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Ethical Issues in the Use of Artificial Intelligence (AI) and Robotics

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Abstract

Technology may be governed by concepts known as technology ethics, which take into account things like individual rights and risk management. Techno-ethical viewpoints have been steadily changing in recent years as technology develops in fields not previously imagined by its developers and an increasing number of individuals from various social, political, educational, and economic backgrounds use new technologies. *Therefore, this paper examined ethical issues in the use of artificial intelligence (AI) and robotics. Three major terms, ethics, artificial intelligence, and robotics, were conceptually discussed. Specifically, the role of artificial intelligence and robotics and their ethical implications for the human race were critically discussed. In this regard, the paper critically examined the possible consequences of human use and unchecked application of artificial intelligence and robotics in various industries. Some of the areas where the application of artificial intelligence and robotics has raised some ethical questions in recent times include job loss and wealth inequality, human-robot interaction such as care robots and sex robots, artificial stupidity and mistakes, AI systems and human lives, rogue AIs, and privacy and surveillance.* Even though continued investment in robotics and artificial intelligence (AI) has the potential to boost markets and industries and contribute to the development of any country, more work has to be done to determine the economic impact of these technologies and figure out how to maximise their positive effects while minimising their

negative ones. For the responsible development and widespread use of robots and artificial intelligence, it is also critical to address legal, regulatory, and ethical concerns.

Keywords: Ethics, Artificial Intelligence, Robotics, Technology, Techno-Ethics

Introduction

Technology may be governed by concepts known as technology ethics, which take into account things like individual rights and risk management. In essence, they are employed to comprehend and settle moral dilemmas related to the advancement and utilisation of various forms of technology. Technologies and human ideals and well-being, the environment in which technological breakthroughs take place and the social consequences of technical innovations are some of the topics that are covered by technology ethics (Belk, 2021). In techno-ethics, technology and ethics are seen as socially rooted enterprises. Its main goals are to identify ethical applications for technology, guard against its misuse, and establish shared values that will direct future advancements in technology development and application for the good of society. A wide range of ethical concerns pertaining to technology are generally referred to as techno-ethics (Liang, Robert, Sarker, Cheung, Matt, Trenz, & Turel, 2021). These can range from narrowly focused issues affecting professionals who work with technology to more general social, ethical, and legal concerns regarding the role of technology in society and daily life.

Techno-ethical viewpoints are always evolving as new technologies find applications outside of their original vision and as users adapt the intended uses of emerging technologies. These technologies are an integral component of human consciousness and purpose in life, thus it is impossible to separate humans from them. For this reason, an ethical paradigm is necessary. As robots enter the picture, humans will have to accept them as members of the human species in order to maintain our faith in them. These are only a few instances of how future technological developments will impact people's ethical standards.

Therefore, the main objective of this paper was to examine ethics, artificial intelligence, and robotics. Specifically, the role of artificial intelligence and robotics and their ethical implications for the human race were critically discussed. To achieve the objectives of this study, the rest of this paper was segmented into four major sections. Following the introduction are the conceptual clarifications. After the conceptual clarification, the key terms are defined. Next to this was the examination of ethics, artificial intelligence, and robotics. This was followed by the critical discussion on artificial intelligence, robotics, and their ethical implications for the human race.

Conceptual Clarification

Three major terms relevant to this study—ethics, artificial intelligence, and robotics—are conceptually discussed.

Ethics

The area of philosophy known as ethics examines how people behave in relation to good and wrong. It is related to the morals and reflecting actions of the human being. It is, therefore, the scientific study of human behaviour patterns with a focus on how rational humans are by nature. The goal of ethics is to come up with justifications for accepting or rejecting human behaviour as good or evil, right or wrong, and deserving or undeserving of a rational person. In

ethical studies, a premium is placed on human freedom, which is strongly associated with human rationality (Belk, 2021).

