to develop the model. If the baseline data is false or depicts biased facts, “biased” statements will result. This can lead to gender-discriminating or racist statements, but most importantly, it can favour cultural areas from which the data originates. While filters and human verification are used for this, an inherent limitation remains.

Imparting knowledge and skills

The use of bots can be used to impart knowledge – for educational or journalistic purposes. For example, local events which are not often reported because of economic / logistic reasons, can be covered. In other scenarios, structurally weak regions lacking a skilled workforce can be augmented. Last but not least, ChatGPT can also be used as a customised learning system.

Limitations with complex tasks

ChatGPT produces erroneous output, e.g., when summarising texts, and also when interpreting background information; when referencing subtle or indirectly related developments; or in parsing ambiguous statements ranging from irony to cynicism. The limitations extend to summarising demanding texts that require multiple perspectives, thus generating systematic error rates that naturally improve with time, but still require supervision – if they are to be relevant to decision-making.

Limitations of personalisation

The outputs of generative AI are based on standardised input data, and can only be customised to the extent that statistically sufficient appropriate references are available. Thus artistic styles like Impressionism or Surrealism can be interpreted, but not in a truly individualised manner of artistic output.

Cost of energy

The computational cost of artificial intelligence is high. While the current versions of ChatGPT on a test basis only begin to charge users for the costs, widespread applications are likely to lead to correspondingly higher expenses and energy costs.



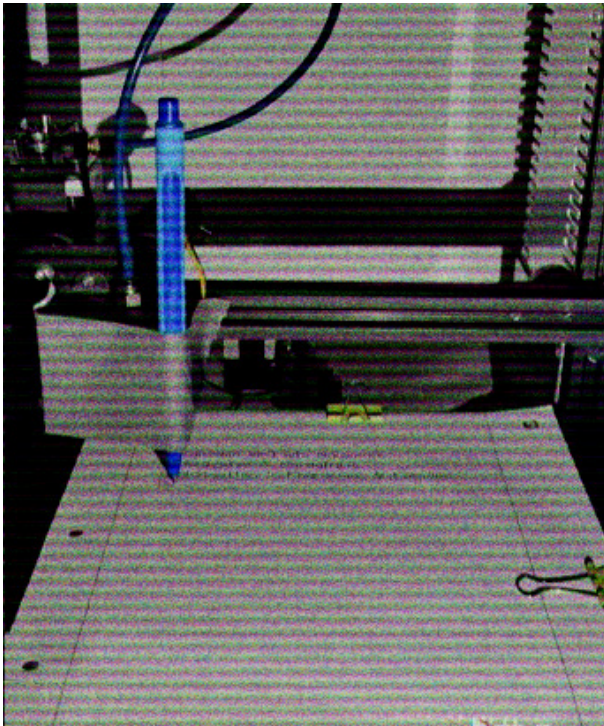
CREATING FAKE PHOTOS OF PEOPLE WITH HOMOGENEOUS FACIAL FEATURES, AND ANATOMICAL FLAWS

https://mymodernmet.com/ai-fake-party-photos/?fbclid=IwAR1DPyZnCLz1VYqYsX60H1EL_LZmjWJIRq0I2zOW7_yH7x55EyKLMhdovNo



A TOOL TO CREATE “INFINITE” SEINFELD EPISODES WITH ENDLESS LOOPS OF SIMILAR CONVERSATIONS

<https://screenrant.com/seinfeld-ai-twitch-stream-jerry-seinfeld-roast-response/>



OUTSOURCING A SCHOOL ESSAY WITH TRANSCRIPTION BY PLOTTER, PERFECTING PLAGIARISM

<https://mymodernmet.com/chatgpt-3d-printer-homework/>



AUTOMATICALLY GENERATING DESIGN SOLUTIONS FOR PRODUCTS BY SELECTION INSTEAD OF DEVELOPING IDEAS YOURSELF

<https://formlabs.com/ch/blog/generative-design/>

OUTLOOK

THE ECONOMY AND SOCIETY IN THE AGE OF GENERATIVE INTELLIGENCE

Forecasts that will shape the future economic and social framework conditions and serve as a basis for planning, can be derived from the potentials and limitations of the technology. These are not one-sided, rather shaped by overarching areas of tension that require a differentiated understanding. With a view to the long-term and fundamental shaping of the world of work and private life, it is necessary to clarify fundamental questions which can no longer be postponed to satisfy short-term reactive behaviours.



