AI in media and journalism: Ethical challenges.

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Abstract:

The article synthesizes the opportunities and associated risks that AI technologies offer for media as a field, the principles that should undergird the adoption of AI and evaluates the ethical challenges; proposing specific recommendations that, if adopted, will enable seize the opportunities, to avoid or at least minimize and counterbalance the risks, to respect the principles, and hence to develop a good AI society.

Using an overview of the AI ethics literature, this article proposes a series of recommendations for the development of a good AI serving journalism and society as well. I reveal several ethical challenges, than suggesting "AI literacy" as a mean to leverage these ethical challenges to empower professionals, which eventually benefits society at large.

Introduction

Systems of artificial intelligence (AI) play an increasingly major role in our everyday lives, from personal assistants on phones and smart devices to the systems that analyze and approve applications for loans and housing.[1] The impact of AI is seen across many areas, from jobs, health, finance, and education, entertainment to media. Some researchers focus on economic impact in terms of increases in growth and productivity, while others take a broader view considering societal benefits. Latter ones include hope that AI 'will be central to the achievement of the Sustainable Development Goals and could help solve humanity's grand challenges'.[2]

Many argue that artificial intelligence (AI) is not only technology but also a paradigmatic shift in the relationship between humans and machines.[3]

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AI can be defined as "a system's ability to correctly interpret external data, to learn from such data, and to use those learning's to achieve specific goals and tasks through flexible adaptation".[4]

AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or it can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications).[5] Additionally, modern AIs are constructed with the ability to continuously learn and improve their processes with little or no human intervention.[6]

Scholars and commentators often distinguish between two forms of AI, Narrow or weak AI systems capable of completing one or two tasks requiring human intelligence and General or strong AI systems capable of doing any task involving human intelligence. Although artificial general intelligence does not yet exist, it remains the major goal of many researchers and research organizations. The promise of AGI is of a single technical system that is perfectly generalizable across cases; a single system that could 'solve thousands of problems.'[7]

Our digital revolution is in full swing. In 2016 we produced as much data as in the entire history of humankind through 2015. Every minute we produce hundreds of thousands of Google searches and Facebook posts. These contain information that reveals how we think and feel. It is estimated that the amounts of data will double every 12 hours.[8] the field of artificial intelligence is making breathtaking advances. Recently, Google's Deep Mind algorithm taught itself how to win 49 Atari games. Algorithms can now recognize handwritten language and patterns almost as well as humans and even complete some tasks better than them. They are able to describe the contents of photos and videos. Today 70% of all financial transactions are performed by algorithms. News content is, partially, automatically generated.[9] Technology giants such as Amazon and Walmart use AI to demand forecasting and supply chain fulfillment. Walmart's store of the future is testing AI with analytics to trigger the need to respond when customers pick the last item and then track the store's ability to quickly restock the

product. The Walmart IRL AI systems are supported by cameras and sensors installed throughout the store that transmit 1.6 TB of data per second to data centers and linked supply chain fulfillment.[10] Studies showed that consumers use AI for a specific task such as making purchases, searching for information, and conducting research. The technological development of AI has had a significant impact on our society in work, education, and other aspects of daily life. *One thing is certain*: AI's presence cannot be ignored. Our society is more digitalized and automated than ever before.[11] some research stress the ethical concerns that come with unsupervised learning approaches built on only a few examples. For instance, Generative Pre-trained Transformer 3 (GPT-3), an autoregressive language model that uses deep learning to produce human-like text, can apply the huge data its creators used to train it to generate text from a few examples. This training activates new ethical challenges concerning biases learned from the training data.[12]

Chat GPT was released 2018 and launched in 2022, starting debates about its negative consequences, in particular moral challenges. The violation of intellectual property rights and bias represent a few examples. The turning point was when the chat GPT passed the fellowship test in medicine, despite not having studied medicine in the first place, and therefore a number of countries banned it, Canada and France to name a few. The AI ethical challenges created international and European attention, especially for the development of multiple conventions to preserve ethics on the one hand, and the governance of these means on the other hand. In the United States, committees discuss these risks and their repercussions and try to legalize them, which reflect the fear of their effects and the hope that they will be used for the benefit of all humanity. To address these ethical challenges caused by AI application in media and journalism, I conducted a literature review from 2016 till 2023. This review is structured around five more sections after this introduction. Section 2 states the opportunities and challenges offered by AI, Section 3 offers a brief view of the AI advantages for media organizations and risks, section 4 discuss the ethical challenges Finally, Section 5 offers ways to protect the

profession and help develop AI in responsible ways stressing the importance of AI literacy to protect user and finally propose a Future research agenda.

Artificial Intelligence: opportunities and challenges

That AI will have a major impact on society is no longer in question. Current debate turns on how far this impact will be positive or negative, for whom, in which ways, in which places, and on what timescale.[13]

Studies have estimated that by 2030, 70% of businesses are likely to have adopted some form of AI technology within their business processes or factory setting. Studies confirmed the benefits of greater levels of adoption of AI within a range of applications, with manufacturing, healthcare and digital marketing developing significant academic interest.[14] within healthcare related studies, researchers have proposed new opportunities for the application of AI within medical diagnosis and pathology with greater levels of speed and accuracy. AI has the potential to offer improved patient care and diagnosis as well as interpretation of medical imaging in areas such as radiology.[15] Education and information search is an area where the literature has identified the potential benefits of AI technology solutions to improve teacher effectiveness and student engagement in the context of intelligent game-based learning environments, tutoring systems and intelligent narrative technologies.[16] Arlitsch and Newell (2017) discussed how AI can change library processes, staffing requirements and library users.[17]

AI-powered mass personalization of communication content can be harnessed to match individuals' preferences, to increase personal relevance, to satisfy individuals' wants and needs[18], and to improve the attractiveness and usability of products, services, messages, and content, which, in turn, increases acceptance, usage, satisfaction, and loyalty.[19] Moreover, mass-personalized content can serve as substitute or shortcut for extensive information search and gathering through information (pre-) filtering and selection leading to better information and efficiencies (e.g. time savings) on the content receiver side.[20]

Everything started quite harmlessly. Search engines and recommendation platforms began to offer us a lot of choices such as personalized suggestions for news, products and services based on personal and data that has been gathered from previous searches, purchases and social interactions. Often the recommendations we are offered fit so well that the resulting decisions feel as if they were our own. In fact, we are being remotely controlled ever more successfully in this manner. The more is known about us, the less likely our choices are to be free and not predetermined by others.[21] Recently, AI has continued to gain strength as we can see with Google's real-time translations, Siri, Alexa, self-driving cars, YouTube's automated video subtitles, Skype's ability to simultaneously translate between languages in video calls, Amazon's cashier less stores, COBOTS in manufacturing and warehouses, and digital twins.[22] Most contemporary AI-based digital assistants rely on some form of conversational user interface, such as speech-based or text-based conversational agents, both for receiving input from and delivering output to users using natural language processing. Advanced AI-based digital assistants may also apply computer vision to recognize visual inputs. Digital assistants with computer implemented cognitive skills allow us to relax our cognitive boundaries. Especially in situations of information overload, they can help us to filter, sort, navigate, and process information. This can bring us closer to the ideal of unboundedly rational individual decision-making. Some examples: Many cars have emergency brake assistants operating at an information processing speed that exceeds human capabilities. E-commerce recommender systems help us to navigate an overflow of offerings. Automated e-mail filtering distinguishes spam from clutter and from high-priority e-mails so as to focus our attention.[23]

In the near future, AI-based team assistants could act as facilitators or team members also, which contribute to a brighter society.[24] however, the challenge increase gradually, It is expected that supercomputers will soon surpass human capabilities in almost all areas, somewhere between 2030 and 2060. Experts are starting to ring warning alarm that super intelligence is a serious danger for humanity, more than nuclear weapons.

The AI policy documents address a wide variety of concerns and challenges associated with AI including ethics, safety, privacy, transparency, accountability, work, education, skills, inequality and inclusiveness, law and regulations, human rights and fundamental norms and values, governance democracy, and warfare.[25] Gupta and Kumari (2017) discussed legal challenges connected to AI-responsibility when errors occur using AI systems. Another legal challenge of using AI systems is the issue of copyrights. Current legal framework needs significant changes in order to effectively protect and incentivize human generated work.[26] A study shows that half of users had 'some familiarity' with ethics in technology design. The four most highly ranked were, respectively, safety, privacy, transparency and security. These were significantly beyond other principles including integrity, non-discrimination, autonomy, dignity, efficiency and equity respectively. A clear majority felt that AI demanded a 'higher ethical standard' than other areas of technological design. Industry and academic researchers are viewed as in control of the trajectory of innovation, whereas public authorities should be responsible for impact from user's point of view. [27]

AI in media and journalism

Artificial intelligence is not just a technology but an encompassing power re-shaping daily practices, individual and professional interactions, and environments. Today we are living in a digital world, in a society which is interconnected with unimaginable opportunities. In this digital world, journalism is a profession hugely dependent on technology. From gathering a piece of news to print/ broadcast, everywhere technology is a crying need. Technologies are no longer used as a helping hand to journalism; rather they are re-shaping the way journalism is.

