Societal Impacts of Artificial Intelligence Ethical, Legal, and Governance Issues

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Societal impacts of artificial intelligence: Ethical, legal, and governance issues

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ABSTRACT

Artificial intelligence (AI) is quickly changing the way we work and the way we live. The emergence of ChatGPT has thrust AI, especially Generative AI, into the spotlight. The societal impact of AI is on most people's minds. This article presents several research projects on how AI impacts work and society. Three research works are discussed in this article. The first study develops a theoretical framework structuring the legal and ethical objectives that are needed and the means to achieve them. The second study concentrates on bias and discrimination issues embedded in AI applications. It focuses on enhancing the collaboration between AI users and AI systems to alleviate bias and discrimination issues. The third study focuses on the governance of AI, and the study will design and develop an integrated AI governance framework to help guide the design and development of AI applications and facilitate the evolutions and revolutions of ethical AI systems.

SPECIFICATIONS TABLE

Subject area	**Issues, Ethics and Legal Aspects**
More specific subject area	**Societal Impact of Generative Artificial Intelligence**
Category/categories of societal impact	Legal Political Societal Technological
Sustainable Development Goals (SDGS) the research contributes to	*GOAL 8: Decent Work and Economic Growth* *GOAL 9: Industry, Innovation and Infrastructure* *GOAL 10: Reduced Inequality*
Resource availability	[1] Artificial Intelligence in Financial Technology: http://2022.cswimworkshop.org/wp-content/uploads/2022/08/CSWIM-2022-Proceedings_18-Aug.pdf [2] Towards An Integrated Framework for Artificial Intelligence Governance: https://aisel.aisnet.org/amcis2022/sig_odis/sig_odis/19 [3] Diffusion of AI Governance: https://aisel.aisnet.org/mwais2022/18 [4] Identifying Legal and Ethical Values in AI: https://aisel.aisnet.org/pacis2022/313 [5] AI in accounting: A value-focused thinking study: https://aisel.aisnet.org/pacis2022/343
Related research article	**Several short conference papers have been published for this stream of research.** [1] Siau, K. L., Nah, F. F. H., Qian, Y., Eschenbrenner, B. L., & Chen, L. (2022, August). Artificial Intelligence in Financial Technology. In *15th China Summer Workshop on Information Management (CSWIM 2022): CSWIM 2022* (pp. 505-510). [2] Eschenbrenner, B. L., Nah, F., Siau, K. L., Chen, L., & Qian, Y. (2022). Towards An Integrated Framework for Artificial Intelligence Governance. In *AMCIS 2022 Proceedings*. 19. [3] Chen, L., Eschenbrenner, B., Nah, F., Siau, K., & Qian, Y. (2022, May). Diffusion of AI Governance. In *17th Annual MWAIS Conference*. [4] Siau, K. L., Ding, C., Lin, F., & Nah, F. (2022, July). Identifying Legal and Ethical Values in AI. In *2022 Annual Pacific Asia Conference on Information Systems (PACIS 2022): Artificial Intelligence, Information*

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	Systems, In Pacific Asia (AI-IS-ASIA) (pp. 313). Association for Information Systems (AIS). [5] Siau, K., Nah, F., Eschenbrenner, B., Chen, L., & Qian, Y. (2022, July). AI in accounting: A value-focused thinking study. In *2022 Annual Pacific Asia Conference on Information Systems (PACIS 2022): Artificial Intelligence, Information Systems, In Pacific Asia (AI-IS-ASIA)* (p. 343). Association for Information Systems (AIS).
Stage of research	The paper introduces a stream of research looking at the societal impact of AI and focuses on three ongoing studies that we are undertaking at the moment.

The rapid advancement of Artificial intelligence (AI) and the increasing prevalence of AI in business and society will have a sweeping impact on the future of jobs and the future of society. According to a Forrester report, generative AI is projected to displace approximately 2.4 million jobs in the US, along with other forms of automation replacing additional positions [29]. [14] predicts that AI will push many out of work and create a "useless class". New economic models, social systems, and education re-engineering are necessary in the AI era. Research on the societal impact of AI is critical and urgently needed.

