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Study on the Requirements for AI Development and Operation Ethics Centered on Children

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Abstract

In recent years, the use of artificial intelligence (AI) has become widespread in society, and the need for ethical considerations regarding its development and operation has been discussed. However, despite the fact that those considerations are equally important for both adults and children, discussions on ethical guidelines based on the impact of international AI on children have not progressed. This study examined the requirements for child-centered AI ethics guidelines based on the United Nations' "Children's Rights Convention." As a result, it became clear that it is necessary to develop AI based on the child's developmental stage, secure a usage environment, and educate the government and industry about the peculiar characteristics of children.

Keywords: Children, Artificial Intelligence (AI), Ethics Guidelines, UNCRC, Rights and Protection

1. Introduction

Artificial intelligence (AI) fundamentally changes the world and affects children, who already communicate using AI technology incorporated into smart toys, video games, chatbots, etc. However, AI also poses risks for children's privacy, safety, and security. For example, the algorithm bias that AI uses provides information that is advantageous or disadvantageous only to specific children, and the risk of hacking and security problems via AI toys cannot be disregarded.

The formulation of child-centered AI ethics guidelines is necessary to ensure appropriate protection for children by balancing the advantages obtained from AI against the new ICT risks that it poses. The UN Secretary-General's High-level Panel on Digital Cooperation (2019) mentioned that there is a need to "rethink our understanding of human dignity and agency, as algorithms are increasingly sophisticated at manipulating our choices."

Various institutions such as international policy organizations, governments, academia, industry groups, and companies have set AI development and operation guidelines to deal with the problems that arise from AI use. For example, the "Principles on Artificial Intelligence"

formulated by the Organization for Economic Cooperation and Development (OECD) (2019) and the "Ethically Aligned Design" by the Institute of Electrical and Electronics Engineers (IEEE) (2017) mention respect for human wellbeing and human rights. Japan's Ministry of Internal Affairs and Communications (2019), has also formulated guidelines for AI utilization and guidelines based on human-centered AI social principles have been established for businesses that develop and use AI to conduct activities.

However, in today's digital age, children's rights need careful attention. This is because children are interacting with and affected by AI systems that are not designed for them (UNICEF, 2020). Moreover, there is no certainty that current policies adequately address AI's impact on children. In addition, it is unclear how they interact with AI and it affects them. The dramatic impact of AI, for better or worse, can change children's daily lives.

2. Previous Research

Focusing on previous research on AI development and operational guidelines, IEEE launched the Global Initiative on Ethics of Autonomous and Intelligent Systems in 2016 to publish ethically consistent AI design principles. The Asilomar AI Principles proposed by The Future of Life Institute mention a series of studies, ethics, and values for safe and socially beneficial AI development. These efforts aim to bring together experts, practitioners, and citizens globally to build a common understanding of concepts such as the explainability of AI. Thus, various stakeholders have developed guidelines that include human values and rights, including non-discrimination, awareness and management, access to data, privacy and management, safety and security, skills, transparency, and accountability.

Looking at the efforts in Japan, the Ministry of Internal Affairs and Communications' "AI Utilization Guidelines" states that by coexisting with the AI network, the benefits of human beings are universally enjoyed by all, human dignity and individual autonomy are respected, and it aims to realize a human-centered society (Ministry of Internal Affairs and Communications, 2019). The "Ethical Guideline" established by the Japanese Society for Artificial Intelligence (JSAI) (2017) requires ethical compliance in AI development from the perspective of contributing to humankind.

On the other hand, the European Commission High Level Expert Group on AI (HLEG) (2019), an international organization, has established the "Ethics Guideline for Trustworthy AI" which focuses on ensuring respect for human freedom and autonomy. Humans who interact with the system want to be able to maintain complete and effective self-determination and participate in democratic processes. Tenets' Partnership on AI, consisting of Amazon, DeepMind/Google, Facebook, IBM, and the Microsoft Global Business Alliance, is a study of AI for maximizing the

benefits of AI and addressing the potential challenges of the technology. It stipulates that the technology community respects international treaties and human rights, protects personal privacy and security, understands the interests of all parties who may be affected by the development of AI, and maintains awareness of the potential impact of AI technology on society.

However, the existing guidelines are mainly aimed at adults, and there are few studies on children. Therefore, UNICEF (2020) published a report titled “Policy Guidance on AI for Children,” which indicates the policy direction for addressing the opportunities and risks posed by AI for children. However, this report does not provide stakeholders with specific approaches as guidelines. Therefore, this paper examines the direction of AI development and operational ethics guidelines based on the phenomenon that the operation of AI will affect children.

