

UNDERSTANDING THE INFLUENCE OF AI LITERACY ON OPINIONS FOR AI4SG

Ms. Rhea Joshi , Ms. Purvashri Bandekar

Assistant Professor, Navneet College,
Mumbai central, Mumbai, India.
rhea.joshi@nesedu.in

Assistant Professor, Navneet College,
Mumbai central, Mumbai, India.
purvashri.bandekar@nesedu.in

Abstract

This research investigates the potential of Artificial Intelligence (AI) in contributing to the accomplishment of the United Nations' 17 Sustainable Development Goals (SDGs), with an emphasis on the healthcare, education and employment sectors. Thus, AI for Social Good (AI4SG) refers to the use of AI technology to address global concerns and promote sustainable development across many industries. It may also address pressing social issues and encourage equitable growth by improving healthcare systems, providing access to high-quality educational material, and providing fair job opportunities in addition to training and development. However, wise use of AI is critical to ensuring that its advantages are dispersed equally and do not worsen existing inequities. Ethical AI standards are crucial for preventing prejudice, discrimination, and unjust outcomes in AI systems while also ensuring openness and accountability. Ethical AI standards are critical for minimizing bias, hatred, and unjust outcomes in AI systems while also ensuring transparency and accountability. Thus, AI literacy refers to the ability to understand the basic techniques and concepts underlying in AI used in different products and services. The aim of this paper is thus to explore the AI literacy levels of the general population. This research thus employs a survey method that is used to gather data from a diverse sample of the general population, aged 16 to 50, to assess public perceptions and understanding of AI's role in advancing SDGs. The questionnaire delves into key issues such as responsible AI use, ethical considerations, and the value of AI literacy in empowering individuals. The findings shed light on how AI is seen in the context of healthcare, education, and employment, as well as concerns about the ethical implications and potential impediments to adoption that they may be facing. The findings highlight the importance of extensive AI education, as well as the promotion of responsible, transparent, and accountable AI practices, to guarantee that AI contributes positively to long-term growth. This study emphasizes the significance of increasing AI literacy in order to create a more inclusive, informed, and equitable future. Finally, it advocates for a collaborative effort to appropriately use AI technology to advance the SDGs while promoting fairness, equity, and societal transformation.

Keywords: AI for Social Good (AI4SG) , AI literacy, United Nations' 17 Sustainable Development Goals (SDGs), Responsible Technology usage.

INTRODUCTION

Artificial intelligence (AI) is a branch of computer science that seeks to engineer robots capable of executing activities that traditionally require human intellect, this includes cognitive functions such as decision-making, pattern recognition, and language processing. AI-powered systems have become a vital aspect of a variety of industries, including healthcare, finance, education, banking, transportation, and entertainment. AI has made significant progress, with applications ranging from chatbots and self-driving cars to predictive analytics and machine learning-driven recommendation systems (Shi, Zhi Ruo, Chao Wang, and Fei Fang 2).

The UN defines social good as activities and initiatives that promote social wellbeing, often involving poverty reduction, education enhancement, better healthcare facilities, sustainability etc. These initiatives align with the UN 17 Sustainable Development Goals, which elucidate the need for collaborative efforts among governments, businesses, and non-governmental groups in tackling major global issues. According to (Tomašev 2), social good projects harness the power of technology along with corresponding legislative changes and with the help of international collaborations, to bring about significant and equitable improvements for communities worldwide. AI for Social Good (AI4SG) is a growing area that aims to use AI technology to address social issues and improve global well-being. AI4SG has a wide range of applications in various domains like Health includes disease prediction and enhance public health measures, under employment domain it includes job market analysis or addressing climate change and in educational domain expanding educational access, inclusivity etc. Thus, despite the lack of a globally accepted definition, AI4SG is often regarded as the ethical and responsible application of AI to address critical societal concerns. The topic has experienced increased interest from researchers,

governments, and companies, with successful initiatives covering sectors such as animal protection, disaster response, and disease prevention (Cows).

The ethical ramifications of AI's creation and application have emerged as a crucial topic of concern as the technology develops (Huma 1). Thus, the crucial need for ethical boundaries of AI to combat biasness, ethical issues and technology advancements clash, emphasizing the value of frameworks that put justice, inclusion, and human-centered design first by promoting greater use of accountability, transparency and fairness.