Ethics has to do with the subject of good and wrong in human action. The subject matter pertains to the proper conduct of men and the reasons for the correctness of specific behaviours. Ethics also examines the moral justifications for activities, including those that are morally acceptable and praiseworthy and those that are morally bad. Classical moral philosophy refers to good and evil (or right and wrong) activities as "virtues and vices" (Liang et al., 2021). Moral philosophy, in the words of Thomas Hobbes, is "the science of virtue and vice."

In moral philosophy, there is a difference drawn between human and humane acts. The latter, known as *actushominis*, is an action that lacks free will and is thus carried out unwillingly. Since the conduct in question is imposed from the outside or from inside, it cannot be properly regarded as ethical and the perpetrator is therefore not held accountable. Human reflexes such as sneezing, yawning, snoring, and others fall under this category. However, the second set of acts in ethics is mostly made up of the intentional and well considered actions of the human individual (Liang et al., 2021).

Human acts are defined as acts carried out with knowledge, purpose, and free will, or *actushumanis*. They are actions that garner acclaim or criticism for the performer. These are moral deeds. These have to do with the ability to reason, which visualises the truth in line with reality and the demands of the mind.

The reasoning faculty considers the degree of values attached to each option and determines which one is most suitable for the moral agent at that particular moment and in the overall interest of the individual' project, as a being intended for eternal happiness, while the intellect throws open the possibilities open to man in choosing what to act upon. A human act is only carried out by the will following this choice (Nidhika, 2023). Consequently, ethics is the science of making decisions by using morally sound rules that represent the reasoning character of both men and women in their conscious efforts to lead happy and successful lives.

It has been claimed since ancient times that self-actualization, self-fulfilment, and self-realization are inherently human tendencies. This indicates that the human soul is infused with the constant quest for fulfillment of one's aspirations. This pursuit cannot cease until he has acquired a condition of absolute delight and contentment, as much as it is possible. However, as long as a person craves for this, advancement in that direction is facilitated by the adoption of an ethical concept.

The Pythagoreans sought this by emphasising that the good act was to be found in-between two extremes, with Archytas of the Fourth Century affirming that right reasoning was the key to good behaviour. In line with this, Protagoras (440 B.C.) was proud to teach young people the proper care of their own affairs in view of becoming responsible persons. However, tribute must be paid to Socrates (469-399 B.C.), who turned the attention of early Greek philosophy from the mere study of the cosmos and its origins to the study of human behaviour (Matsuzaki, 2018). He was convinced that the early Greek philosophy (cosmologists) had spent too much time studying the origin and sustainer of things and needed to turn inwards, leading man from the study of nature to the study of himself (Elendu, Amaechi, Elendu, Jingwa, Okoye, Okah,... & Alimi, 2023).

In doing this, he would be able to distinguish between virtues and vices, good and evil. Thus, while *Agathos* generally commended the good man, he expressed the admiration the public had for such a man. Socrates was accredited for making the famous statement, "Man know thyself," a dictum that guided him all his life until he drank the hemlock (liquid of a poisonous plant), believing that life continued more qualitatively for those who led the good life (Matsuzaki, 2018). It is quite clear from the foregoing that the drive for happiness is inherent in human nature, and this quest continues insatiably as long as one is alive. Moral philosophers have reached the conclusion that the only way one can remain in the state of happiness is by living the "examined life." This is precisely the task of ethics through which one gains mastery over one's emotions and uncontrolled desires. Man risks bringing about his or her own self-annihilation if he or she continues to allow ruthless and selfish passions to guide and control his or her behaviour.

Commenting on this, Alan Finkelkraut opines that "*at the end of the century, which, in sixty years, has known two world wars, totalitarianism of the right and left, Hitlerism and Stalinism, Hiroshima, the Gulag, the genocides of Auschwitz and Cambogia, can no longer be explained or confronted with evil...our century is that of 'useless suffering'*" (Furet& Nolte, 2001, p. 134). The quotation supports the ethical orientation that makes necessary the bringing about of self-control, living the good life, and attaining true happiness. This decision to have mastery over oneself, one's emotions, and one's desires is no doubt the most important discipline of science, for of what use is it to make all the scientific and technological achievements of which we are proud of today and still be living in suspicion of one another (Vallor, 2016).