3. Study Concept

3.1. UNCRC, the Basis of Child Protection Policy

To consider ethical guidelines that reflect AI’s impact on children, it is meaningful to refer to previous efforts in a close policy area. In particular, since the policies of international organizations promote cooperation among countries and guide policies in a harmonious direction, this session overviews a similar policy area, as a policy recommendation on the ICT use environment in international organizations, as a policy on Internet youth protection.

The OECD (2012) formulated the “Council Recommendation on the Protection of Children Online” to show the international community the policy direction for protecting children as Internet users. In principle, the recommendation is that all stakeholders build a secure Internet environment, to protect young people and educate them to become responsible digital citizens. This recommendation stipulates empowerment of children and parents, the balance between respect and protection of rights, and flexible policy response as the principles for implementing Internet youth protection policies.

In addition, the Council of Europe (2018) formulated “Recommendation CM/Rec (2018) 7 of the Committee of Ministers to member states on guidelines to respect, protect and fulfill the rights of the child in the digital environment.” The recommendation mentions the need for protection with respect to children's right to use the Internet and their right to express themselves and participate through the Internet, and sets the policy direction for the member states.

Both the OECD recommendations and the Council of Europe recommendations are based on the United Nations Convention on the Rights of the Child (UNCRC) (1989), and these policy principles are common. This treaty stipulates the need for children’s wellbeing, rights, and protection in the diverse environment surrounding them, which is also required in the AI usage environment. In addition, the United Nations International Children's Emergency Fund (UNICEF), which carries out policy activities to protect the lives and rights of children, has released "Policy

guidance on AI for children," which provides guidance on children's AI based on the UNCRC. This guidance summarizes the requirements for the application of AI in society from the standpoint of child wellbeing and protection (UNICEF, 2020).

Therefore, in this paper, we examine the requirements for AI ethics guidelines centered on children, based on the treaty of the UNCRC.

3.2. AI Ethics Guidelines in Japan

At present, the guidelines on AI ethics formulated by government agencies include those by the Cabinet Secretariat Integrated Innovation Strategy Promotion Council and the Ministry of Internal Affairs and Communications AI Network Society Promotion Council. The "AI Utilization Guidelines" developed by the Conference Toward AI Network Society (2019) organized by the Ministry of Internal Affairs and Communications, are ethical guidelines for AI service providers and business users (Ministry of Internal Affairs and Communications, 2019). On the other hand, the "Human-Centered AI Social Principles" formulated by the Cabinet Secretariat Integrated Innovation Strategy Promotion Council stipulate three basic principles toward the realization of an "AI-Ready" society; human dignity, diversity, and sustainability (Cabinet Secretariat, 2020).

In this way, the Ministry of Internal Affairs and Communications' AI utilization guidelines can be said to focus on businesses, and the Cabinet Secretariat's human-centered AI social principle develops in harmony with society and AI, focusing on the principles for AI and respect for the human rights of people living in AI-based societies¹. Based on this, as a national policy of Japan, the Principle of the Cabinet Secretariat will be used as material for examining children's social utilization of AI.

3.3. Direction of Comparative Verification

This study analyzes the contents of each of the following principles: UNCRC, which defines the direction of international policy on children's rights, the UNICEF guidance statement, which shows the direction of child protection in the AI society based on the UNCRC, and the Principle of the Cabinet Secretariat, which shows the direction of respect for human rights of the people in the AI community in Japan. From the results, this study aims to structurally visualize the consideration for children, which is lacking in the Cabinet Secretariat Principles.

4. Requirements for AI Development Ethics Guidelines Based on UNCRC

¹ It can be said that the consideration businesses give children should also be verified. For this reason, the AI Utilization Guidelines of the Ministry of Internal Affairs and Communications will be regarded as a future verification instrument.

4.1. UNCRC Text Structure

UNCRC is broadly divided into "the right to live," "the right to grow up," "the right to be protected," and "the right to participate" to consider the relationship between these rights and the AI environment from the perspective of children's involvement in AI. As components of the rights required for AI ethics guidelines centered on children, these can be defined as: "the right to live in the AI society," "the right to grow up with AI," "the right to be protected from AI risks," and "the right to participate in AI."

The right to live in an AI society requires that the lives of all children be protected in a society where the use of AI is a prerequisite. As the related treaty is Article 6, the rights to resources necessary for child life, survival, and development would be applicable.

The right to grow up with AI requires the right to education, medical care, and play for children of all ages in the AI society. The following are related to treaty texts: Article 8: Name, identity, nationality, family relations; Article 17: the right to access information and promote social, mental, and moral happiness, and physical and mental health; Article 28: the right to education; Article 30: minority, religion, language minority children, or indigenous children's right to enjoy their culture, religion, and language; Article 31: the rights to rest, play, recreation, and enjoy leisure.