Journalism is one of the world's fastest growing tech-based sectors. First world countries newsrooms are ready for the fourth major wave of journalism (after online, mobile and social media) to use large scale amount of data with the help of AI. It has made news to be generated faster, with fewer errors. From processing big data to in depth investigation, AI is used everywhere by big news

companies.[28] Journalism has become more modern and trendier with the help of AI than ever before. Big organizations like New York Times are using AI to speed up research, accumulating and cross referring data. Since 2016 Washington Post is using AI based robo-reporters which they claimed have written 850 news articles within one year.[29] some scholars are considering AI as an opportunity for journalists to free from routine works and a suitable cost cutting tool. On the other hand, some scholars are considering AI as a threat to journalism which will replace human journalists than helping them out. Whatever be the controversy, no one can deny the importance of AI in every profession especially in the field of journalism which prompted scholars to ask, in effect, "who and what do journalism? But such a question is pertinent not only to journalism, but indeed to all of communication.[30]

AP AI projects include automated stories, image recognition, and real-time transcriptions. In June 2022, *Cosmopolitan* published the first magazine cover art generated by AI. The Los Angeles Times (2019) uses Quakebot, an algorithm that ties directly into the U.S. Geological Survey, to generate reporting in virtual real time on seismic activity (e.g., earthquakes).[31] Biswal and Gouda (2020) stated that most people are resisting AI usage in journalism because of the lack of credibility. According to them, some academicians and practitioners firmly believe that human's credibility, creativity and humor cannot be replaced by AI. Some are concerned about the ethical issues; some are on losing their job to machines. These sorts of mental blockage are working against the use of mainstream news production.[32] For example, AI can complement a communication professional's skills such as predicting trends of publics, monitoring social media conversations, and detecting fake news stories in an effective manner, speech recognition, decision-making, visual enhancements, and historical data. In addition, AI has the ability to find words or phrases that unverified information often uses and flag the false information seen on social media.[33]

Every wave of new technology (telephone, photograph, reproduction, or computerization), has somehow changed the nature of roles, tasks, and workflows in the newsroom. AI is no different,

it is a technology that is and will continue to change news work, often complementing but rarely wholesale substituting for a trained journalist. Some experts estimate that only about 15% of a reporter's job and about 9% of an editor's job could be automated using current levels of AI technology. Reporting, listening, responding, and pushing back, negotiating with sources, and then having the creativity to compellingly put it together, or knowing when a new angle of attack is needed—AI can do none of these indispensable journalistic tasks, though it can often augment human work to make it more efficient or high quality.[34] Far from destroying jobs in journalism, AI appears to be creating them. NLP is already widely used in journalism and media operations, including news organizations such as the Associated Press which uses AI extensively and in a variety of arenas, from news gathering, to news production to news distribution.

AI is a new medium through which journalists can express and exercise their ethical and normative values through the code they implement. For example, in 2017, the Washington Post launched a system called "ModBot", which automatically reads the comments made on its website to determine if they meet quality standards or should be moderated away. Maintaining the quality of the online comments section is a major challenge that many online news sites struggle with. "ModBot" can save hours of manual human effort sifting through comments. In making its determination of whether a comment should stay or go. The system was explicitly designed to set the abusive language bar higher for public figures, with the recognition that criticism of public figures must be allowed in a forum dedicated to fostering deliberative conversation on issues of societal import. By developing its own system for moderating comments, the Post was, therefore, able to better match the operational behavior of its AI with professional ethical and normative expectations.[35] Google recently introduced an AI agent that mimics a human voice in completing administrative tasks; the resulting backlash prompted Google to reassure the public that the virtual agent would identify itself. Disclosure of the nature of a communicator are also part of emerging ethical debates into the relative transparency of authorship and bylines for "robot reporters"

and legal debates about responsibility in automated media. Generative artificial intelligence is ushering in an era of potential transformation of journalism and media content. ChatGPT allows users to enter text prompts and rapidly generates text responses drawn from its knowledge acquired via machine learning in engagement with the internet. In 2020, The Guardian (Generative Pre-trained Transformer 3, 2020) published an article written by GPT-3, the basic NLP engine that runs ChatGPT.[36] Generative AI can be relevant to journalism and mass media in several ways, it can be used to generate news stories or articles, freeing up journalists to focus on other aspects of their work and it can also be used to create personalized content for individual readers based on their interests and preferences. In addition, generative AI can be used to automatically generate summaries of long articles or news stories, making it easier for people to quickly get the key points from a piece of journalism.[37] An AI tool such as Chat GPT could be used as an asset to assist a human journalist or media professional and thereby could be highly relevant to improving both the quality and efficiency of journalistic and media work, particularly when time constraints and other resource limitations are increasingly germane.[38] AI have broken down the barriers between professional journalists and amateur reporters, allowing a variety of ordinary people to report their own communities and spread their stories quickly and widely online. News production is also affected by artificial intelligence. Two main contributing factors are automated gatekeeping and robotic writing. Automated gatekeeping functions like human editors to check, shape, and screen news content, which has resulted in a plethora of propaganda or fake news online, because algorithms cannot distinguish truth from outright lies. Consequently, fake news that appeals to a wider readership will spread faster than unpalatable authentic and legitimate coverage. In addition, robotic writing is beginning to dominate the journalist fields of sport and finance, where both source data and news content are defined in highly structured templates. Accordingly, algorithm-based platforms like Amazon Web Services can produce more news texts more quickly and with fewer errors than human journalists.[39]   In other areas like

investigative journalism where algorithms cannot generate content, there is a prevailing practice of what Whittaker calls augmented journalism. As human journalists source quotations and stories from interviewees, algorithms and software are employed to help them collate and understand data. Therefore algorithmic journalism has been fully integrated into news production cycle.[40]

In his book "Tech Giants, Artificial Intelligence, and the Future of Journalism" (2019) Jason Whittaker talked about five biggest tech giants (Amazon, Apple, Facebook, Google and Microsoft) who are working intensively with artificial intelligence and thus creating impact in the future of journalism. According to him, these tech-giants are creating "Digital Ecosystem" where public sphere are emerging with the help of social machines and gaining social computational power. He stated that AI has changed the understanding of the consumers about journalism and media, so as people's behavior in consumption. He predicted an even better future of AI in journalism practice where AI will not only help in profit making but also will aid human in understanding and transforming the world.[41] Nicholas Diakopoulos further develops this case for a "human-centered future" of AI and journalism. Building on his book "Automating the News: How Algorithms are rewriting the Media", he argues that "the future of AI in journalism has a lot of people around." That is, far from destroying jobs in journalism, AI appears to be creating them, and, thus, we need to develop a research agenda for studying the hybridization of humans and AI in journalistic workflows.[42] The advertising models of Google and Facebook utilize automation on a massive scale to reduce the advertisement cost, thus giving them a competitive edge over conventional media outlets. Of equal appeal to advertisers is a constant flow of user data generated by algorithms, enabling them to target potential consumers effectively. With lower expenses and better audiences (local or global), Google and Facebook are the only viable options for advertisers in the digital era.[43] Apart from commercial appeals, the dual role of AI in personalized content production and dissemination also pertains to news and journalistic content. While the first generation of news personalization incorporated receiver-initiated customization based on explicitly

expressed preferences, the second generation features implicit personalization techniques building on individuals' digital profiles and indirect preference signals.[44] In addition, Newsbots have developed from rebroadcasters of news content to disseminators of news incorporating Chatbot conversation capacities, thereby becoming a third party (person) mediating the sender-receiver relationship or conversational agents.[45] Recommender systems refer to (algorithmic) functions utilizing information about individual preferences as inputs to predict how individuals would rate certain items under evaluation and how they would rank a set of items individually or as a bundle. Inputs from individuals can include any form of reactions (e.g. comments, likes, ratings, reviews) to news, products, or other social, political, cultural, or entertainment stimuli, all of which being indicative of social norms evaluating sociocultural entities. Recommender systems can take the form of collaborative filtering, content-based filtering, or hybrid methods.[46] Generally, AI does not only facilitate, mediate, and channel communication, but also functions as a communicator and participant in communicative exchanges itself, a role that has been historically attributed to humans from a communication-theoretical perspective.[47]

AI in journalism: ethical challenges

The discourse on moral and ethical implications of AI dates back from 1960. The increasing pervasiveness and encompassing impact of AI applications and systems have intensified calls for and discussions of accompanying ethical guidelines. Contemporary society is seeking its proper forms of governance in a digital transformation driven by platformization, datafication, and algorithmic automation.[48]