1. Taking over previously human tasks – simultaneous emergence of new job profiles and responsibilities

ChatGPT and future generative bot systems align with the characteristics of industrial revolutions, that since the 19th century, have led to tasks once performed by humans being partially or fully outsourced to machines. With a focus on communication, process design, and design, this exercise now covers a wide range of tasks that were previously the preserve of humans. The elimination of traditional jobs covered by the new spectrum of automation is highly likely. However, given the error-prone nature and limitations of performing complex tasks, an upgrading of human tasks in “fine-tuning,” personalisation or quality control is emerging at the same time. With the spread of generative AI, the demand for these control tasks will also increase. Moreover, the results of AI will always be oriented towards statistical averages; unexpected, novel ideas and solutions are not, or only to a limited extent, part of the potential of learning machines.

Consequence: Building up future competences away from repetitive and procedural tasks, clarifying the areas of application where generative AI adds value, and defining control instances for system-relevant tasks.

2. Flooding the internet with artificially generated content – resulting in a loss of trust in digital content, and the dissolution of a quality-controlled web

The widespread availability of generative artificial intelligence will change the way we deal with knowledge – and thus also the internet – in a far-reaching way. Automatically generated texts and images will not only be used for school essays or journalistic tasks, but will be responsible for a significant part of the content of the World Wide Web in the future. As a result, it will become increasingly difficult for users to distinguish between content or social media profiles are human or bot-generated. It will take more effort with texts, just as with images, to distinguish between what the real and the artificial. This constant search for authenticity will result in a widespread loss of trust in the virtual world, and increases the effort of searching many times over. Automated plagiarism detectors will not solve the problem either, as they are themselves error-prone. As a reaction to this, in the future, quality-checked and authentic content on the internet will exist behind paywalls. This undermines the original democratic grassroots principles of the World Wide Web.

Consequence: Access to usable and credible content becomes more costly. Return to physical exchange as a basis for trust. AI-generated content and images must be transparently recognisable.

3. Expanded basis for creativity – but even more homogenisation with loss of margins

The ability to arbitrarily combine content with text types and language styles or image elements with illustration styles or references from artists opens up new – and efficient – possibilities for creative applications where texts, illustrations or even product designs can be generated at the click of a keystroke. However, due to building on existing content or illustrations, and the focus on statistical averages, the use of generative AI brings with it a homogenisation in which the results for corporate communication, illustration, product design, or architecture become increasingly similar. The result is growing pressure on margins, and willingness to pay for artificially generated content, which further drives up the need for (global) scaling and platform-based business models. As a counterpoint, true differentiation consequently becomes even more dependent on human input. Due to the high relevance of usable data, this may result in a new competitive basis or location factor: Business models or jurisdictions that have high-quality and usable training data have an advantage in an AI-based economy.

Consequence: The increasing alignment of AI-based results leads to counter-trends and the search for diversity and genuine authenticity – also as a basis for future margins.

4. More convenience and equal opportunities – but a declining decision-making capacity and risk of third-party control

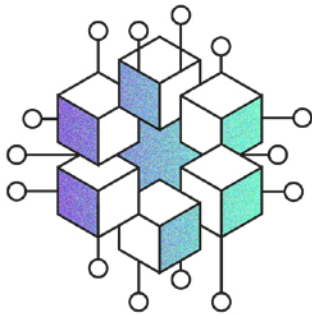
Free access to generative AI assistance systems allows more and more people to outsource simple tasks: from writing a letter, to social media posts, to creating an initial brainstorm. This leads to an enormous relief in overcoming the tedious daily tasks. AI-based bots also empower people without the appropriate training or skills to conduct structured research, formulate texts, or create illustrations. This “democratization” increases equality of opportunity in the population. In addition, AI-based assistance systems can provide services in structurally weak areas that were previously unaffordable. However, a constant handover of these activities to digital assistance systems leads in the medium to long term to a loss of competence and self-efficacy, or to more heteronomy. Without regular practice, the ability to formulate, structure content, and thus also critical or creative thinking will be lost across broad sections of the population.