After the war and the victory won by Iraq, it is said to have been won; there seems to be a more ravaging war on a daily basis to this day, with very many prominent persons losing their lives to suicide squads. Therefore, Corte rightly asserted that "only the individual is capable of choosing, among the many material things technology puts at his disposition, those that serve his needs and contribute to the development of his being; no person can do that for him" (Lezra, 2010: 213).

Ethics has its own principles and procedures; hence, it is a science. This is because it seeks to justify its principles and methods of operation using logically and universally accepted standards. Thus, it can be rightly considered that the art of developing one's talents and faculties positively culminates in self-identity and self-authentication. As evidence in casuistry and applied ethics, by collecting data and presenting them logically, systematically, and procedurally, ethics qualifies as a science. Though the empirical sciences are descriptive in approach by analyzing empirically observable matters, ethics is prescriptive and is concerned about human behaviour, which is non-empirically verifiable. By its very nature, ethics continuously searches for better methods to validate its theories. It was in this regard that Norwell Smith opines that traditionally moral philosophy has always been regarded as a 'science' because it was a systematic inquiry, the goal of which was knowledge, and 'practical' because the goal was practical knowledge, knowledge of what to do rather than knowledge of what the cause is (Wei, 2020)

However, with the inception of modern technological attitude and emphasis on experimentation and factual evidence, metaphysical, ethical and religious discipline came to be

relegated (Villemaire, 2002). The need for man to re-examine himself became necessary after the world wars; hence, ethical studies regained prominence in the formation of men and women in view of the transformation of the earth. This attitude is most evident among the various professional groups like medicine, law, journalism, technologists, etc. These and other introduced codes of conduct to guide members are needed in order to safeguard their professional dignity. Also, the code of conduct helps to checkmate the excesses of technological development.

What is artificial intelligence (AI)?

Artificial intelligence (AI) is a general term that implies the use of a computer to model and/or replicate intelligent behaviour. The study of artificial intelligence focusses on the development and analysis of algorithms which learn and/or perform intelligent behaviour with minimal human intervention. These techniques have been and continue to be applied to a broad range of problems that arise in robotics, e-commerce, medical diagnosis, gaming, mathematics, military planning, and logistics, to name a few (Elendu et al., 2023). Several research groups fall under the general umbrella of artificial intelligence (AI) in the department but are disciplines in their own right, including robotics, natural language processing, computer vision, computational biology, and e-commerce. Peter Norvig and Russell Stuart opine that research is being conducted in estimation theory, mobility mechanisms, multi-agent negotiation, natural language interfaces, machine learning, active computer vision, probabilistic language models for use in spoken language interfaces, and the modelling and integration of visual, haptic, auditory and motor information.

Up until the end of the 1980s, the discipline known as "symbolic artificial intelligence" was intimately linked to the phrase artificial intelligence. A subfield of artificial intelligence known as "computational intelligence" emerged as a result of the increasing popularity of sub-symbolic techniques like deep neural networks, fuzzy systems, evolutionary computing, and other mathematical models, which helped to overcome some of the shortcomings of symbolic artificial intelligence. The notion of a machine that is intelligent in terms of its operational and societal implications has been embraced by the term artificial intelligence in recent times.

Concept of Robotics

An interdisciplinary discipline that combines engineering and computer science is robotics. The design, building, usage and maintenance of robots are all included in robotics. Designing robots that can support and aid people in a variety of occupations, such as education, cars, aircraft, the military and medical, is the aim of robotics (Nidhika, 2023). Robotics create devices that can mimic human behaviour and stand in for people. Although robots can be employed in a wide range of settings and for a wide range of tasks, many are currently employed in hazardous environments (such as radioactive material inspection, bomb detection and deactivation, and manufacturing processes), in places where humans cannot survive (such as space, underwater, in extremely hot conditions, and in the cleanup and containment of hazardous materials and radiation).