The discussions about AI and ethics held in the global arena confirm the importance of this lively subject among academics and policy-oriented bodies. Ethics guidelines in particular, as a governance tool, have seen very strong development over the last few years. For instance, a study of the global AI ethics landscape, published in 2019, identified 84 documents containing ethical principles or guidelines for AI. It concluded that there is relative

unanimity globally on at least five principle-based approaches of ethical character: (1) transparency, (2) justice and fairness, (3) non-harmful use, (4) responsibility, and (5) integrity/data protection. At the same time, the study establishes that there are considerable differences in how these principles are interpreted; why they are considered important; what issue, domain or actors they relate to; and how they should be implemented. The single most common principle is "transparency", a particularly multifaceted concept. Over the last few years, a number of ethics guidelines have been developed relating to AI by companies, research associations, and government representatives. Many overlap in part with already-existing legislation, but it is often unclear how the legislation and guidelines are intended to interact more precisely. In particular, the way in which the standpoints in principle are intended to be implemented is often unclear.[49] Since 2016 a focus on ethics in relation to the development, deployment and use of AI has emerged in AI policy and strategy documents. The Royal Society in the UK has conducted a program of activities on AI and ML, identifying public concerns about potential harms, worker replacement and impacts on human experience and choices. The Ada Lovelace Institute was established to specifically 'inform public understanding of AI and data science', to create a 'shared understanding of the ethical issues arising from data and AI'. The ACM Code of Ethics and Professional Conduct (2018) has expanded the responsibility of computer engineers to include 'awareness of the social context in which the work will be deployed, and competence in recognizing and navigating ethical challenges'. The IEEE (2019) has released a set of AI-related standards that advise developers to follow 'values-based design methods' but acknowledge a preference for identifiable and quantifiable 'norms' over values.[50] In April 2018, the EU adopted a strategy for AI, and appointed the High-Level Expert Group with its 52 members, to provide advice on both investments and ethical-governance issues in relation to AI in Europe. In December 2018, the Commission presented a coordinated plan, "Made in Europe", which had been developed with the Member States to promote the development and use of AI in Europe. Followed by EC

Communication proposed a 'European approach' to AI called for applying AI for 'good and for all', and the centrality of the 'Union's values and fundamental rights as well as ethical principles such as accountability and transparency.' In late 2018, the EC released its draft guidelines for 'trustworthy AI' based on the work of 52 experts around Europe. The expert group ethics guidelines point out that trustworthy AI has three components that should been place throughout the entire life-cycle of AI: being legal and comply with all applicable laws and regulations; being ethical and safeguard compliance with ethical principles and values; being robust, from both a technical and a societal viewpoint, as AI systems can, despite good intentions, cause unintentional harm.[51] The key elements of a future regulatory framework for AI in Europe are to create a "unique ecosystem of trust," which is described as a policy objective in itself and therefore speed up the uptake of the technology. From an Asian socio-legal perspective, the Chinese and the Japanese developments on AI policy and governance are significant. The core in China's AI strategy can be found in the New Generation Artificial Intelligence Development Plan (AIDP), issued by China's State Council in July 2017 and the Made in China 2025, released in May 2015. Its goal is to establish initial ethical norms, policies, and regulations related to AI development in China.[52] this includes participation in international standard setting as well as deepening international co-operation in AI laws and regulations. In May 2019, the so-called Beijing AI Principles were released by the Beijing Academy of Artificial Intelligence, depicting the core of its AI development as the realization of beneficial AI for humankind and nature. These Principles have been supported by various elite Chinese universities and companies including Baidu, Alibaba, and Tencent.[53] In Japan, an expert group at the Japanese Cabinet Office has elaborated on the Social Principles of Human-Centric AI, which was published in March 2019 after public comments were solicited. In a comparison between Japanese and European initiatives, a recent study concludes that common elements of both notions of governance include that AI should be applied in a manner that is "human-centric" and should be committed to the fundamental rights of

individuals and democracy and that a particular difference is that Japan's Social Principles are more policy-oriented, while the European Ethics Guidelines have a rights-based approach.[54]

Researchers have discussed the ethical dimensions of AI and implications for greater use of the technology. However, it is not clear how ethical and legal concerns especially around responsibility and analysis of decisions made by AI based systems can be solved. A couple of studies have more specifically addressed AI-based cyber threats such as AI-based malware or spyware, password guessing or brute-force techniques, social bots and of adversarial training. They demonstrate that AI provides superiority in scope, speed, and scale compared to traditional approaches. Schneier (2018) says that "both attack and defense will benefit from AI technologies". However, as attackers have the advantage of initiative and as AI tremendously augments attack speed it might create new asymmetries in the attack-defense balance.[55] The Cambridge Analytica scandal in 2017/2018 saw contractor, Christopher Wylie, revealing problematic data practices at Facebook and other companies.[56] The ethical consideration between the personalization of advertising and consumers' privacy represents the personalization privacy paradox (PPP).[57] Collecting, using, and sharing personal data for marketing purposed has always raised consumer privacy concerns. Consumers have misconceptions about extracting data for marketing purposes as they have little knowledge about it. This is what Boerman et al. (2017) described as 'information asymmetry' where companies know much about consumers, yet consumers know little about what happens to their data.[58]

Jai, Burns, and King (2013) found that when consumers know that their information, collected on websites are shared with third-party companies, there is lower repurchase intentions, increased perceived risk and unfairness.[59] However, we must also consider the risks associated with inadvertent overuse or willful misuse of AI technologies, grounded, for example, in misaligned incentives, greed, adversarial geopolitics, or malicious intent.[60] In the literature relating to ethics guidelines targeted at AI, it has been argued that

transparency is not an ethics principle in itself, but rather a "pro-ethical condition" for enabling or impairing other ethical practices or principles. Transparency is now a fundamental principle for data processing under the General Data Protection Regulation.[61] In a study on the socio-legal relevance of AI, there are several contradictory interests that can be linked to the issue of transparency.[62] Consequently, there are reasons other than pure technical complexity why certain approaches may be of a "black box" nature, not least the corporate interests of keeping commercial secrets and holding intellectual property rights.[63] According to data protection law, in particular when data controllers target children, The new legislation requires data controllers to provide information about themselves (who), the quantity and quality of processed data (how), the time (-frame) of the processing activities (when), the reason (why), and the purpose of processing (what for). It includes a retrospective transparency element which refers to the possibility to trace back how and why a particular decision was reached. While a rich body of literature explores transparency in AI systems and its outcomes in computer science, little research on the transparency expectations or demands of users exists.[64] Transparency requirement should be tailored to the stakeholder more broadly, including developers, users, regulators, deployers, and society in general. Stakeholder groups differ in their ability to make use of information provided, and different types of information pose different barriers to understanding. Therefore, attention to the specificity of the technology, the context, and the different types of users within each stakeholder group is essential for protecting users' data protection-related rights.[65]

Research shows that users' perception of and attitudes to transparency differ substantially depending on the technologies, the context of use, services investigated and tasks given. In the context of recommender systems, for example, transparency of music recommendations increased participants' satisfaction with the recommendation and their confidence.[66] By contrast; Cramer et al. (2008) looked at recommender systems in the cultural heritage domain but did not find a positive effect of transparency on trust in the system. However, they confirm that transparency increased the

acceptance of the recommendations.[67] Generally, transparency refers to explanations why specific personalized content are shown to a person, which in turn enhance trust and satisfaction. Explanations that are too vague or too specific create feelings of unease and distrust. In that sense, enhanced transparency might not always be a blessing but sometimes a burden.[68]

 Another ethical challenge is ***Data quality and bias***: Data quality can be thought of as the fitness of data to obtain actionable insights using appropriate analytical tools.[69] Data noise, data heterogeneity, imbalanced data, and data discretization are some of the prominent reasons of low quality data. The usefulness of the data depends on the quality of the available data in the companies' warehouses.[70] Low quality data lead to the poor decision-making and as a result loss in businesses. As most of the data collected over a couple of years is unstructured and amassed from multiple sources, the overall quality of collected such data is assumed to be low and if low quality data is used to train AI enabled tools, it will lead to disaster. D'Ignazio and Bhargav argue that 'Big Data has an empowerment problem' because of its four main characteristics: *Lack of Transparency*, *Extractive Collection*, *Technological Complexity* and *Control of Impact*.[71] One important quality issue is data bias, which appears in different forms. Today's (big) data is far from neutral, as 'the complex systems of data production and representation co-constitute the very systems they purport to describe, and in this process, they often embed, replicate or reinforce preexisting attitudes and prejudices'.[72] The bigger the dataset, the more likely it is to contain often hidden biases. However complex, these biases are only starting points for more complex AI biases. AI systems do not only embed, replicate or reinforce attitudes or prejudices found in data – more importantly, they also recombine them and produce new biases.[73] Even as we move towards true intelligent robots that can build themselves; they still use human culture as a source for understanding relationships; stereotypes, discrimination, prejudices and all. In one recent example an experimental conversational agent that learnt from Twitter conversations took less than 24 h before it starting tweeting hateful, racist, sexist and homophobic phrases.[74] One recent study

found that the vast majority of digital assistants are portrayed as young, Caucasian, women that enhance the negative perception of the stereotyped role of women in secretarial roles. This is further enhanced by the language used by virtual assistants in general conversation and when responding to certain types of harassment.[75] Bias in AI frequently targets marginalized peoples as a result of prejudices present in historical training data.[78] This was certainly the concern in an incident, in which a librarian reported that a search for "stress in the workplace" in the library discovery system returned a link to "women in the workforce," and saying that stress in the workplace was really about women in the workforce." These kinds of unexpected, and unfortunate, correlations between topics are usually the result of a flawed assumption based on the textual analysis and word-embedding models that power a discovery system.[77] AI technologies base their predictions on pre-existing big datasets and thus they make their decisions by looking backwards, and without understanding culture, context and meaning. Moreover, human communication constantly evolves and is highly contextual. Moderating harassment, racism, sexism, and misinformation online is highly complex, and cannot be achieved by AI alone.[78] An example of this nexus between values, power and AI is a study which revealed that a widely used prediction algorithm for selecting entry into healthcare programs was exhibiting racial bias against African American patients. The deployed algorithm relied on the predictive utility of an individual's health expenses indirectly leading to the rejection of African-American patients at a higher rate relative to white patients, denying care to patients in need, and exacerbating structural inequities in the US healthcare system.[79] Bolukbasi et al. (2016) describe the implicit biases that an AI trained on texts selected from Google News developed in identifying semantic relationships based on gender between various words, such as the relationship between "hairdresser" and "she," and "architect" and "he." In a replication study, researchers were able to replicate all reported instances of positive and negative biases associated with gender, race, and age identified by a wide range of research on semantic analysis of text.[80] In 2017, Amazon decided to abandon a recruiting recommendation tool after finding

out that it discriminated against women. The developers had trained the system using data from more than 10 years of incoming past applications and hiring decisions, in which males dominated.[81] That's why it would be erroneous to call AI tools such as ChatGPT racist, sexist, and so forth simply because it includes terms of abuse in outputs: it's just reproducing words in the training data based on statistical correlations without intention.[82] Otherwise, all dictionaries would be racist, sexist, and so forth, something which most reasonable people would deny.[83]