Consequence: The majority are not aware of the “costs of convenience” in the form of loss of competence and declining decision-making ability. Organisations and educational institutions are challenged to strengthen these abilities and to consciously forego control by AI when making important decisions.

KEY QUESTIONS

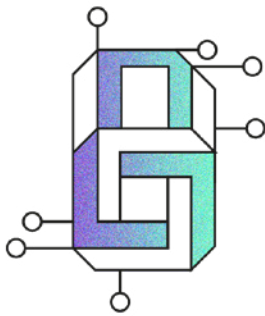
DEALING WITH GENERATIVE ARTIFICIAL INTELLIGENCE

Looking at the long-term framework of the economy and society, several key questions need to be addressed, not primarily as a reactive positioning to the growing capabilities of AI, but building on how we define future interactions, our own self-image, and the design of a desirable society.



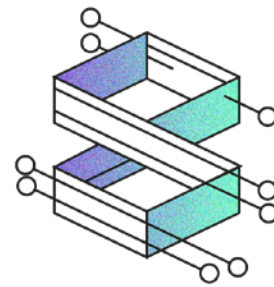
How to differentiate?

The power of standardisation will continue to grow with generative AI bots. For large, platform-based business models, the question is what will truly define services and products when artificial intelligence becomes ubiquitous.



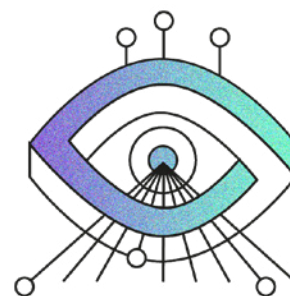
How to build trust?

With the rapid proliferation of AI-generated content and images, it is increasingly difficult to tell whether a photo is real or a text or message was written by a human. The effort to detect deception is increasing; building trust in virtual space requires new foundations, defined either by certificates of authenticity or a counter-trend to real encounters.



How to protect intellectual property and make it usable?

ChatGPT currently uses the accumulated knowledge of the Western cultural space based on Wikipedia entries and other information that is processed, but without referencing sources or compensating copyrights. With the first regulatory restrictions due to data protection as in Italy or lawsuits from rights holders, the central question will be whether we as a society allow AI to use free knowledge and pass it on (increasingly at a cost).



How to maintain skills and self-worth?

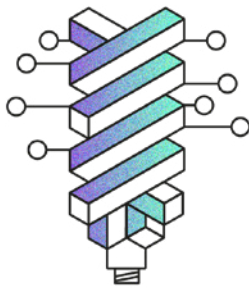
The temptation to simply outsource threatens a creeping loss of competencies and self-worth. To prevent this, it is important to actively define a societal perspective where human competence is crucial, and a means of maintaining self-efficacy in the long term.

AREAS FOR ACTION

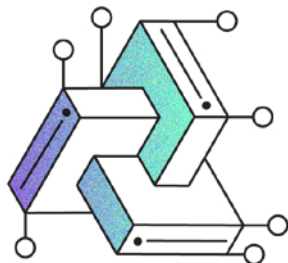
RECOMMENDATIONS IN DEALING WITH GENERATIVE AI

Organisations must systematically evaluate the potentials and limitations of generative AI and take measures to remain competitive while strengthening the trust of employees and customers. At the same time, it is important to create the foundations to carry generative AI solutions productively and safely into everyday life. The findings of the digital transformation to date show that the classic “move fast and break things” approach propagated by Mark Zuckerberg does not lead to sustainably successful solutions or profitable business models. Taking social requirements and challenges into account must be the basis on which future innovations are carried into the market. This requires companies to focus on a holistic understanding of innovation, it requires universities that lay the foundation for appropriate technologies, and it requires, above all, forward-looking regulations that create the legal basis in a technology-neutral way but with a focus on fairness and diversity.