Although robots may take on any shape, some are designed to seem like people. This is supposed to make it easier for humans to accept a robot doing some replicated actions that people often do. These robots aim to mimic human functions such as walking, lifting, speaking, and thinking. Today, a large number of robots draw inspiration from nature, which advances the

subject of bio-inspired robotics. While some robots need human input to function, others can do it on their own. Although the idea of building autonomous robots has existed since antiquity, it was not before the 20th century that there was a significant increase in study into the capabilities and possible applications of these machines (Belk, 2021).

It has long been believed by academics, including engineers, technicians, and inventors, that those robots will eventually be able to behave like humans and do duties in a manner akin to their own. Since technology is always advancing, the area of robotics is expanding quickly nowadays. Whether for military, commercial, or household use, studying, inventing, and creating new robots serves a variety of useful goals. Numerous robots are designed to do dangerous tasks for humans, such as disarming explosives, locating survivors in unstable wrecks, and searching for mines and shipwrecks.

Ethics, artificial intelligence and robotics

The usual reaction to new technology is to centre the ethics of AI and robotics on "concerns" of various kinds. A lot of these concerns prove to be rather quaint (e.g., trains are too swiftly for souls); some are predictably wrong (e.g., phones will destroy private communication, writing will eliminate memory, video recordings will make redundant); some are broadly correct but only marginally relevant (e.g., digital technology will destroy industries that produce photographic film, cassette tapes, or vinyl records); and some are deeply relevant but also broadly correct (Vallor, 2016).

Some technologies, such as nuclear power, automobiles and plastics, have sparked ethical and political debate and considerable regulatory initiatives to limit their course; typically, relatively minor damage is done. In addition to such "ethical concerns," new technologies question present norms and conceptual frameworks, which is particularly interesting in philosophy. Finally, once we understand a technology in its context, we must build our society reaction, which includes regulation and legislation. All of these characteristics are present in modern AI and robotics technologies, as well as the core worry that they will usher in the end of human control on earth.

The mainstream media frequently speaks as if the issues being discussed are simply projections of what future technology will bring, and as if we already know what is most ethical and how to attain it. The press focuses on danger and security (Nidhika, 2023). The end result is a discussion of mostly technical issues centered on how to accomplish a desired conclusion. Current policy and industry conversations are also influenced by image and public relations, and the term "ethical" is nothing more than the new "green," maybe used for "ethics washing." For a problem to qualify as a dilemma for AI ethics, we must not immediately know what the proper way to do. In this sense, job loss, theft, or killing with AI is not a problem in ethics, but whether these are permissible under certain circumstances is a problem.

In this sense, job loss, stealing, or death using AI are not ethical issues; nevertheless, whether they are permitted under specific conditions is. The ethics of AI and robots is a relatively new subject within applied ethics, with substantial dynamics but few well-established concerns and no authoritative overviews, despite a promising framework and early indications of social effect. The researcher described the ethical difficulties associated with human use of AI and robotics systems that can be more or less autonomous—that is, we look at issues that occur

with some uses of the technology but not others. In this sector, we need "responsible design" in addition to "responsible use". The emphasis on usage does not presume which ethical systems are most suited to addressing these challenges; they might be virtue ethics rather than consequentialist or value-based. This section is likewise impartial regarding the subject of whether AI systems genuinely have "intelligence" or other mental qualities. It would also apply if AI and robots were just viewed as the contemporary face of automation (Thomsen, 2019). More than 100 films about artificial intelligence were produced around the world between 1927 and 2019. While some events are portrayed positively, the majority are horrible. In films such as The Terminator, The film Avengers, Age of Ultron, and many more, the film industry inserted sequences into our collective imaginations depicting how more sophisticated robots will take over the globe and enslave or completely eliminate mankind. The possibility for AIs to surpass human intellect foreshadows a bleak future for humans (Iphofen&Kritikos, 2021).