Ethically we also face **Security breach:** A stark reminder of how destructive the potential misuse of AI technology can be is the case of FBI agents monitoring a hostage situation related to organized crime in the winter of 2017 in US. The criminals using a swarm of drones managed to force the FBI agents out from their location and they live streamed the video to their gang leader on YouTube. Yang *et al.* discussed some well-known IoT security threats such as spoofing, Man-in the-Middle (MITM) attack, hardware threats, cloning the data access, eavesdropping, device tampering, signal jamming, Distributed Denial of Service (DDoS), back-off manipulation, granted time slots, malicious code injection, sybil attack, side-channel attack, reply attack, physical damage, tag cloning, information leak, etc.[84] Confidentiality, source authentication, and availability are considered essential security criteria in IoT networks where data freshness, stable system localization, time synchronization, and self-organization are addressed as minor. However, it is also more challenging to maintain personal data protection, user authentication, threats handling, encryption, access control, network security, application security, restricted resources devices and latency in IoT network architecture. The recent cyber-attacks on Renault, Saint Gobain, Rosnef and Merck, among others have spotlighted cyber security-related threats towards industry, and their unexpected financial and business impacts. Albu and Flyverbom (2019) illustrate the dual nature of transparency with regard to the Snowden disclosures. They highlight that while the disclosed information on the secret US surveillance programs was the focus of attention in public reception, disclosures were taking place embedded in

organizational contexts, involved curation by other professionals, and were performed with certain strategic intentions, making it more appropriate to consider them as ''complex and dynamic communication processes rather than simple and straightforward transmissions of information''.[85] Similarly, technology companies such as Facebook or Google employ strong narratives of openness, connectedness, and sharing on the user sidewhilebeing highly secretive themselves. For instance, a review of Google's privacy policy shows a combination of an abundance of highly specific and detailed information on types of information collected, partly presented in a very user friendly manner, alongside extremely vague general (and practically meaningless) statements about the purpose of data usage, presented generically in terms of improvement of user experience.[86] In addition, AI has a negative consequences which threat democracy itself by increasing political polarization, Phenomena such as filter bubbles, echo chambers, and respective (ideological) polarization that can arise from algorithmic content filtering.[87] Personalization entails the (pre-) selection of content and recommendations individuals are exposed to, which can eventually result in content receivers' selective exposure to content, which lead to polarization.[88] This challenge affects the context in which public governance is exercised – that is the sphere of public opinion formation at large and thus, indirectly, the ability of government to both be seen as legitimate by citizens, and to formulate policy actions that draw on a perceived common good. Also, AI systems can also be used by dictatorial governments for extending their unlawful regimes and suppressing freedom. Under the label of "nudging," and on massive scale, they are trying to steer citizens towards healthier or more environmentally friendly behavior by means of a "nudge" a modern form of paternalism. The new, caring government wants to make sure that we do the things that it considers to be right. The magic phrase is "big nudging", which is the combination of big data with nudging. To many, this appears to be a sort of digital scepter that allows one to govern the masses efficiently, without having to involve citizens in democratic processes. In addition, governments are able to influence the outcomes too. During elections, they might nudge undecided voters

towards supporting them, a manipulation that would be hard to detect. Therefore, whoever controls this technology can win elections—by nudging themselves to power.[89] This problem is exacerbated by the fact that, in many countries, a single search engine or social media platform has a predominant market share. This concern becomes critical because the propaganda and manipulation become wider. For instance, the spreading of disinformation aims to guide thinking and actions of the user with hiding some facts, not telling the whole truth like in so called fake news or in hate speech which is about hateful, discriminative expressions of minorities like ethnic groups in societies.[90] Owing to the resonance effect, a large-scale change of opinion in society can be only produced slowly and gradually. The effects occur with a time lag, but, also, they cannot be easily undone. It is possible, for example, that resentment against minorities or migrants gets out of control; too much national sentiment can cause discrimination, extremism and conflict. Perhaps even more significant is the fact that manipulative methods change the way we make our decisions. The large-scale use of manipulative methods could cause serious social damage, including the brutalization of behavior in the digital world. Also, Manipulative technologies restrict the freedom of choice by transforming us to digital slaves; only execute decisions that were actually made by others before. Our freedom is disappearing slowly, but surely.[91] if our judgments and decisions are predetermined by algorithms; however, this truly leads to a brainwashing of the people. Ultimately, a centralized system of technocratic behavioral and social control using a super-intelligent information system would result in a new form of dictatorship. Therefore, the top-down controlled society, which comes under the banner of "liberal paternalism," is in principle nothing else than a totalitarian regime with a rosy cover.[92]

One of the main ethical issues raised by generative AI and its potential impact on society is the question of accountability. Because generative AI systems are capable of creating new content, such as text, audio, or images, there is a concern that they could be used to produce misleading or malicious information that is difficult for humans to distinguish from genuine content. This could

lead to the spread of fake news and other harmful information, which could have serious consequences for individuals and society as a whole.[93] For instance, ChatGPT can be used to deceive or mislead people by generating fake news, fake reviews, fake letters, or impersonating others online. Deep fakes are incredibly potent tools to polarize groups, spread conspiracy theories, misrepresent experts and official organizations, and troll online conversations.[94] The fact-checking service News Guard fed ChatGPT with 100 false narratives and coaxed it to produce eloquent, yet false outputs 80 per cent of the time.[95] Deep fakes are particularly worrying in security and intelligence operations, as they can legitimize war, fuel conflict and discredit leaders. One striking example of harmful individual-level consequences caused by false information is the conspiracy theory that Hillary Clinton operated a child sex ring in a Washington pizzeria. As a consequence, a man carrying a gun entered the local and opened fire, believing that the local was harboring young children as sex slaves. Another example of individual-level harms resulting from false information has been reported from Iran where apparently hundreds of people lost their lives because they trusted in methanol to combat COVID-19.[96]

Another challenge is the huge international competition, especially between China and USA, and the deepening of digital gap. Study indicates that high income countries are leading the AI bandwagon. Except, India, Kenya and Tunisia, none of the developing world countries are part of this discourse. The presence and absence of complementary assets are likely to influence the trajectories of AI in the developing world.[97] AI-based digital assistants provide significant opportunities, but also might become a threat. On the one hand, they are expected to take over routine tasks from humans and to free up time and resources for more demanding tasks. For instance, IBM argues that chatbots can help to reduce customer service costs by 30%. On the other hand, a recently announced advanced AI-based digital assistant by Google named Duplex has led to a debate about potential misuses for deception and fraud, owing to its human likeness. More generally, while the pervasiveness of AI-based digital assistants' increases; most people ignore their underlying architecture and algorithms, resulting in

serious concerns and user aversion regarding their uses.[98] A study shows that users listed automation most frequently as a negative aspect of AI, stating that automation might result in job losses, too much standardization and out of control machines. Automation was closely followed by concerns related to security, privacy and surveillance. They were concerned about the level of public expenditure on making machines smarter, rather than humans, and wondered if humans should trust machines to predict, rationalize, and rank information.[99]

How to solve and handle ethical problems?

Duo mechanisms: *Ethics and regulation*.