(Laupichler et al. 1) defined AI literacy as competencies that include basic knowledge and analytical evaluation of AI, as well as critical use of AI applications by non-experts. AI literacy thus refers to the ability to understand, evaluate, and engage with AI technologies effectively. It is an essential ability that enables people to make knowledgeable choices about the use of AI in their daily lives. Promoting ethical AI use and making sure that technology breakthroughs benefit society require an understanding of both the promise and limits of AI (Ng 2).

Thus, it can be said that AI is a powerful tool and can be used to great extent for the social wellbeing of communities, while one should keep in mind its ethical constraints too. However, the notion of the general public in ethical usage of AI technologies is a less explored topic. The study aims to understand whether 1) AI Literacy plays a role in the one's understanding of how it can be used for social benefit of the people and 2) What is the view of the general public (non-experts of AI usage) about AI and its usage. This research will thus assess AI literacy levels among the general population and analyze their perceptions of AI's role in achieving SDGs.

LITERATURE REVIEW

In the study given by Chan and Nurrosyidah, in (Chan et al. 30), have found how artificial intelligence can be used to break down world problems. The research pays attention to the facilities that artificial intelligence gives to improve social welfare by utilizing machine learning, neural networks, and automated decision making in areas like healthcare, education, and social services. To understand and assess the current literature on AI for social purposes, the researchers perform a bibliometric-systematic review to determine the important and basic research trends, and new areas of focus. A main difficulty of the research is the adjusting of access to and governance of AI technologies. Further, the paper discusses ethical problems such as imbalance in data, privacy, and the existing digital division that may create more social inequalities if not addressed appropriately. The significance of the study is the need for interdisciplinary collaboration for the design of AI for the benefit of low margin communities by social scientists, technologists, and policy makers. This literature review is convenient for informing researchers, practitioners, and policymakers on how to accomplish sustainable and inclusive development by summarizing current knowledge and identifying gaps between the literature.

Shi, Wang, and Fang's study "Artificial Intelligence for Social Good: A Survey" (Shi et al) presents a thorough examination of AI's role in tackling societal difficulties and uplifts well-being across many industries. The authors evaluate over 1,000 research papers on AI for Social Good (AI4SG) to provide a quantitative and conceptual review of how AI contributes to social impact. The report splits AI4SG applications into eight primary divisions: healthcare, education, environmental sustainability, countering misinformation, social care, urban planning, public safety, and transportation. It also discusses the progress of AI techniques employed in AI4SG research, with machine learning (ML) emerging as the controlling method, especially in healthcare and environmental conservation. The report mentions five major research issues that continue all over AI4SG applications, including data availability, ethical constraints, and algorithmic bias, as well as future research prospects. Further, the study stresses the value of interdisciplinary collaboration and stakeholder involvement in ensuring that AI-powered solutions are ethically aligned, egalitarian, and effectively implemented for social good. By drawing research trends and gaps, the study provides a core resource for researchers, policymakers, and exponents seeking to use AI for societal well-being.

In a study by Batole, Elephant and Bano (Batool et al) highlight the problems and constrained framework conditions related to responsible governance of AI. They highlight the fundamental problem of AI usage in medical, financial and social benefits in order to create transparency, account obligations and comprehensiveness (Batool et al.). It suggests a multi-level model to combat these issues at team level, organization level, industrial level, national and international level of management. This classification provides a structured approach to understanding various AI governments, from the company's main principles to the global regulatory frame. This study emphasizes that AI GOVERNANCE should use technological innovation to harmonize ethical responsibilities to prevent distortion, discrimination and opacity of the AI system. This study also highlights the gap between management mechanisms, participation of stakeholders, and compliance that in turn affect the ethical guidance in relation to the alphabet AI. The authors thus emphasize the need for general efforts among politicians who decide on decisions, researchers and technical developers. The review tested in this study provides important information on the regulatory approach necessary for the AI government, ethical considerations and social initiatives related to AI - CONTROLLING.