Artificial Intelligence, Robotics and Ethical Implications on Human Race

The role of artificial intelligence and robotics and their ethical implications for the human race are discussed under the following heading:

Job Loss and Wealth Inequality: One of the primary concerns people have with AI is future loss of jobs. Should we strive to fully develop and integrate AI into society if it means many people will lose their jobs and quite possibly their livelihood? According to the new McKinsey Global Institute report, by the year 2030, about 800 million people will lose their jobs to AI-driven robots. Some would argue that if their jobs are taken by robots, perhaps they are too menial for humans and that AI can be responsible for creating better jobs that take advantage of unique human abilities involving higher cognitive functions, analysis, and synthesis. Another point is that AI may create more jobs; after all, people will be tasked with creating these robots to begin with and then managing them in the future (Belk, 2021).

One issue related to job loss is wealth and inequality. Consider that most modern economic systems require workers to produce a product or service with their compensation based on an hourly wage. The company pays wages, taxes, and other expenses, with left-over profits often being injected back into production, training, and/or creating more business to further increase profits. In this scenario, the economy continues to grow (Iphofen&Kritikos, 2021). But what happens if we introduce AI into the economic flow? Robots do not get paid hourly, nor do they pay taxes. They can contribute at a level of 100% with low ongoing costs to keep them operable and useful. This opens the door for business executives and stakeholders to keep more company profits generated by their AI workforce, leading to greater wealth inequality. Perhaps this could lead to a case of "the rich"—those individuals and companies who have the means to pay for AIs get richer (Richardson, 2019).

Human-Robot Interaction: Human-robot interaction (HRI) is an academic field in its own right, which now pays significant attention to ethical matters, the dynamics of perception from both sides, and both the different interests present in and the intricacy of the social context, including co-workers (Liang *et al.*, 2021). While AI can be used to manipulate humans into believing and doing things, it can also be used to drive robots that are problematic if their processes or appearance involve deception, threaten human dignity, or violate the Kantian requirement of "respect for humanity." Humans very easily attribute mental properties to objects and empathise with them, especially when the outer appearance of these objects is similar to that

of living beings. This can be used to deceive humans (or animals) into attributing more intellectual or even emotional significance to robots or AI systems than they deserve.

Some parts of humanoid robotics are problematic in this regard, and there are cases that have been clearly deceptive for public relations purposes (for example, Hanson Robotics' "Sophia"). Of course, some fairly basic constraints of business ethics and law apply to robots, too: product safety and liability, or non-deception in advertisement. It appears that these existing constraints take care of many concerns that are raised (Huang, Zhang, Mao & Yao, 2022).

(a) Care robots: The use of robots in health care for humans is currently at the level of concept studies in real environments, but it may become a usable technology in a few years and has raised a number of concerns for a dystopian future of dehumanised care (Yew, 2021). Current systems include robots that support human cares/carers (for example, in lifting patients or transporting material), robots that enable patients to do certain things by themselves (for example, eat with a robotic arm), but also robots that are given to patients as company and comfort (for example, the "Paro" robot seal).

This argument makes problematic assumptions, namely that with a longer lifespan people will need more care and that it will not be possible to attract more humans to caring professions. It may also show a bias about age (Nidhika, 2023). Most importantly, it ignores the nature of automation, which is not simply about replacing humans but about allowing humans to work more efficiently. It is very clear that the fear of robots dehumanising care, but the actual and foreseeable robots in care are assisting robots for classic automation of technical tasks. They are thus "care robots" only in a behavioural sense of performing tasks in care environments, not in the sense that a human "cares" for the patients. It appears that the success of "being cared for" relies on this intentional sense of "care," which foreseeable robots cannot provide. If anything, the risk of robots in care is the absence of such intentional care because less human care may be needed.