AI applications have appeared in many domains, including education, healthcare, transportation, and manufacturing. AI plays an increasingly important role in increasing efficiency and enhancing effectiveness [17]. AI models are powerful for making decisions with uncertainties. They are also useful for detecting relationships between factors representing causes and effects [8]. AI has been embedded into many applications, such as automation, reasoning, decision-making, predictions, and natural language processing [1,8,44]. The rapid development of AI technologies (e.g., deep learning, machine vision) and surprisingly powerful Generative AIs, such as ChatGPT and Claude, have shocked the world [23]. Generative AI is a powerful machine-learning technology that generates new data/content from training data [16]. This technology has benefited people with significant convenience since it can work as search engines, code-writing assistants, and chatbots [43].

In our previous work [40–42], we tried to obtain a more detailed view of how AI has been applied in various industries and fields, and we discussed in detail how such advanced technology could be embedded into accounting [41] and Fintech [42]. For example, AI is one of the most significant technologies disrupting the traditional accounting profession [3,18]. Specifically, AI applications are able to perform accounting tasks such as payable processing, expense management, auditing, and tax preparation. Much manual work in the accounting field has been taken over by advanced AI and modern technologies. With the help of AI systems, even events hidden in the workflow data can be detected. AI is changing the traditional finance industry as well [21,39]. Enabled by AI-empowered finance, traditional finance has been replaced by a new era of smart digital currencies, risk management, and lending [6]. AI can replace humans to automate time-consuming and labor-intensive operations in the financial technology field (Fintech). It enhances the quality and speed of innovative financial services to customers (e.g., credit approval process and credit increase requests).

Besides accounting and finance, the introduction of AI is also reforming the healthcare field. Since AI is capable of detecting diseases in their early stages, assisting in diagnosis, helping patients manage long-term treatment programs, and cutting time and cost for medical research, AI enables healthcare systems to work more efficiently and effectively [27,52]. Generative AI further enhances the capabilities of other AI tools. Generative AI establishes closer links between people and AI applications and provides an easier and more pleasant user experience.

While AI provides much potential, its application is still lingering with issues. For example, the operation of AI models generally needs a large training data set, which may necessitate the incorporation of external data [51]. These external data acquisitions will require appropriate procedures and systems to effectively handle the integration with existing data sets. Errors will occur without proper governance. Also, the decision processes are complex and invisible. The transparency issues make it difficult to convince people to trust recommendations provided solely by machines [11]. Illegal and unethical consequences may happen since AI algorithms could identify relationships that are not causal, resulting in biases against certain groups of people. Further, the integration of AI into the workforce may put some traditional jobs at risk [26].

The capability of AI is an important aspect of how we evaluate the technology. Nevertheless, we should also be concerned about potential societal impacts when implementing AI in organizations and businesses. Therefore, we have conducted and are conducting several research projects to study and understand the societal impacts brought by AI.

Methodology

To obtain a more thorough understanding of how AI affects society, we started several research projects to analyze the societal impacts of AI from different aspects.

First, we are studying how the introduction of AI challenges existing legal and ethical standards. Legal standards are mandatory and must be observed [31]. Ethical ones indicate what is accepted by society [47]. People observe rules adopted by the majority as a social obligation. Thus, ethics can be viewed as internal systems of control, whereas law refers to external mechanisms of enforcement. Table 1 compares the differences between "legal" AI and "ethical" AI.

The rapid development of AI is raising a series of legal and ethical concerns. For example, the introduction and application of AI may result in people losing their jobs, which may cause social instability. In healthcare, the use of autonomous robotic devices has aroused significant concerns about ethics and trust [7]. People are worried that AI can harm human physical and mental integrity and reduce human autonomy [24]. The existence of such problems is partially because of the lack of legal and ethical frameworks related to AI, and previous research studies have not dealt with the issue comprehensively. Therefore, one of our ongoing research projects is focusing on this topic. We use Value-Focused Thinking, a systematic qualitative method, to conduct the study. Specifically, we are collecting ideas and opinions on AI development from both IS/IT professionals and legal professionals. The preliminary results show that experts believe that "maximize ethical AI development" and "maximize AI governance" are fundamental. To

Table 1
Differences between "legal" and "ethical" AI.

"Legal" AI *Versus* "Ethical" AI		
	"Legal" AI	"Ethical" AI
Definition	A set of rules and regulations created and enforced by the administrative authority of a society to ensure that AI development and usage are in accordance with the law.	The moral principles that govern AI's behavior or conflicts surrounding AI development and usage.
Purpose	The purpose is to create a legally complying development and usage of AI.	The purpose is to ensure that ethics are central to AI development and usage.
Consequence	The development of legal frameworks to provide oversight and guidance to AI development and usage.	The adoption and adaptation of existing moral principles to govern AI development and usage, as well as the formulation of new moral principles that are specific to AI.

achieve these two fundamental objectives, different levels of means objectives, such as "maximize clarity of AI liability", "maximize communication", and "maximize social stability", are needed. This research will eventually provide a theoretical framework depicting the means/steps of achieving the fundamental objectives of maximizing ethical AI development with maximum AI governance.