Another study investigated the ethical guidelines and suggested a systematic framework to ensure the ethical development of AI. Their research claims that although AI can tackle major societal issues, ethical factors must take precedence to reduce risks and unforeseen repercussions (Floridi et al. 2). They prescribed that initiatives within AI4SG should be transparent, responsible, and centered around human needs to conform to global ethical

norms and enhance social welfare. The research outlines seven critical factors required for crafting ethical AI aimed at social good. First being the falsifiability and incremental rollout, indicating verification to avert detrimental consequences. Secondly, to administer protective measures to avoid the manipulation of predictors, ensuring that AI models do not exacerbate biases or unethical behaviors. Thirdly, AI solutions to be relevant to their user contexts, adjusting its interventions to the social, cultural, and economic demands of various communities (Floridi et al. 6). Moreover, the necessity of transparency and explainability in AI decision processes, contending that AI models must yield clear and understandable outputs for users. They also emphasize the importance of protecting privacy and obtaining informed consent, mandating that AI systems honor user data rights and secure explicit permission prior to gathering personal data. In addition, situational fairness is also essential to guarantee that AI does not reinforce social disparities but instead encourages inclusivity and equitable results. Ultimately, AI should facilitate human-friendly semanticization, implying it ought to augment human decision-making rather than supplant it, thereby asserting AI's function as a collaborative instrument rather than an independent decision arbiter (Floridi et al. 8). They conclude that frameworks for ethical AI governance should encompass these seven factors to steer policymakers, developers, and organizations in the responsible application of AI4SG initiatives. They maintain that AI has the potential to serve as a powerful catalyst for positive transformation if administered with stringent ethical scrutiny and accountability. By delineating these principles, the research offers a thorough framework to reconcile AI's prospective advantages with its ethical challenges (Floridi et al. 12). Future investigations should build on these principles, exploring real-world case studies to assess their efficacy in advancing socially advantageous AI solutions.

In the study presented by Bondi et al. (Bondi, Elizabeth, et al 21) critically analyze the emerging field of AI for Social Good (AI4SG) and propose a community based framework to guide AI research and its effects on deployment. The authors have concluded that existing AI4SG initiatives frequently adopt a utilitarian perspective, prioritizing the majority community over the minority community. They instead found a method, in which affected communities worked and had played a major role in research. Their research is grounded in the capabilities approach, a framework that assesses human welfare by considering the substantive freedoms individuals possess to lead meaningful lives. Secondly the authors studied and presented the PACT framework (Participatory Approach to enable Capabilities in communiTies), which merges participatory design with including the capability theory. This model guarantees that AI development is combined with the participatory method and their satisfaction to do use it. The study obliges top-down AI interventions, underscoring that AI should not be given to the communities only, but should be developed with them. Understanding and evaluating the community's advice and suggestions, PACT establishes systems such as AI for social welfare which can create equality. Moreover, Bondi et al. underscore the increasing criticisms of AI4SG, observing that numerous projects characterized as "AI for good" frequently lack explicit ethical guidelines and accountability mechanisms. They emphasize that defining AI for social good necessitates more than technological solutions; it requires inclusive governance and ethical evaluation. The paper concludes by providing guiding questions for participatory AI research, encouraging AI practitioners to reconsider their role in society and engage with grassroots organizations, policymakers, and social scientists to ensure that AI truly serves the public good.

Berberich, Nishida, and Suzuki (Berberich, et al .613) concluded that harmony is the main framework for ethical considerations. the publishers made an "Takt"—an idea of tactful, context-aware action. This framework corresponds with wider discussions on AI ethical considerations, like Floridi and Cowl's (Floridi et al. 2) framework, which stresses beneficence, non-maleficence, autonomy, justice, and explicability. Nevertheless, Berberich et al. (2020) explained that harmony is to be an additional ethical tenet, especially in AI-driven human interactions. Their research also links to studies on AI as a societal catalyst, in order to encourage prosocial behaviors, enhance inclusivity, and effectively mediate human relationships. Considering the international and cross-cultural influence of AI, melding various ethical frameworks— blending Western notions with Eastern ideals such as harmony— can help create a more comprehensive and socially advantageous AI environment. This review underscores the necessity for more interdisciplinary research on AI ethics, highlighting the importance of AI literacy and public awareness to guarantee responsible and fair AI implementation.

METHODOLOGY

This study used a mixed-methods approach to evaluate the impact of artificial intelligence (AI) in fulfilling the United Nations' Sustainable Development Goals (SDGs), namely in the healthcare, education, and employment sectors. The study used a survey-based quantitative research approach to assess public opinions of AI and its implications for promoting social good.

Data Collection

A standardized questionnaire, SNAILS4ALL (Maria 35), was conducted to better understand non-experts' AI literacy. It has 52 components and can be administered to anyone aged 16 to 50. It had 4 subsets on What is AI? (Recognizing AI, Understanding Intelligence and Interdisciplinarity; General vs. Narrow); What can AI do?; How does AI work? and How should AI be used? The response type chosen was True/False that would help

understand the AI literacy of the sample. The questionnaire was distributed digitally to ensure broad accessibility and maximize participation.