The right to be protected from AI risks requires that children be actively protected and safe from discrimination, exploitation, and attack by AI systems. The relevant text is as follows: Article 2: the right to be protected from discrimination of all kinds; Article 16: the right to be protected from arbitrary or illegal interference with privacy, family, or communications, or with illegal attacks on him or his honor and reputation; Article 17: the right to be protected from harmful information; Article 19: the right to be protected from all forms of physical or mental violence, injury, or abuse and neglect, including sexual abuse; Article 34: the right to be protected from sexual exploitation and sexual abuse; Article 35: the right to be protected from human trafficking; Article 36: the welfare of children should not be infringed by exploitation; Article 37: the right to be protected from torture and inhumane punishment; Article 39: the right to support the physical and mental recovery and reintegration of victims of neglect, exploitation, and abuse.

The right to participate in AI identifies that children must be given equal opportunities by AI. The relevant text is as follows: Article 12: The right to be consulted on all matters that affect children; Article 13: the right to freedom of expression; Article 14: the right to freedom of thought; Article 15: the right to freedom of association and participation in peaceful meetings; Article 17: the right to access information; Article 31: the right to freely participate in cultural life and art; Article 31: the rights to rest, play, recreation, enjoy leisure, etc.

4.2. Requirements of UNICEF Guidance

This session overviews the requirements for AI that are sought after by the UNICEF Guidance. The UNICEF Guidance lists nine requirements to protect children's rights.

“Support children’s development and wellbeing” requires the use of AI to maximize children’s potential and support their development and wellbeing. “Ensure inclusion of and for children” requires all children to have the opportunity to be protected and participate. “Prioritize fairness and non-discrimination for children” requires AI to be for all children. “Protect children’s data and privacy” requires the protection of children's data and privacy as they interact with AI. “Ensure safety for children” requires ensuring safety in the AI use environment. “Provide transparency, explainability, and accountability for children” requires that AI be aware of its impact and be responsible for it by ensuring transparency and accountability. “Empower governments and businesses with knowledge of AI and children's rights” requires providing governments and businesses with knowledge of children's rights for increasing the effectiveness of securing those rights. “Prepare children for present and future developments in AI” requires securing educational opportunities for children on AI. “Create an enabling environment” requires the development of an environment that enables AI centered on children.

4.3. Principles of Cabinet Secretariat

This section provides an overview of the principles of the Cabinet Secretariat as AI ethics guidelines by the Japanese government. The "Human-Centered Principles" stipulate that the use of AI must not violate the basic human rights guaranteed by the Constitution and international norms. The "Principles of Education and Literacy" stipulate that the environment for education on AI must be provided equally to all. The "Privacy Ensuring Principles" stipulate that personal data must be handled so that individuals will not be disadvantaged if they are distributed or used in a way that they do not want. The "Principle of Ensuring Security” stipulates that one must always pay attention to the balance between the benefits and risks of AI and strive to improve the safety and sustainability of society as a whole. The "Principle of Ensuring Fair Competition” stipulates that a fair competitive environment must be maintained so that new businesses and services can be created, sustainable economic growth can be maintained, and solutions to social issues can be presented. The “Principles of Fairness, Accountability, and Transparency” ensure that fair and transparent decision-making and accountability for its consequences are appropriate so that people are not subject to unfair discrimination or treatment, and stipulate that the reliability of the technology must be ensured. The "Principle of Innovation” stipulates the promotion of thorough internationalization and diversification and industry-academia-government-private partnership from both the human resources and research perspectives.

5. Comparative verification

This section compares and examines UNCRC, UNICEF Guidance, and the Cabinet Secretariat Principles to clarify issues that are insufficiently addressed in Japan's AI policy from the perspective of children's rights and protection. Table 1 shows the correspondence between the UNICEF Guidance and the Cabinet Secretariat Principles, centering on the three rights of the UNCRC.

Looking at the correspondence between UNICEF and the Cabinet Secretariat from the perspective of UNCRC's "right to live," the respect for basic human rights mentioned in UNCRC can be seen in both UNICEF and the Cabinet Secretariat. However, UNCRC and UNICEF attach great importance to respect for human rights based on children's developmental stage. Children's weak judgments can lead to risk development factors. Minors have an underdeveloped ability to control emotions (Giedd, 2015) and are not accustomed to making calm decisions about risk (Jensen & Nutt, 2015). Due to their inexperience in the real world, they are also not aware of how to deal with various problems (Livingstone, et al., 2016, Livingstone, et al., 2017). For this reason, the AI policy also requires respect for human rights according to children's developmental stage.