A key ethical AI issue is related to bias and discrimination. Therefore, the second study concentrates on bias and discrimination issues when implementing AI systems. Bias and discrimination issues derive from both technical issues and human-related issues. Technically, the over- and under-representativeness of the data used in AI models may lead to minority bias as certain groups are not fully considered [15]. Trashy data input leads to dissatisfactory and biased output (known as Garbage In, Garbage Out, i.e., GIGO) [49]. Data cleansing is a procedure of spotting and correcting inaccuracies in data to increase its quality. Prioritizing the enhancement of data quality can tap into the full potential of AI [4]. Besides, bias and discrimination results can be caused by unprofessional behaviors during the training processes. For example, inconsistencies in data labeling and unethical actions may occur while developers manually divide possible values of a target variable into exclusive categories [46]. The algorithms used by AI models can also be problematic as it is hard for developers and users to find all the errors and biases in AI algorithms, which are usually in the "black box" [12]. Meanwhile, bias and discrimination resulting from the data collection and training processes can be reinforced in a feedback loop, making it even harder to discover and eliminate [54]. Humans are another factor in why bias and discrimination problems occur. One of the most important groups is the developers. Developers may have insufficient knowledge of social science and pay less attention to fairness issues [19]. Another unsettled problem of this group is that it lacks diversity. A large proportion of AI developers are males, and the male-thinking model will place females in a disadvantageous position. Because of these problems, we are conducting a study aiming to detect how bias and discrimination issues affect the "collaboration" between AI users and AI applications. The results of this research will enable us to formulate better approaches to enhance users' trust in AI systems and enable human-AI collaboration to generate greater efficiencies and create more positive societal impacts.

Another study we are focusing on is the governance of AI. Researchers, policymakers, and all stakeholders need to pay extra emphasis on the governance of AI to maximize its positive impact on society. Many authorities, such as the United States, the European Commission, Singapore, and Hong Kong, have proposed frameworks for AI governance. We suggested that one potential solution to tackle AI challenges, such as those related to ethical and legal issues, is to develop an integrated AI framework based on the meta-synthesis of existing AI frameworks from various regions worldwide [10]. Such a unified framework will be structured by the core components we identified from the existing frameworks (i.e., we will extract both their similarities and differences). The unified governance framework that will be developed in this research can be specialized to different geographical regions, countries, and businesses based on the specificities, needs, and requirements of different scenarios and environments.

Implications

Overall, the discussion above indicates that it is crucial to formulate proper guidance and governance policies for AI applications, enhance collaboration among different disciplines, and provide education on the latest AI technologies. The aforementioned research projects highlight measures that can be implemented to initiate the regulation of AI's ethical use. For example, the Value-Focused Thinking study on AI's legal and ethical issues provides a path to move from means objectives to the fundamental objectives of "maximize ethical AI development" and "maximize AI governance". The three studies discussed above will improve our comprehension of the societal issues surrounding AI. The further development of the ethical framework for AI applications can steer the advancement of this emerging technology to create a positive societal impact.