Interestingly, caring for something, even a virtual agent, can be good for the career itself. A system that pretends to care would be deceptive and thus problematic unless the deception is countered by sufficiently large utility gain (Van Wynsberghe, 2016). Some robots that pretend to "care" on a basic level are available, and others are in the making. Perhaps feeling cared for by a machine, to some extent, is progress for some patients.

b) Sex robots: It has been argued by several tech optimists that humans will likely be interested in sex and companionship with robots and be comfortable with the idea (Peeters&Haselager, 2021). Given the variation of human sexual preferences, including sex toys and sex dolls, this seems very likely: The question is whether such devices should be manufactured and promoted and whether there should be limits in this intimate area. Humans have long had deep emotional attachments to objects; companionship or even love with a predictable android is attractive, especially to people who struggle with actual humans and already prefer dogs, cats, and birds (Nyholm, 2022). Sullins (2012) argues that these can be true friendships and is thus a valuable goal. It certainly looks like such friendship might increase overall utility, even if lacking in depth. There is an issue of deception since a robot cannot (at present) mean what it says or have feelings for a human. It is well known that humans are prone to attribute feelings and thoughts to entities that behave as if they had senses, even to clearly

inanimate objects that show no behaviour at all. Also, paying for deception seems to be an elementary part of the traditional sex industry.

There are concerns that have often accompanied matters of sex, namely consent, aesthetic concerns, and the worry that humans may be “corrupted” by certain experiences. Old-fashioned though this may seem, human behaviour is influenced by experience, and it is likely that pornography or sex robots support the perception of other humans as mere objects of desire or even recipients of abuse and thus ruin a deeper sexual and erotic experience. Nyholm (2022) pointed out that the “Campaign Against Sex Robots” argues that these devices are a continuation of slavery and prostitution.

Artificial stupidity and mistakes: Artificial intelligence are not immune to making mistakes, and machine learning takes time to become useful. If trained well using good data, then AIs can perform well. However, if we feed AIs bad data or make errors with internal programming, the AIs can be harmful. A notable example of this is Teka Microsoft’s AI chatbot, Tay, which was released on Twitter in 2016. In less than one day, due to the information it was receiving and learning from other Twitter users, the robot learnt to spew racist slurs and Nazi propaganda. Microsoft shut the chatbot down immediately since allowing it to live would have obviously damaged the company’s reputation (Sulaiman, 2024). AIs make mistakes, but do they make greater or fewer mistakes than humans? How many lives have humans taken with mistaken decisions? Is it better or worse when an AI makes the same mistake? These are all ethical issues that could have some implications for the use of AI and robotics.

AI Systems and Human Lives: In his TEDx speech, Jay Tuck describes AIs as software that writes its own updates and renews itself. This means that the programmed machine is not created to do what we want it to do—it does what it learns to do (15). Jay goes on to describe an incident with a robot called Tallon. Its computerised gun was jammed and open-fired uncontrollably after an explosion, killing 9 people and wounding 14 more (Goundar, 2022). Similarly, Predator drones, such as the General Atomics MQ-1 Predator, have been in existence for over a decade. These remotely piloted aircraft can fire missiles, although US law requires that humans make the actual kill decisions. With drones playing more of a role in aerial military defence, we may need to further examine their role and how they are used. **AI and Robotic Rights:** Should robots be granted human rights or citizenship? If we evolve robots to the point that they are capable of “feeling,” does that entitle them to rights similar to humans or animals? If robots are granted rights, then how do we rank their social status? This is one of the primary issues in “roboethics,” a question that was first raised by Isaac Asimov in 1942. In 2017, the Hanson Robotics humanoid robot, Sophia, was granted citizenship in Saudi Arabia. While some consider this to be more of a PR stunt than actual legal recognition, it does set an example of the type of rights AIs may be granted in the future (Goundar, 2022).