SAMPLING AND PARTICIPANTS

The study employed a convenience sample method to target a broad demography, assuring representation from a variety of academic and professional backgrounds. Respondents were chosen from various areas to elicit a varied spectrum of viewpoints on AI's societal influence while adhering to age restrictions. This study included data from 38 people.

DATA ANALYSIS

Quantitative data analysis was carried out using statistical approaches, including Pearson's correlation analysis, to assess the link between AI literacy levels and perspectives of AI for social good. Descriptive statistics including mean, standard deviation, and frequency distribution were used to understand overall trends. A scatter plot was also created to show the relationship between AI literacy as well as opinions towards AI4SG.

ETHICAL CONSIDERATIONS

The study followed ethical research guidelines by requiring voluntary participation, informed consent, and the confidentiality of participant information. No personally identifiable information was gathered, and replies were anonymised to protect privacy.

RESULTS

The correlation analysis between AI literacy (mean=7.4, sd=1.67) and Opinions on AI for social good (mean=1.3, sd=0.82) revealed a moderate to strong positive relationship. As described in table 1, Pearson's correlation coefficient, the analysis yielded a value of $r = 0.69$ with a p-value of 0.029, indicating statistical significance ($p < 0.05$). This suggests that individuals with a higher understanding of AI concepts are more likely to have positive views on the use of AI for social good, and its applications in domains like education, healthcare, and financial inclusion. The scatter plot (figure 1) illustrates an upward trend, indicating a positive relationship of with participants with higher AI literacy scores expressing more positive opinions for AI usage in social good (assigned value 1) as compared to neutral opinions (assigned value 2) and negative opinions (assigned value 3) regarding AI's societal benefits. This finding emphasizes the importance of enhancing AI literacy to foster more informed and optimistic perspectives on AI's role in addressing social challenges.

Table 1: Correlation Analysis table of AI Literacy and Opinions on AI

Statistical analysis	Value
Mean AI Literacy Score	7.4
Standard Deviation (AI Literacy)	1.67
Mean Opinion Score	1.3
Standard Deviation (Opinion)	0.82
Pearson Correlation Coefficient (r)	0.69

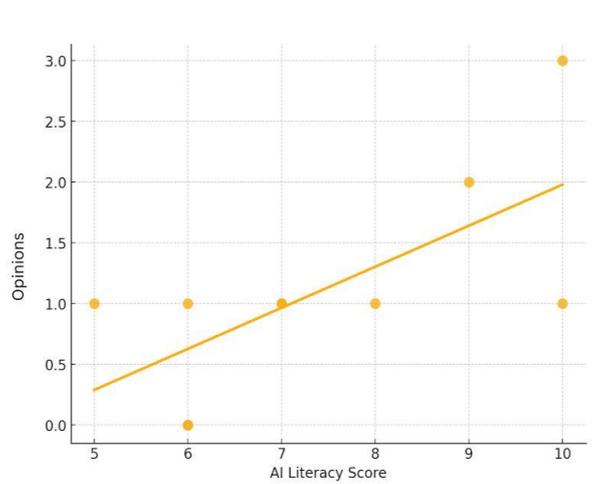


Figure 1: Scatterplot of AI Literacy and Opinions on AI

DISCUSSION

The results of this study indicate a positive co-relationship between AI literacy and positive assessment of AI's potential for social benefit. Participants with high scores on the AI literacy scale showed a stronger tendency to acknowledge the advantages of AI in essential sectors like education, healthcare, and financial inclusion (Tomašev 2). This implies that increasing public awareness on AI could lead to more supportive attitudes toward its ethical and responsible use in tackling societal issues. The strength of the correlation ($r = 0.69$, $p = 0.029$) emphasizes the vital role of AI literacy and awareness in influencing public opinions about technology and its effects on society since those with greater AI literacy tend to recognize AI's possible benefits while remaining aware of its ethical challenges and limitations. In contrast, misunderstandings and doubt were more commonly observed among participants with neutral or negative perspectives, underscoring the need for focused educational efforts to advance informed public conversations about AI's societal role.