Call for regulations

Since AI is bringing and will continue to bring significant societal impacts on the entire society and impact on the future of humanity, scientists, professionals, and even ordinary people are calling for regulations and policies to govern AI development and use. Researchers agree that determining the acceptable uses of AI is urgent [30]. Gordon [13] calls for regulations to deal with problems including machine bias, legal decision-making, and legal responsibility. Buitem [5] believes that machine-learning algorithms should be more explainable by enhancing the transparency of the input data, the testing of algorithms, and the decision model. The understanding of fairness, accountability, transparency, and explainability in AI systems is vital in boosting users' confidence in these systems [36]. Users can gain deeper insights into AI's 'black box' by understanding how AI reaches its decisions [36]. For instance, the systems can offer additional details, such as the size and limitations of the training set, to enhance comprehensibility [35]. Google DeepMind and Stanford University have introduced a recent application - Mobile ALOHA, a humanoid robot that is completely open-source and accessible to all users [20]. This level of openness boosts the system's transparency and reliability and fosters continued development. Our research projects conduct a formative analysis of the key objectives during AI interaction and the effectiveness of various regulations. Future research can explore who should be held accountable for AI decisions in different scenarios and the establishment of transparency and privacy agreements for disclosing necessary information. Many countries and geographical regions are proposing relevant documents to increase the trustworthiness of AI. For example, China released the "New Generation Artificial Intelligence Development Plan" in 2017. This strategy reveals China's vision to become a leader in AI by the end of the next decade and highlights ethical norms and standards for AI [30]. Meanwhile, the European Union (EU) produced a document with ethical guidelines for AI in 2019 [9]. On July 10, 2023, China's top internet watchdog, the Cyberspace Administration of China (CAC), in consultation with six other regulators, issued China's first generative AI regulation to legislate a largely unregulated AI space [53]. Also, the US President issued an executive order on safe, secure, and trustworthy AI in late 2023 [45], and the UK Prime Minister launched the world's first AI Safety Institute a few days after the US President's announcement [28]. Social activists and scientists are calling to maintain the balance between creativity, innovation, and commercialization in the AI space and the need for robust and adequate legal safeguards for human safety. For example, engineers and scientists have signed a global pledge against the development and usage of autonomous weapons systems using AI that can identify, target, and kill a person without human authorization [25,32]. They also advocate stopping generative AI development, as such technologies may threaten humanity [48]. While our research highlights the significance of establishing regulations to govern AI development and usage, many companies do not want too many regulations on AI as these restrictions may impede technology development and deprive them of the opportunities to gain competitive advantages [9,37]. Ethical AI development and the need for AI governance are critical topics at this expeditiously changing and transformative time.

Interdisciplinary collaboration

Applying AI to different domains, such as accounting, finance, and healthcare, needs support from professionals in these fields. Insufficient collaboration among disciplines may lead to errors and inefficiencies. For example, AI developers' lack of knowledge and sensitivity to social science issues is one of the cited reasons why biases and discrimination

occur [19,34]. Domain-specific knowledge is essential for ChatGPT to provide convincing responses when it is used in various subjects. There is a call for speeding up the integration of large-scale models such as ChatGPT, a large language model, into healthcare. Healthcare areas such as diagnosing diseases, spotting malignant tumors, and drug discoveries are tasks that AI can do well and may perform better than healthcare professionals. AI-healthcare professionals' collaboration is important. Besides the smooth operation of the AI systems, professional opinions and proper interpretation of the feedback from the clinics are critical for the realization of AI-empowered Medicare [50]. Studies show that combining AI with human evaluations can maximize diagnostic accuracy and provide more optimal treatment planning. Similarly, experts familiar with tasks in fields such as accounting and finance are also important to ensure that the AI systems function well in those domains. With AI penetrating almost every field and discipline, interdisciplinary collaboration and cooperation will maximize the positive impact of AI on society.

Education reform

Society needs to invest more resources in education on the awareness, understanding, and usage of AI. Northeastern University proposed an educational model consisting of three components – technology, data, and human interaction [33]. Society, either schools and colleges or working institutions, can provide students and junior workers with training in these three aspects. Specifically, they need to be equipped with sufficient skills and knowledge, such as machine learning, natural language processing, and deep learning, to face an era with rapidly evolving technologies, and they need to know how to use content generated by AI properly [2]. Studies show that low-skilled laborers will be most negatively affected by the introduction of AI, while medium and high-skilled laborers may benefit from working with AI [22]. Higher education institutions play essential roles in developing "soft skills", such as creativity, problem-solving, collaboration, communication, and adaptability, that enable students to be prepared for the AI era [38]. The combination of theoretical knowledge and practical experience is also essential for professionals to transform into a new generation of professionals who can work collaboratively and in partnership with AI. In an era with a rapidly and frequently changing environment, the adaptability quotient (AQ) will be critical and needs to be nurtured by the educational system. The AI era has arrived. One needs to continuously adapt and transform oneself to adapt to and excel in the new era. Resistance is futile.

CRediT authorship contribution statement

Yuzhou Qian: Writing – original draft, Writing – review & editing. **Keng L. Siau:** Supervision, Writing – review & editing. **Fiona F. Nah:** Supervision, Writing – review & editing.

Ethics statements

This is a review and summary paper. No ethical issues.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.socimp.2024.100040.

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