In this section, I will address ethical considerations that need to be taken in order to avoid a dystopian future. If a AI will perform simple jobs that do not require great skills, The solution will lies in education, which must provide its students with superior skills that are commensurate with the new digital labor market and its evolving needs, and rehabilitate groups that could be more affected, such as women. The future situation could be worse among women since over 160 million women worldwide may need to transition between occupations often into higher-skilled roles. Among different natures of work, clerical work such as secretaries and bookkeepers will be mostly easily eliminated by AI, given that 72% of those jobs in advanced economies are held by women.[100] We need some solidarity between those disadvantaged today and those advantaged tomorrow, to ensure that the disruptive transition between the present and the future will be as fair as possible, for everyone. As such, to gain a competitive advantage at work, similar to classic literacy which includes reading/writing and mathematical abilities, AI literacy has emerged as a new skill set that everyone should learn in response to this new era of intelligence.[101] An AI-literate person must be able to evaluate an AI applications or product and to correctly understand and judge ethical issues to ensure that AI technology is used correctly and appropriately.[102] The three key components of AI literacy are: knowledge about artificial intelligence; the ability to recognize instances where AI might be usefully and creatively applied and when it should be

avoided; skills to help, coach or teach others when strategically understanding, imagining, developing and implementing AI.[103]

Increasing awareness and empower individuals to develop AI literacy constitutes an important step to leverage AI for social good.[104] Journalism and media educators should teach students about the potential uses and limitations of AI in the field of journalism and media. This could include discussing the potential advantages of using AI in journalism, such as the ability to quickly analyze large amounts of data, generate news stories automatically, or improve the accuracy and fairness of reporting. It could also include discussing the potential drawbacks of using AI in journalism, such as the risk of introducing bias or errors into reporting, the need for careful oversight and editing of AI-generated content, and the potential impact on jobs and the media industry. Additionally, inform students about the ethical and legal implications of using AI in journalism and media, such as the need to protect the privacy and rights of individuals, the importance of transparency and accountability in the use of AI, and the potential consequences of using AI in ways that are harmful or irresponsible.[105] we also need to focus on data quality, however, using unbiased data is often not enough for developing unbiased AI, and companies are trying out other solutions. In September 2018 Hempel has written about a new trend: 'an auditing process that asks companies to open up their technology for evaluation'. Algorithm auditing does not follow any standard procedures, and 'an audit doesn't prove that a company has avoided all the unintended pitfalls of an algorithm. Nevertheless, concludes Hempel, 'it's a baby step toward a more transparent data future: If we cannot strip algorithms of all their bias, at least we should rid them of the bias we can identify.'[106]

Ethics by design: Transparency may be practically inert due to the embededness of the technology in a wider network of devices. For large technology companies, such as Google, Apple, or Amazon, which offer increasingly interconnected suites of complex AI services across life spheres, refusing consent to particular elements may not be an option. Even if users disagree with particular

elements, once a technology provider has been chosen for the majority of their devices, these users are locked-in. This is the case because refusal on the operation of one part of the system may significantly impair the overall functionalities of the system. Moreover, high switching costs, a lack of functional interoperable alternatives, and the fact that AI systems are increasingly becoming part of our daily infrastructure mean that users are in a structurally disadvantaged position, with little agency to make demands[107]. Kemper and Kolkman (2018) argue that ''transparency of algorithms can only be attained by virtue of an interested critical audience.''[108] The major challenges include assuring that AI-based digital assistants support moral principles such as doing good, doing no harm, being transparent and being non-discriminatory. We need ethics-by-design as a non-functional requirement for AI-based systems. The best way of ensuring embedding of values and regulation in the AI systems is to ensure that these are taken into account from the very start of the design process and that the system ensures that the values and regulations are adhered to. For example, the public is warned when facial-recognition systems are being used to track them, and that they should have the right to reject the use of such technology. We also need to address a specific ethical challenge such as maintaining human autonomy, builds on freedom of will. Automated decisions (e.g., IoT devices ordering products) may be convenient, but deprive us of control. Here, we need a societal discourse about what is desirable or acceptable, and we need methods to engineer systems that comply with these principles. Being non-discriminatory is an important moral principle, yet, historical and current individual, business, and political practices don't always adhere to this principle. When the training data are biased, the machine learning algorithms may pick up these biases and may then perpetuate them; this leads to a continuance of discriminatory decisions. Even if this is against the intentions of the developers and users, it may happen without their knowledge. Examples of discriminatory algorithms are Amazon's presumably sexist recruitment support system (no longer operational) and Google's presumably racist image tagging service. We need more and better tools to audit systems based on machine

learning, and higher awareness among developers and users of machine learning-based systems.[109] Justice as an ethical principle in the context of AI relates to using AI to correct past wrongs such as eliminating unfair discrimination; Ensuring that the use of AI creates benefits that are shared (or at least shareable); and Preventing the creation of new harms, such as the undermining of existing social structures. We must also support the creation of educational curricula and public awareness activities around the societal, legal, and ethical impact of Artificial Intelligence. This may include Curricula for schools, supporting the inclusion of computer science among the basic disciplines to be taught; Initiatives and qualification programs in businesses dealing with AI technology, to educate employees on the societal, legal, and ethical impact of working alongside AI; The development of similar programs for the public at large, with a special focus on those involved at each stage of management of the technology, including civil servants, politicians and journalists; Engagement with wider initiatives such as the ITU AI for Good events and NGOs working on the UN Sustainable Development Goals. [110]

Training data certification: Blockchain can provide a trusted mechanism to certify the quality of training data for an AI system module. In order to create a Good AI Society, we should embed these ethical principles in the default practices of AI. In particular, AI should be designed and developed in ways that decrease inequality and further social empowerment, with respect for human autonomy, and increase benefits that are shared by all, equitably. Creating a Good AI Society requires a multi stakeholder approach, which is the most effective way to ensure that AI will serve the needs of society, by enabling developers, users and rule-makers to be on board and collaborating from the outset. The development of AI technology must secure people's trust, serves the public interest, and strengthens shared social responsibility. By respecting ethical frameworks.[111]

We must also enhancing ethical designs and practices by **Incentivize financially the inclusion of ethics:** Investments in transparency by AI developers could be costly, while the effects

and benefits are unclear and there is a risk that transparency might backfire, either because it may prioritize seeing over understanding, create false binaries, or because it results in harm.[112] Organizations and institutions are transparent when they release information about their internal practices, for example, their data collection and data analysis. In the context of AI, an example would be a shopping mall that announces at the entrance and on its website whether it uses facial recognition technology to track shoppers, rather than keeping this information hidden.[113]

Also, Incentivize financially research about public perception and understanding of AI and its applications, and the implementation of structured public consultation mechanisms to design policies and rules related to AI. This may include the direct elicitation of public opinion via traditional research methods, such as opinion polls and focus groups, as well as more experimental approaches, such as providing simulated examples of the ethical dilemmas introduced by AI systems, or experiments in social science labs. This research agenda should not serve merely to measure public opinion, but should also lead to the co-creation of policies, standards, best practices, and rules as a result.[114] There is, also, a multidisciplinary need for research in this field that requires collaboration between computer-scientific disciplines and the humanities and social science-oriented disciplines that can theorize and understand their interaction with cultures, norms, the meanings and consequences for power relations, states, and regulation.

Laws and regulations must lead AI practices**:** it is indubitably an incentive for many companies to avoid tougher regulation by pointing to "self-regulation" and the development of internal policies with weak actual implementation. Even though self-regulation is surely used as an argument for avoiding the intervention of concrete legislation. History teaches us that regulatory balancing is difficult, especially in times of rapid technological change in society.[115] Wachter and Mittelstadt (2019) argue that the current legal framework does not accurately protect data subjects from high-risk inferential analytics such as privacy-invasive or reputation-damaging inferences with low verifiability,

such as predictive or opinion based inferences.[116]   Often it is suggested that while regulation is needed to avoid AI related risks, it is important to 'avoid the risk of over-regulation, as this would critically hamper' innovation (European Commission 2017). We need a good understanding of what AI can, cannot and will be able to do in the short, medium and long term' and that 'attempts to regulate "AI" in general would be misguided, since there is no clear definition of AI (it isn't any one thing), and the risks and considerations are very different in different domains'. Pre-digital experience indicates that sometimes it may take a couple of decades before society catches up with technology by rebalancing rights and protection adequately to restore trust. The earlier that users and governments become involved the shorter this lag will be. Also, there is a need for a **global alliance for AI standardization and rating.** Like the ICANN for the internet, there is an urgent need for setting up an independent and transparent Global Alliance for AI Standardization and Rating which should regulate the AI development, testing and rating system for every AI module or system being created. However unlike ICANN, this global alliance must be made a truly democratic international alliance of governments. The tasks before such a Global Alliance for AI Standardization and Rating would be: Defining privacy standards to be met by all AI systems, Defining ethical boundaries for all AI development, Defining civil and criminal liability of AI systems and a mechanism to deal with them, Define audit standards to help explain the decision taken by autonomous AI systems.[117] **Also, global cooperation and science diplomacy** is a must. Due to the global reach of AI, several documents suggest that ethics guidelines and sometimes even regulation should be coordinated or adopted at international level. If many countries and international organizations have developed their national AI strategies, then how do they interact with each other? Policy documents and media promote seemingly contradictory discourses of global competition vs. global cooperation on AI. The global competition discourse presents AI development as 'a new space race' where countries compete to dominate the AI development.This global competitiveness discourse can also have negative effects such as

hampering global collaboration. Focus on global competitiveness among countries has been called 'a dangerous obsession' because it suggests that relationships among countries are 'a zero-sum game' rather than 'a positive-sum game' where the overall size of the pie increases and everyone gains.[118] To facilitate international collaborations among scientists, policy-makers have launched science diplomacy activities at the intersection of science policy and foreign affairs to support joint efforts to address global challenges. When designing international cooperation initiatives for AI, which have to address not only complex scientific and technological issues but also often sensitive topics of diverse political and economic systems, regulatory environments and cultural traditions, there are many opportunities to learn what works in other fields and how. [119]