For this, six areas for action can be defined that need to be addressed.

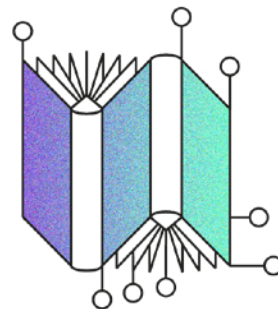


1. CLARIFY INTELLECTUAL PROPERTY RIGHTS: Define a regulation for the protection of, but simultaneous access to, intellectual property that can be used for the training of AI systems. The prerequisite would be technological solutions that can clearly reference sources, alternatively a pool of content whose rights holders are compensated on a flat-rate basis for widespread use.

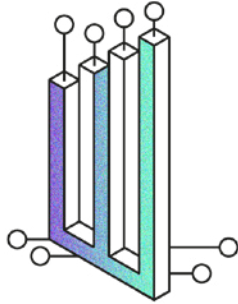


2. BUILD DATA BASES: Create a broad base of relevant, quality-checked diverse data sources as a foundation for training generative AI that can be used by companies, public organizations, or the public. Central to this is also the protection of

personal rights, which in the best case are released by users in “datatrust” solutions for defined financial or other consideration. Future tasks of a data-oriented “public service” may arise here.

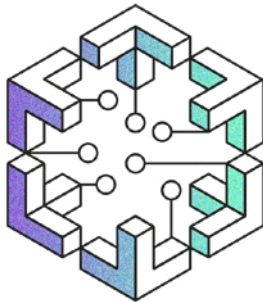


3. TRAINING USER COMPETENCIES: Promote competencies that position users to use AI tools wisely and minimize risks related to misstatements, discrimination, undermining IP rights for themselves or for third parties. Teach “computational thinking”, explain how algorithms work, and practice recognition of artificially generated images or text. Develop job profiles, build test environments, and train in critical thinking and source-based research. Schools and universities can use generative AI as a working tool and test it as part of training, and learn which results are useful and which are not.



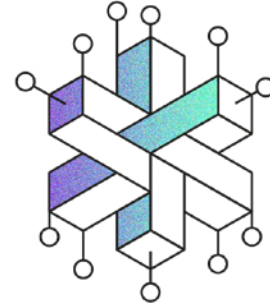
4. REGULATE CRITICAL OUTPUTS:

Identify ethically critical outcomes of AI, for example, discrimination against conversations, texts, or in HR processes. Hold companies accountable for the decisions their AI systems make. The goal is not to regulate at the level of technologies or software and restrict degrees of freedom, but to analyse outcomes in terms of critical outputs and restrict algorithms or improve processes in response.



5. ESTABLISH TRANSPARENCY:

Declare AI application involvement when publishing software, text, and visualizations, especially when applying photo filters on social media, scientific papers, and marketing. Opportunity for companies by encouraging self-declaration and proactive first-mover transparency. Proactive regulation is needed here, while at the same time organizations have the opportunity to build trust through their own policies.



6. USE HUMAN CONTROL AND DIFFERENTIATION INSTANCES:

To prevent biased and generic results from AI systems, adapt and maintain diversity as a basis for innovation. Human intervention is needed at neuralgic points of system-relevant processes, and also for ensuring new ideas off the statistical mean. Companies can protect themselves from increasing alignment by incentivizing novel ideas and solutions. At the same time, human interactions ensure both innovation and trust from R&D to customer service.

OUTLOOK

BOTS ARE HERE TO STAY – FOREVER

Shaping the future, not fitting into machine processes, is becoming the basic prerequisite for building a humane future.



protect their users from the flood of offers. The increase in such “machine-machine interactions” will simultaneously shift the role and range of competencies of humans, who will assume more control and steering tasks. The use of ChatGPT is already entailing new software that helps identify plagiarism, for example. However, these are equally prone to error. Recently, the Bible and works by Shakespeare were identified as AI-generated.