Rogue AIs: If there is a chance that intelligent machines can make mistakes, then it is within the realm of possibility that an AI can go rogue or create unintended consequences from its actions in pursuing seemingly harmless goals (Calo, 2020). One scenario of an AI going rogue is what we have already seen in movies like The Terminator and TV shows where a super-intelligent centralised AI computer becomes self-aware and decides it doesn’t want human control anymore. Right now, experts say that current AI technology is not yet capable of

achieving this extremely dangerous feat of self-awareness; future AI supercomputers might. The other scenario is where an AI, for instance, is tasked with studying the genetic structure of a virus in order to create a vaccine to neutralise it. After making lengthy calculations, the AI formulated a solution where it weaponises the virus instead of making a vaccine out of it. It's like opening a modern-day Pandora's Box, and again, ethics comes into play where legitimate concerns need to be addressed in order to prevent a scenario like this (Sulaiman, 2024).

Privacy and Surveillance: There is a general discussion about privacy and surveillance in information technology, which mainly concerns access to private data and data that is personally identifiable. Privacy has several well recognised aspects, e.g., "the right to be let alone," information privacy, privacy as an aspect of personhood, control over information about oneself, and the right to secrecy. Privacy studies have historically focused on state surveillance by secret services but now include surveillance by other state agents, businesses, and even individuals. The technology has changed significantly in the last decades, while regulation has been slow to respond (though there is the Regulation (EU)). The result is a certain anarchy that is exploited by the most powerful players, sometimes in plain sight, sometimes in hiding. (Calo, 2020)

The digital sphere has widened greatly, and as all data collection and storage is now digital, our lives are increasingly digital; most digital data is connected to a single Internet, and there is more and more sensor technology in use that generates data about non-digital aspects of our lives. AI increases both the possibilities of intelligent data collection and the possibilities for data analysis (Thomsen, 2019). This applies to blanket surveillance of whole populations as well as to classic targeted surveillance. In addition, much of the data is traded between agents, usually for a fee. At the same time, controlling who collects data and who has access is much harder in the digital world than it was in the analogue world of paper and telephone calls. Many new AI technologies amplify the known issues. For example, face recognition in photos and videos allows identification, thus profiling and searching for individuals. The continuous use of other techniques for identification, "device fingerprinting, which are commonplace on the Internet, is sometimes revealed in the "privacy policy." The result is that "in this vast ocean of data, there is a frighteningly complete picture of us." The result is arguably a scandal that still has not received due public attention.

The data trail we leave behind is how our "free" services are paid for—but we are not told about the data collection and the value of this new raw material, and we are manipulated into leaving ever more such data. For the "big 5" companies (Amazon, Google/Alphabet, Microsoft, Apple, and Facebook), the main data collection as part of their business appears to be based on deception, exploiting human weaknesses, furthering procrastination, generating addiction, and manipulation (Richardson, 2019). The primary focus of social media, gaming, and most of the Internet in this "surveillance economy" is to gain, maintain, and direct attention—and thus data supply. "Surveillance is the business model of the Internet."

Conclusion

With the proliferation of artificial intelligence and robotics together with the "Internet of Things," the so-called "smart" systems, "smart cities," and "smart governance" are gradually raising concerns about the future of the human race. One pertinent ethical question to ask is: what will happen to society, politics, and daily life when non-conscious but highly intelligent algorithms know us better than we know ourselves?

One of the major practical difficulties is to actually enforce regulation, both on the level of the state and on the level of the individual who has a claim. They must identify the responsible legal entity, prove the action, perhaps prove intent, find a court that declares itself competent, and eventually get the court to actually enforce its decision. Well-established legal protection of rights such as consumer rights, product liability, and other civil liability or protection of intellectual property rights is often missing in digital products or hard to enforce. This means that companies with a “digital” background are used to testing their products on consumers without fear of liability while heavily defending their intellectual property rights. This “Internet libertarianism” is sometimes taken to assume that technical solutions will take care of societal problems by themselves.

As much as sustained investment in robotics and AI may promote the future growth of any nation by providing some economic benefits to markets and industries, greater effort needs to be invested in assessing the economic impact and understanding how to maximise the benefits of these technologies while mitigating adverse effects. Also, it is important to address legal, regulatory, and ethical issues for practical deployment and responsible innovation of robotics and AI.

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