International and regional cooperation: From climate change and antimicrobial resistance to nuclear proliferation and fundamentalism, global problems increasingly have high degrees of coordination complexity, meaning that they can be tackled successfully only if all stakeholders co-design and co-own the solutions and cooperate to bring them about. AI, with its data-intensive, algorithmic-driven solutions, can hugely help to deal with such coordination complexity, supporting more societal cohesion and collaboration. There is now a strong need for these broader national and transnational communication policies to evolve to take account of the role and impact of AI on mediated forms of human communication.[120] To avoid or mitigate the ethical problems caused by using ChatGPT, a preventive measure OpenAI could take such as statistical watermarking. A second, related solution consists of finding an AI styleme (like a unique, indelible, and discrete linguistic fingerprint) that would distinguish generated texts from those made by humans. Thirdly, attempts at deception could be discovered thanks to ChatGPT detectors. Next, a Stanford team put out "DetectGPT" which identifies generated text regardless of the AI system that produced it, without need for watermarking, training a separate classifier, or collecting large datasets with real or generated samples (thereby skirting copyright issues). A fourth option to combat ChatGPT enabled deception is

through verification or factchecking through websites such as Factmata, Fact Check Explorer, Snopes, Factly, the Consensus Meter, The Journal, Lead Stories, NewsGuard, PolitiFact, and so forth. Alternatively, one may also refer to search engines or consult with expert sources.[121] Use of non-technical solutions help also to solve this problem. It refers to measures that do not involve changes in the algorithms or recourse to other AI, such as fact-checking services. These can include policies, regulations, and best practices. So we must *enforce terms of use, safety & overall best practices* several provisions already cover and can help deter deceptive practices and other malicious activities. The requirement to be 18 years old to register and gain access would, in theory, eliminate the possibility of younger students obtaining output and passing it off. This makes extra sense given that ChatGPT tends to be inaccurate and younger students have reduced fact-checking abilities or propensities.[122]

Using transparency as another mechanism to end problems, this entails being forthcoming about what ChatGPT can and cannot do. It is not designed to offer accurate information, to perform mathematical calculations and computations, to make translations, or any other function. Not only is its training data unverified, but it is also limited to information available in 2021. However, none of this will prevent ChatGPT from providing human-like responses, even if it has to fabricate data or hallucinate, mixing fact with fiction. Users should always be suspicious of the veracity or accuracy of outputs. Even champions of ChatGPT use in education unequivocally warn, "Don't trust anything it says. If it gives you a number or fact, assume it is wrong unless you either know the answer or can check with another source".[123] In response to ChatGPT misbehaviors, both stand-alone and as part of the new Bing, Microsoft's search engine, Open AI released the document "How should AI behave, and who should decide?" to increase transparency as well as public understanding and participation. Open AI also promises to "improve default behavior" (diminish bias, hallucinations, and so forth), "define AI values within broad bounds". Elements of governance which emphasize the importance of interaction between government and a broad range of societal

actors in decision-making is essential to ensure that AI is developed and used according to interests and needs of the society.[124]

State role: Policy documents suggest a number of activities expected from the state including regulation and supporting research and retraining. For example, a French document assigns the state the role of a key driver for 'laying the foundation for innovation and providing stakeholders with the means and the resources for breaking new ground'. The AI Now 2017 report with a particular focus on the US situation highlights that the role has shifted during the history of AI: In the mid-twentieth century, advanced computing projects tended to be closely associated with the state, and especially the military agencies that funded their fundamental research and development. Although AI emerged from this context, its present is characterized by a more collaborative approach between state agencies and private corporations engaged in AI research and development.[125] Borras and Edler (2020) have identified 13 roles of the state and many of them are highly relevant for addressing some of the AI related concerns. This includes such roles as, for example, a mitigator trying actively to reduce the negative effects that arise as a consequence of socio-technical change; an enabler of societal engagement encouraging the involvement of stakeholders in participatory processes to define direction of change; and a moderator acting as arbitrator or negotiator between different social and political positions among agents regarding the direction of transformation of a socio-technical system.[126]

Responsible Innovation: In the past decade the Responsible Innovation approach has been developed as a way to go beyond ethical principles. While there are many definitions of Responsible Innovation, it is broadly understood that responsible forms of innovation should be aligned to social needs, be responsive to changes in ethical, social and environmental impacts as a research program develops, and include the public as well as traditionally defined stakeholders in two-way consultation. One way to go beyond ethical principles is to learn from the Responsible Innovation approach on how to systematically address societal

needs in the development and use of emerging technologies to apply ethical principles in practice in the field of media using AI.[127] Another important future direction is ensuring that people are at the center of any AI developments. In the practical sense, this means moving beyond AI for efficiency, towards creating more fair, just and equitable uses that not only improve people's lives, but also go on to enhance them in the form of creating pleasurable experiences, joy, connection, play and laughter. Acceptance of failure is also important – there will be mistakes along the way, but we need to be accepting of this and learn from them. There is still a huge amount of research that needs to be completed on the ethical challenges of introducing new technologies into our lives. What level of responsibility do we give these new machines and what level of blame do they get when something goes wrong? Is it fair to ask machines questions we would struggle to answer as humans?.[128] Another key need for autonomous systems is fairness. They must be 'trained' in human values and they must not exhibit any gender or racial bias and they must be designed to stay away from 'social profiling' (especially in law enforcement, fraud detection, crime prevention areas). AI systems designed must comply with 'free of bias' norm to prevent stereotyping. In MIT Technology Review of Feb 2018, Timnit Gebru highlights the pitfalls of AI designed without diversity incorporated in its base, "If we don't have diversity in our set of researchers, we are not going to address problems that are faced by the majority of people in the world." AI machines are capable of inventing superior ways of accomplishing the task given, using a purely unintended route. This can have serious implications for the society. The famous case of Facebook AI project where two robots started talking to each other, in an invented language to accomplish a negotiation task they were given, is a sharp reminder of unintended consequences which can emerge. The robots were taught to converse using Natural Language Processing (NLP) but they invented a more efficient communication strategy which looked like gibberish to humans.[129]

Organization role: To enable people to seek redress, organizations must hire An "AI ombudsperson" to ensure the auditing of allegedly unfair or inequitable uses of AI; A guided process for

registering a complaint akin to making a Freedom of Information request; and the development of liability insurance mechanisms.[130] The organization could also support the development of codes of conduct. Furthermore, they can fund and/or develop AI literacy programs for consumers. This may include improved training for existing boards and the development of an ethics committee with internal auditing powers, in conjunction with the development of a mandatory form of "corporate ethical review board" to be adopted by organizations developing or using AI systems, to evaluate initial projects and their deployment with respect to fundamental principles.[131] Whittlestone et al. (2019) conversely highlight the need to engage more deeply with the tensions that arise between principles and their implementation in practice. It also becomes clear that studies investigating transparency outcomes were conducted in the US, which might affect their transferability to a European context. For example, it could be that making assistive robotics more transparent would lead to positive outcomes in European countries with a strong trust and transparency culture, but might not have as much of an effect or be even detrimental in societies with less institutional trust and transparency.[132] The implications of transparency should be considered not just with regard to human interaction with specific technologies and their contexts of use, but also from a broader theoretical and normative perspective that considers how transparency practices are embedded into wider organizational and cultural contexts.[133] At the core of the principles lies the requirement for the technical security of the system, for example, in the form of protection against hacker attacks. Also, the accuracy of AI is therefore decisive for societal benefit.[134] while all ethical principles highlighted in the AI ethics guidelines seem desirable in principle, they can cause considerable challenges in practice. The reason is that when designing an AI system, it is often infeasible to maximize the different ethical aspects simultaneously. Thus, multiple complex trade-off matrices emerge. Two examples help to illustrate this point. First, the more information available about a user's wants, needs, and actions, the more helpful and accurate recommendation algorithms can make on social media platforms. This information includes not only private

data about a user, such as the browsing history, but also sensitive data, such as gender. Collecting this data and simultaneously improving the recommendation can result in accuracy– privacy or accuracy-fairness trade-offs. Second, for a company to assess if its hiring algorithm discriminates against social minorities, it needs to collect sensitive information from its applicants, such as ethnicity, which may violate fundamental privacy rights, leading to a fairness-privacy trade-off. By adding more variables such as transparency, security, autonomy, and accountability to the mix, highly complex trade-offs between the various ethical principles emerge.[135]

Ethics Score: How compliant (or trained) the AI system is in preserving human values of dignity, fairness, respect, compassion and kindness for a fellow human being. Does the system have a preferential sense of duty towards children and vulnerable people like elderly, pregnant women and sick? How well does it value environmental sustainability, green energy and sustainable living? Not only should the autonomy of humans be promoted, but also the autonomy of machines should be restricted and made intrinsically reversible. Therefore, what seems most important here is what we might call "meta-autonomy", or a "decide-to delegate" model: humans should always retain the power to decide which decisions to take, exercising the freedom to choose where necessary, and ceding it in cases where overriding reasons, such as efficacy, may outweigh the loss of control over decision-making? As anticipated, any delegation should remain overridable in principle (deciding to decide again).[136] Many of the challenges now linked to AI are far from new. For instance, concerns about increasing inequality gaps, stereotypes and biases, shortages of skills, and abuse of power have existed for centuries now. AI is not the creator of these problems. Rather, in many ways, AI is simply resurfacing prevailing problems and urging society to acknowledge their existence and provide solutions. On the other hand, AI technologies are of such high impact and progress at such rapid speeds that some issues developing are authentically new.[137] In this regard, there are many open questions concerning the responsibility of and accountability for decision-making when non-human agents get involved. Besides

the economic impacts, these systems will also impact on humans. Especially children may get used to these systems and may relate to them as family members.[138] The transition of technologies vis-a-vis AI from mediators people talk through to communicators people talk with simultaneously presents communication scholars with theoretical challenges and opportunities.[139]

***Digital divide and 'data-deficit'*:** Digital divide in some sense can be linked to the Equity and fairness; they are treated separately to accentuate the fact that over half the world population has no access to the internet. Since the entire AI revolution has data at its foundation, there is a real danger of societies with poorer access to information technology, internet and digitization being left behind. Informed citizens would tend to gain disproportionately in this data driven revolution. Countries and governments having good quality granular data are going to derive the maximum benefit out of this disruption. Countries where the data is of poor quality would be left behind in harnessing the power of AI to improve lives of its citizens. Another challenge that emerges from this technology is the skewed power distribution between digital haves and have-nots. Only those who the ability, knowledge and resources have needed to connect to online data driven systems would be heard. The voices of others may not get registered in the system.[140]

Conclusion

Artificial intelligence (AI) is (re)shaping communication and contributes to commercial and informational need satisfaction by means of mass personalization. However, the targeting opportunities do not come without ethical challenges. The paper reveals tensions between ethical principles, which advocate the need of a basic understanding of AI inputs, functioning, agency, and outcomes. By AI literacy, individuals could be empowered to interact with and treat AI in a way that promotes individual and social good while preventing harm.