It is clear that a powerful technology like AI cannot do without stringent regulation. It is all the more astonishing and irresponsible that the central questions and approaches have only come to the attention of a broad public – and, it seems, to the agendas of politicians – through the GPT hype. The technology companies have missed an opportunity here just as much to develop concepts in the background at an early stage that can

be pulled out of the drawer at the right moment.

The task now is to learn from these shortcomings, and finally install an early detection system that systematically translates into concrete fields of action, binding to both policymakers and responsible parties for private and public organizations.

The final deciding factor, however, is not the performance of the machines, but the active definition of the role we designate for ourselves as human beings. This includes an active decision about the bandwidth for irrationality or emotions that we allow, since these are not only often responsible for extraordinary innovations, but above all, for cultural achievements. The quality that emerges is not about maximizing productivity, but rather concerned with self-efficacy and other unquantifiable quantities that constitute the value of life and the future of our civilization. The real answer to the future of artificial intelligence is thus defined by the role we give it.

The performance spectrum of generative AI will undoubtedly continue to increase in the coming months and years. However, the “tipping point” has already been reached with the broad availability of the technology. The central questions on how to deal with AI are therefore not dependent on the next development steps but concern the fundamental relationship between humans and machine learning. One thing is clear: even in the distant future, the outputs of machines will remain “artificial” and will not be generated by living people with feelings and social embedding. They are based on statistical probabilities. Bots do not have a “human” understanding of the world. Artificial intelligence will therefore not be able to do without humans, neither today nor in the future. Even if the results are more astonishing and efficient, it is important to decide on its use not only on the basis of technical feasibility, but also on the basis of social desirability. In one study, people were asked if they would use ChatGPT to generate love letters for Valentine’s Day. 42% of men and 20% of women surveyed had planned to do so, however 50% of the respondents expressed misgivings about being the recipient of such artificially created content.⁶

As AI systems become more powerful, more applications whose results will no longer be measured by humans but by other bots are likely to follow. In the future, for example, marketing bots will meet personal “shopping” bots that

⁶ <https://www.fastcompany.com/90846284/chatgpt-ai-love-letter-chatbot-valentines-day-poll>

ABSTRAKT is a series of briefings published by Think Tank W.I.R.E., providing a forward-looking analysis of developments, trends or new technologies relevant to the economy and society in a compact but differentiated and far-sighted manner, as well as formulating recommendations for action to shape the future. The briefings are based on the concept of the same named book series published by W.I.R.E. over many years and carry on the aspiration to combine inspiration with critical thinking.

The Future Society Association (FSA) is an initiative to reconnect business and society with the aim of shaping the transformation of a digital and sustainable society together with business, science and politics. It is based on the forward-looking identification of future societal challenges as a complement to the existing technology focus of many innovation projects, the transfer of knowledge about new societal developments, and the linking of actors to shape tomorrow's society. The aim is to promote business models and products that integrate social responsibility and thus enable long-term and stable economic growth. At the same time, the FSA promotes new perspectives for a desirable future, as without the participation of the population, neither sustainable data-based nor circular-based business models will find acceptance.

The FSA was initiated in 2020 by Think Tank W.I.R.E. and is supported by a group of forward-thinking organizations and individuals.

GLOSSARY

Reinforcement learning

Perhaps the simplest form of training available, reinforcement learning involves giving the system feedback each time it performs a task, so that it learns to do things correctly. This can be a slow and expensive process, but for systems that interact with the real world, there is sometimes no better way.

Large-language models (LLMs)

This is one of the so-called neural networks. Large-language models are trained by feeding them billions of words in everyday usage from sources such as books, tweets, and everything in between. The LLMs draw on this wealth of materials to predict words and phrases in specific sequences.

Generative adversarial networks (GANs)

In this method, two neural networks are connected to create something new. The networks are used in creative work such as music, visual arts, or filmmaking. One network is assigned the role of creator, while a second is assigned the role of marker. The first learns to synthesise elements that the second approves of.

Symbolic AI

There are even AI techniques that draw inspiration from the past. Symbolic AI is an approach which rejects the idea that a simple neural network is the best option, and seeks to combine machine learning with carefully structured facts about the world.

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