One of the notable strengths of this study is the concentration on the less-underexplored area of research on the relationship between AI literacy and social good. By directly correlating knowledge levels with public attitudes, the research can provide useful insights for policymakers, educators, and technology developers seeking to advance responsible AI usage. Involving participants from varied backgrounds and professions further enriches the outcomes, yielding a more thorough understanding of public perceptions. And implementing a mixed-methods approach, including qualitative interviews, could also yield richer insights into the underlying factors influencing public perceptions and the role of education in molding these attitudes. But, nonetheless, a major limitation was a small sample size which limits the generalizability of these findings. Although statistical significance was reached, increasing the sample size in future investigations would improve the credibility and strength of the results.

Despite its limitations, this study makes a substantial contribution to understanding how AI literacy (Laupichler et al. 2) influences public attitudes regarding AI's role in fostering social good. It stresses the essential function of education in nurturing informed and constructive usage and understanding of emerging technologies, providing a basis for future initiatives aimed at closing knowledge gaps and promoting responsible AI integration into society.

CONCLUSION

The results show a significant positive relationship between AI knowledge and favorable opinions on AI's ethical and responsible uses, which reinforces the necessity for widespread AI education and AI literacy among the general population (RQ 1 & 2). Those with higher levels of AI literacy are more inclined to acknowledge AI's potential in promoting the United Nations' Sustainable Development Goals (SDGs), while individuals with limited understanding often display skepticism or doubt. In conclusion, this study highlights the significance of AI literacy in fostering a future where AI technology is used for sustainable development and social change. By emphasizing responsible AI application usage and enhanced education of AI among the public, we can create an inclusive and ethically grounded AI ecosystem that empowers individuals and promotes substantial progress toward global welfare.

Appendix

SNAIL4ALL (AI Literacy Scale Survey)

Section 1: Demographic Information

1. Name or Initials (Optional)
2. Age (Below 18, 18-25, 26-35, 36-50)
3. Occupation
4. Do you give your consent to use your data for this research? (Yes/No)

Section 2: Recognizing AI, Understanding Intelligence, and Interdisciplinarity

Indicate whether the following statements are True or False:

1. AI uses algorithms to learn from data and perform tasks that require intelligence.
2. The use of massive data helps some AI algorithms improve their performance.
3. AI is applied to recognizing human speech.
4. The ability to learn from experience is a feature of intelligence.
5. Human intelligence is the only form of intelligence that can be considered true intelligence.
6. The ability to use tools and manipulate the environment is a form of intelligence.

Section 3: General AI vs. Narrow AI

Indicate whether the following statements are True or False:

7. Artificial intelligence can be programmed to perform a wide range of tasks with precision and consistency, surpassing the specific abilities of children's intelligence.
8. The humanities have no place in artificial intelligence.
9. AI is a single technology.

10. Computer Vision is an example of an interdisciplinary AI technology.

Section 4: What AI Can Do?

Indicate whether the following statements are True or False:

11. Narrow AI defines algorithms that solve specific problems.
12. Task-specific AI is called narrow AI.
13. AI can be divided into specific sub-fields such as general AI and narrow AI.
14. Narrow AI systems are tailored to specific tasks and domains.
15. AI excels at performing well in complex environments, such as driving on crowded streets.
16. Because it is a cross-cultural topic, AI applies equally well across all countries.
17. High-stakes decisions are best left to AI because it is more neutral than humans.
18. Current AI systems are fully capable of performing complex associations as humans do.
19. AI is efficient in solving problems that involve emotions.

Section 5: How AI Works

Indicate whether the following statements are True or False:

20. Some AI systems can represent visual or auditory patterns.
21. Examples of knowledge representation include decision trees and Bayesian networks.
22. Knowledge representation plays a crucial role in machine learning by creating feature representations from raw data.
23. Rule-based systems are one example of how computers can reason.
24. Computers can only reason and make decisions in a way that is identical to how humans do.
25. Machine learning is used to predict, cluster, and classify large amounts of data.
26. Deep learning is a type of machine learning.
27. Machine learning algorithms learn from data.
28. In machine learning, datasets are frequently split into a training set and a test set.
29. Model selection is an important step in the machine learning process.
30. Biased data perpetuates social stereotypes.
31. Data is subject to interpretation.
32. Some data used in AI is constructed in a particular cultural setting, which can influence the outcome of models that use the data.
33. Since data is objective, machine learning models are unbiased.
34. The data used to train a machine learning model can be biased.
35. Bias in the data used to train a machine learning model can lead to biased outcomes.
36. Human oversight is necessary to ensure that AI systems are used ethically and responsibly.
37. The role of humans in AI development is limited to monitoring an AI system's performance.