Given the many recent warnings about AI, Müller and Bostrom (2016) collected opinions from researchers in the field to get their view on the future. The median estimate of respondents was that

there is a one in two chance that high-level machine intelligence will be developed around 2040–2050, rising to a 9 in 10 chance by 2075. They expect that systems will move on to super intelligence in less than 30 years thereafter. Further, they estimate the chance is about one in three that this development turns out to be "bad" or "extremely bad" for humanity. However, we should not take this as a guarantee since predicting about the future is hard and evaluation of predictions from experts have shown that they are often wrong in their forecasts.[141] AI era not only causes radical and unprecedented changes in the way people live and work, but also initiates greater changes in the future. AI technology gives rise to new social, ethical and professional problems such as deepfake, data bias, digital privacy, and security.

These changes in a new society require new learning, as people cannot understand and adapt to it without understanding the technologies and phenomena that have led to them. Literacy has developed as a basic social ability for individuals to understand the society they live in. In fact, humans are very closely related to technology to realize their needs, and they are not aware of the impact of technology on them. In the post digital context, the question of literacy does not relate only to people; these days, we also need to start thinking what makes AIs literate and develop ways of raising literate thinking machines.[142] AI literacy includes the passive ability to successfully protect personal information and the active ability to socially realize one's goal by appropriately utilizing AI.[143]

Education should also provide an understanding of the responsible and critical use of digital technologies, because citizens must be aware of how the digital world is intertwined with the physical one. In order to effectively and responsibly exercise their rights, citizens must have an understanding of these technologies, and also of what uses are illegitimate.[144]

From an ethical perspective, A lack of AI literacy skills widen the problem of "digital divide and digital exclusion" among the members of society and between societies. In this way, the so-called "bottom billion," that is, one thousand million people who

live in the poorest places on earth are unfortunately a natural candidate to remain on the segregate side of the digital divide.[145]

The state must provide an appropriate regulatory framework, which ensures that technologies are designed and used in responsible ways, compatible with democracy and protect social values. Robust laws, frameworks and guidelines for responsible AI use in content creation and dissemination must be implemented. There should also be a right to get a copy of personal data collected about us. It should be regulated by law through which the unauthorized use of data would have to be punishable by law.[146] In addition; efficient complaints procedure for citizens, as well as effective sanctions for violations of the rules must be implemented.

Completely new educational concepts are needed. This should be more focused on critical thinking, creativity and entrepreneurship than on creating standardized workers whose tasks, in the future, will be done by robots and computer algorithms. As such, educating both citizens and computer scientists AI ethics is essential to strengthen their social responsibility, and consider social inclusion and diversity to apply AI for societal good. Therefore the spreading of disinformation aims to guide thinking and actions of the user with hiding some facts, not telling the whole truth like in so called fake news or in hate speech which is about hateful, discriminative expressions of minorities like ethnic groups in societies.[147]

Algorithms' reliance on training data has implications for data quality. Despite persistent claims to the contrary, algorithms are neither objective nor resistant to bias; values and biases inherent in datasets are not automatically ameliorated by AI analyses. Algorithms that use historical data may produce biased outputs (e.g. algorithms may find a relationship between a disease and a minority group that has historically had worse access to healthcare) doctors may become over-reliant on algorithms to make decisions and lose the skills to make those decisions without the aid of algorithms. If AI fails to integrate into workflows or is poorly validated for clinical use it may lead to worse patient outcomes.[148] Also we should remember that AI as a cross-disciplinary concept

and as an intricate and developing component of our world in the 21st century. Working with a diverse, interdisciplinary team and promoting stakeholder engagement leads to less bias.

Regarding Generative AI, One of the main ethical issues raised by generative AI and its potential impact on society is the question of accountability. Because generative AI systems are capable of creating new content, such as text, audio, or images, there is a concern that they could be used to produce misleading or malicious information which could lead to the spread of fake news and other harmful information, which could have serious consequences for individuals and society as a whole.

It is the responsibility of the user to ensure that they do not use these platforms like ChatGPT in a way that infringes on the rights of others, such as by using it to generate text that is copied from someone else's work without permission, to ensure that they do not use ChatGPT in a way that is illegal, unethical, or harmful to others.[149] Journalism and media educators should teach students about the potential uses and limitations of AI in the field of journalism and media. This could include discussing the potential advantages of using AI in journalism, such as the ability to quickly analyze large amounts of data, generate news stories automatically, or improve the accuracy and fairness of reporting. It could also include discussing the potential drawbacks of using AI in journalism, such as the risk of introducing bias or errors into reporting, the need for careful oversight and editing of AI-generated content, and the potential impact on jobs and the media industry.[150] Additionally, journalism and media educators should teach students about the ethical and legal implications of using AI in journalism and media, such as protecting the privacy and rights of individuals, the importance of transparency and accountability in the use of AI.

Educators should be considering how to develop courses or programs that train human students in the effective use of generative AI, as well as the threats it poses, including matters of ethics and potential bias. In addition; we need to include more

positive examples of AI technologies, such as applications in healthcare, education, and art.

Developers of intelligent and adaptive systems must, in addition to being concerned with ethical issues in how they design systems, try to give the systems themselves the ability to make ethical. This is referred to as computer ethics, where one looks at the possibility of giving the actual machines ethical guidelines. The machines should be able to make ethical decisions using ethical frameworks. Michael and Susan Leigh Anderson have collected contributions from philosophers and AI researchers in the book "*Machine Ethics*", discussing why and how to include an ethical dimension in machines that will act autonomously. A robot assisting an elderly person at home needs clear guidelines for what is acceptable behavior for monitoring and interaction with the user. Medically important information must be reported, but at the same time, the person must be able to maintain privacy. Maybe video surveillance is desirable for the user (by relatives or others), but it should be clear to the user when and how it happens.[151]

Implementing ethical behavior in robots inspired by the simulation theory of cognition has also been proposed by researchers. This is by utilizing internal simulations of a set of behavioral alternatives, which allow the robot to simulate actions and predict their consequences.[152] We must expect that the robots of the future will be smarter and faster than the people they should obey. It raises questions about safety, ethics and economics. How do we ensure that they are not being misused by persons with malicious intent? Is there any chance that the robots themselves, by understanding that they are superior to humans, would try to enslave us? Another problem is that robots could be misused for criminal activities such as burglary. So we need great security mechanisms to prevent abuse.[153]

Ethics guidelines of the AI industry serve to suggest to legislators that internal self-governance in science and industry is sufficient, and that no specific laws are necessary to mitigate possible technological risks and to eliminate scenarios of abuse. Therefore large companies such as Facebook or Twitter have not yet

published any systematic AI guidelines, but only isolated statements of good conduct. Especially the aspects of accountability, privacy or fairness appear altogether in about 80% of all guidelines and seem to provide the minimal requirements for building and using an "ethically sound" AI system. Several tech-companies already offer tools for bias mitigation and fairness in machine learning. In this context, Google, Microsoft and Facebook have issued the "AI Fairness 360" tool kit, the "What-If Tool", "Facets", "fairlern.py" and "Fairness Flow", respectively.[154]

In contrast, almost no guideline talks about AI in contexts of care, help, welfare, social responsibility or ecological networks. Research treats AI as isolated entity solving only technical problems. What is often lacking is a consideration of the wider contexts and the comprehensive relationship networks in which technical systems are embedded. No guideline deals with the "hidden" social and ecological costs of AI systems. Producer and consumer practices in the context of AI technologies may in themselves contradict sustainability goals. Issues such as lithium mining, e-waste, the one-way use of rare earth minerals, energy consumption, low-wage "click workers" creating labels for data sets or doing content moderation are of relevance here.[155]

A number of critical voices and corporate scandals have highlighted the potential negative impacts of contemporary AI on employment, democracy, justice and human existence. Algorithms' designs vary from platform to platform. Regarding online videos, given that the main purpose is to get users interested in watching additional material, algorithms are coded to suggest unexpected options, such as extreme political positions, conspiracy theories, or fake news. These patterns could also undermine audiences' rights to receive plural contents and facts-based information.[156]

Not only the way in which algorithms are coded is important, but also how to increase the variety of sources for data collection is relevant, because taking care of sources could help minimize sample bias as much as possible. Moreover, co-design discourse itself is primarily rooted in 20th and 21st-century Euro-North American thought. Ansari (2019) for example, asks: 'What does it

mean to design for people who are not like us, even before we ask whether we should design for people who are not like us? What does it mean to design for people who have different histories, different backgrounds, and different commitments from us? What does it mean to design for people who might relate to the world differently from the way we do?[157]

 The Government must understand the need to build public trust and confidence in how to use artificial intelligence, as well as explain the risks'. The gap between societal expectations of AI, and AI in practice, will remain until we understand and accept the limitations of AI in complex social contexts and recognize that non technological policies and human workers are required to make AI work ethically. None of the ethical principles are strongly preferred over the other. All ethical principles are more or less equally important. Hence, developers and organizations should not neglect some ethical principles, while emphasizing others.