Section 6: How Should AI Be Used?

Indicate whether the following statements are True or False:

38. Autonomous driving is an application area of AI.
39. Robots can not only act on the world but also react.
40. Microphones are a type of sensor that is used in robotics.
41. Sensors help a robot make sense of its environment.
42. Sensors are devices that detect and convert measurable physical properties into a digital format.
43. To achieve greater transparency, the source code, data use, and limitations of AI should be communicated.
44. AI must be created in accordance with democratic and societal issues.
45. It is necessary to develop and strengthen rules and laws, including the right to appeals, redress, or remedy for AI solutions.
46. AI should inform users of the underlying reasons and processes that may lead to potential harm.
47. AI developers, designers, institutions, or industry should be accountable for AI actions.
48. Privacy should be assured by AI design, access control, public awareness, and regulatory approaches.
49. AI development must be aligned with human values and human rights.
50. Trusted AI must include reliability, accountability, and processes to monitor and evaluate the integrity of AI systems over time.

Section 7: Opinions on AI

Indicate whether the following statements are True or False:

51. AI should not diminish or destroy human dignity but respect, preserve, or even increase it.
52. The benefits of AI must not threaten social cohesion and must respect potentially vulnerable persons and groups.

REFERENCES

- [1] Batool, Ayesha, Didar Zowghi, and Muneera Bano. "AI Governance: A Systematic Literature Review." *AI and Ethics*, 2025, <https://doi.org/10.1007/s43681-024-00653-w>.

- [2] Berberich, Nicolas, Toyoaki Nishida, and Shoko Suzuki. "Harmonizing Artificial Intelligence for Social Good." *Philosophy & Technology*, vol. 33, 2020, pp. 613-638.
- [3] Bondi, Elizabeth, et al. "Envisioning Communities: A Participatory Approach Towards AI for Social Good." *AAAI/ACM Conference on AI, Ethics, and Society*, 2021, pp. 19-21, <https://doi.org/10.1145/3461702.3462612>.
- [4] Chan, Carol, and Aini Nurrosyidah. "Democratizing Artificial Intelligence for Social Good: A Bibliometric–Systematic Review Through a Social Science Lens." *Social Sciences*, vol. 14, no. 1, 2025, p. 30, <https://doi.org/10.3390/socsci14010030>.
- [5] Cows, Josh, et al. "Designing AI for Social Good: Seven Essential Factors." *Oxford Internet Institute, University of Oxford*, 2019. SSRN, <https://ssrn.com/abstract=3388669>.
- [6] Floridi, Luciano, et al. "How to Design AI for Social Good: Seven Essential Factors." *Science and Engineering Ethics*, vol. 26, 2020, pp. 1-13. Springer, <https://doi.org/10.1007/s11948-020-00213-5>.
- [7] Huma, Zillay. "Navigating the Ethical Boundaries of Artificial Intelligence Innovation."
- [8] Laupichler, Matthias, et al. "Development of the 'Scale for the Assessment of Non-Experts' AI Literacy' – An Exploratory Factor Analysis." *Computers in Human Behavior Reports*, 2023.
- [9] Soto-Sanfiel, María, et al. "The Scale of Artificial Intelligence Literacy for All (SAIL4ALL): A Tool for Assessing Knowledge on Artificial Intelligence in All Adult Populations and Settings." *National University of Singapore*, 2024. Preprint.
- [10] Ng, Davy Tsz Kit, et al. "Conceptualizing AI Literacy: An Exploratory Review." *Computers and Education: Artificial Intelligence*, vol. 2, 2021, p. 100041. Elsevier, <https://doi.org/10.1016/j.caeai.2021.100041>.
- [11] Sheikh, Haroon, Corien Prins, and Erik Schrijvers. "Artificial Intelligence: Definition and Background." *Mission AI: The New System Technology*, Springer International Publishing, 2023, pp. 15-41.
- [12] Shi, Zheyuan, et al. "Artificial Intelligence for Social Good: A Survey." *Carnegie Mellon University*, 2020. arXiv, <https://arxiv.org/abs/2001.01818>.
- [13] Tomašev, Nenad, et al. "AI for Social Good: Unlocking the Opportunity for Positive Impact." *Nature Communications*, vol. 11, 2020, p. 2468, <https://doi.org/10.1038/s41467-020-15871-z>.