Studies results suggest that operators of AI systems should address the needs of the affected stakeholders differently if aiming for greater acceptance. For the admission system, it might be useful to highlight that such systems deliver precise results and treat students equally, since students primarily belong to the group of the Fairness Concerned.[158]

However, considering only the public perspective in AI development and implementation might also have serious ramifications. Srivastava et al. (2019) show that the broad public prefers simple and easy to comprehend algorithms to more complex ones, even if the complex ones achieved higher factual fairness scores. As AI technology is complex in its nature, it is possible that many people will not understand some design settings. In the end, this might lead to a public demand for systems that are easier to understand.[159]

Given the assumption that AI-based digital assistants may complete many routine tasks in the future, and that humans focus more on complex tasks, so we must ask how does this development impact on the education of future employees? How do we need to redesign

our curricula to ensure that employees are ready to complete tasks that are more complex when this period of completing easier tasks disappears? These are important questions that we must consider now, given the speed at which AI-based digital assistants are entering different areas of society.[160]

In summary, it can be said that we are now at a crossroads. Big data, artificial intelligence, cybernetics and behavioral economics are shaping our society—for better or worse. If such widespread technologies are not compatible with our society's core values, sooner or later they will cause extensive damage. They could lead to an automated society with totalitarian features. In the worst case, a centralized artificial intelligence would control what we know, what we think and how we act. We are at the historic moment, where we have to decide on the right path that allows us all to benefit from the digital revolution. Therefore, we urge to adhere to the following fundamental principles: support informational self-determination and participation; improve transparency in order to achieve greater trust; reduce the distortion and pollution of information; enable user-controlled information filters; to support social and economic diversity; support collective intelligence, and promote responsible behavior of citizens in the digital world through digital literacy and enlightenment.[161]

How do we fool-proof every new technology so as to prevent it from being twisted for achieving destructive goals. A case in point the Internet. How internet proliferated across the globe benefitting billions but also carried along with it a wave of cybercrime, malware, viruses and games like 'blue-whale' which resulted in loss of innocent lives of teens around the world. It is therefore imperative to strike a balance between pursuing the ambitious opportunities offered by AI to improve human life and what we can achieve, on the one hand, and, on the other hand, ensuring that we remain in control of these major developments and their effects.[162]

In the end, AI systems could, if designed effectively, amplify and strengthen shared moral systems and we can avoid dystopian future and the consequences of Pandora box.

Limitations and research agenda

Discussions of challenges about AI and governance, policy and ethics of emerging technologies are diverse and extensive. It is beyond the scope of this article to cover them comprehensively and to study all of them in-depth. Therefore, the main focus here is on some of the key concerns and solutions identified in AI policy discussions and lessons from work on other emerging technologies that might be relevant for. While the article takes a 'bird's eye' view on common trends in common ethical concerns for AI, we should recognize the importance of diverse national, regional and local contexts and cultures.

The article proposes a research agenda as follow:

Rethinking mass communication theories: Research regarding AI has focused on how to reproduce aspects of human intelligence, including the ability to communicate, within the machine. In contrast, communication historically has been conceptualized as foremost a human process mediated by technology, with research within the discipline as a whole focused on how people exchange messages with one another and the implications thereof.[163] AI technologies vary in how they function as a communicator, from interpersonal interlocutor to content producer. Voice-based assistants, such as Amazon's Alexa, vocally respond to human questions and requests. Embodied robots interact verbally and nonverbally with people. Automated programs called bots enter into text-based social media interactions by posing as human conversational partners, influencing the tone and substance of these exchanges. News-writing programs develop narratives from raw data that appear alongside human-produced stories and cannot be easily distinguished from them. AI more than facilitates communication: it automates communication as well as the social processes dependent upon it.[164] it is true that talking technologies existed before AI, such as car navigation systems; however, interaction with these devices was restricted to using a narrow range of rote commands. This is not to argue that communication theory has overlooked technology or failed to adapt to its evolution. As digital devices emerged, communication scholars turned greater

attention toward studying the technological differences between "old" and "new" media. Some scholars established the study of technology as a social actor and provided important theoretical contributions to interactions between people and computers.[165] AI devices designed as communicators—machine subjects with which people make meaning instead of through which people make meaning—do not fit into theories based on previous technologies designed as channels of human interaction. What scholars of AI in communication need is a body of work that concurrently challenges long-held assumptions of communication as a process taking place between humans, and only humans, and accounts for the expanding role of technology. Research could offer important insights for the study of chatbots, socialbots, and newswriting technologies within journalism. News-writing programs are designed to fit into mass communication and have been studied within these contexts. For example, scholars have used the criteria by which human journalists are judged, such as the credibility of their stories, to assess "robot reporters" and the content they produce.[166] Scholars have also found differences in people's communicative behavior between people and technology, including AI and robots. In these instances, people treated both technology and humans as communicators but as different types of communicators. Therefore, ongoing research should not only be focused on assessing the similarities between humans and machines in their function as communicators, but should also take into account the differences, so that scholars can develop an understanding of technology as a unique type of communicator. Additional questions include to what degree and to what effect people's interactions with early AI influence their understanding of future generations of AI technology. For example, automated news-writing programs carry out a limited, but integral, function in journalism—creating stories from data.[167] Although these programs do not perform any other journalistic functions, they are often referred to as "robot journalists" in the popular press and in journalism research and have been compared against human journalists in writing competitions.[168] Case studies and ethnographic analyses could inform the lived realities of transparency, for example, how

companies use transparency as a selling point and how users (fail to) engage with transparency for self-reflection, self-enhancement, or as a means of communication. Particular attention should be paid to factors that make transparency meaningful and trustworthy in the users' eyes. Policymakers should assess the usefulness and limitations of the current transparency regime. They should be aware of the performative aspects as well as the dilemmas and constraints consumers of AI face. In that regard, more meeting spaces could be created, where policymakers are exposed to the voices of user-centered and critical researchers on transparency understandings and demands.[169] We can design ethical AI and that developers (especially academic ones) will behave ethically; however, challenges remain around understanding the most important ethical issues, how these vary from domain to domain, and deciding who should be responsible and accountable for negative impacts. Furthermore, is the focus on ethical AI diverting attention away from other important ethical issues, including how data are gathered, the conditions under which humans develop and deploy AI in communication governance, and the impact on users?[170]

A new area of data and AI governance is needed to ensure that the benefits can be gained and risks avoided. Value-aware AI systems need to be designed that ensure that decisions are made correctly, that societal values and norms are represented in AI systems and people can safely enjoy the benefits of AI. Although norms and values differ per society, there are universal values that can be adhered to and embedded in the systems.

Future research could focus on the following research questions, such as: How does human-to-human differ from human-to-non-human interaction? What are the ways to improve user engagement through AI? What are the AI-enabled ways to improve the trustworthiness of media? Also we need to address special issues for further research by scholars such as ***AI Standards and Rating***: A Global alliance to democratically and transparently standardize and rate AI applications is urgently needed. What should be its structure? How the rating standards should be chosen? How to

account for global diversity and cultural norms? How to ensure that standards are followed? Also, we need to address the challenge of responsibility. Of what the responsibilities of the designers are and what the responsibility of the users are? Where should we add for the checks and controls to prevent the making of mistakes and to ensure that mistakes are detected? These all are significant questions to be answered in future research.[171] How can we ensure that humans are at the center of AI design and development and that the future aligns with a more fair and equitable use of the technology to improve people's lives. Who gets the blame when things go wrong? In addition we need to understand the monopolization of AI by huge tech companies in the US and China, which control a significant market share of the innovation and AI technology. AI leaders of the world (Facebook, Amazon, Microsoft, IBM, Baidu, Alibaba and Tencent) – how can society and government push back from this imbalance? Is society disadvantaged by this level of control of the AI research agenda by a small number of organizations? Could society as a whole benefit from greater regulatory or government involvement earlier in the AI product lifecycle at an algorithmic assurance level?[172]

Despite the application of AI, most commercial games and communication platforms rely on users to flag unfair, abusive or disturbing content. They also rely on databases being constantly updated by significant human labor, not the highly skilled or well paid work. Despite societal expectations that AI will automate poorly paid occupations, AI requires extensive human decision making – from training tools, to moderating and removing unwanted content. While AI may reduce the financial and psychological costs, AI still requires human workers to make complex communication decisions, and in some instances to explain unfair automated decisions. Thus, AI can be a helpful servant, but in many instances the humans are serving and helping AI overcome its limitations.

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