Considering the correspondence between UNICEF and the Cabinet Secretariat from the perspective of "right to grow up," UNCRC and UNICEF mention the right to grow up from the perspective of basic human rights, which is also in line with the Cabinet Secretariat. For instance, the right to education at UNCRC (Article 28) also corresponds to UNICEF and the Cabinet Secretariat. It should be noted that Article 31 of the UNCRC focuses on child-specific "play, recreation and leisure," and UNICEF also mentions play as "children's wellbeing" in Requirement 1. However, such important matters peculiar to children are not mentioned in the Cabinet Secretariat Principles.

Considering the correspondence between UNICEF and the Cabinet Secretariat from the perspective of "rights to be protected," UNICEF and the Cabinet Secretariat mention ensuring privacy and security. However, the Cabinet Secretariat has not made sufficient mention of "child safety," which UNCRC and UNICEF focus on.

Considering the correspondence between UNICEF and the Cabinet Office from the perspective of "right to participate," "freedom of expression," "freedom of thought," "freedom of association," "right to access information," and "right to participate in cultural activities," which are the UNCRC's focus, these are rights that should be considered regardless of age. UNICEF takes a similar position, as "inclusion for children." These could be superimposed on the "human-centered principles" of the Cabinet Secretariat.

On the other hand, although not in the UNCRC text, there are requirements for ensuring children's rights as mentioned in UNICEF. UNICEF Guidance stipulates "Empower governments and businesses with knowledge of AI and children's rights." This requirement will be positioned

as an important issue for the industry that provides AI to promote securing children's rights by considering their developmental stage and providing knowledge to governments and companies.

Table 1: UNCRC, UNICEF Guidance, Cabinet Secretariat Principles Mutual Correspondence Table

| Category | UNCRC | | UNICEF | | Cabinet Secretariat | |
|---|-------|---|--------|--|---------------------|--|
| | No. | Rights | No. | Requirements | No. | Principles |
| The right to live in the AI society | 6 | The rights to resources necessary for child life, survival, and development | 1 | Support children's development and wellbeing | 1 | Human-centric |
| | | | 9 | Create an enabling environment for childcentred AI | | |
| The right to use AI | 8 | Name, identity, nationality, family relations | 1 | Support children's development and wellbeing | 1 | Human-centric |
| | 17 | The right to access information and promote social, mental and moral happiness, and physical and mental health | | | | |
| | 28 | The right to education | 8 | Prepare children for present and future developments in AI | 2 | Education |
| | 30 | Minority, religion, language minority children, or indigenous children's right to enjoy their culture, religion, language | 1 | Support children's development and wellbeing | 1 | Human-centric |
| | 31 | The right to rest, play, recreation, enjoy leisure | | | | |
| The right to be protected from AI risks | 2 | The right to be protected from discrimination of all kinds | 3 | Prioritize fairness and non-discrimination for children | 6 | Fairness, Accountability, and Transparency |
| | 16 | The right to be protected from arbitrary or illegal interference with privacy, family, or communications, or | 4 | Protect children's data and privacy | 3 | Privacy |
| | | | | | 4 | Security |

| | | | |
|--------------------------------|---|--|---|
| | with illegal attacks on him or his honor and reputation | | |
| 17 | The right to be protected from harmful information | 5 Ensure safety for children | — |
| 19 | The right to be protected from all forms of physical or mental violence, injury or abuse, neglect, including sexual abuse | | — |
| 34 | The right to be protected from sexual exploitation and sexual abuse | | — |
| 35 | The right to be protected from human trafficking | | — |
| 36 | The welfare of children should not be infringed by exploitation | | — |
| 37 | The right to be protected from torture and inhumane punishment | | — |
| 39 | The right to support the physical and mental recovery and reintegration of victims of neglect, exploitation, and abuse | | — |
| The right to participate in AI | 12 The right to be consulted on all matters that affect children | 6 Provide transparency, explainability, and accountability for children | 6 Fairness, Accountability, and Transparency |
| | 13 The right to freedom of expression | 2 Ensure inclusion of and for children | — |
| | 14 The right to freedom of thought | | — |

| | | | | |
|---|----|---|---|---|
| | 15 | The right to freedom of association and participation in peaceful meetings | | – |
| | 17 | The right to access information, Article 31: the right to freely participate in cultural life and art | | – |
| | 31 | The right to rest, play, recreation, enjoy leisure | | – |
| – | – | 7 | Empower governments and businesses with knowledge of AI and children's rights | – |

6. Conclusion

This study compared and verified the policies of UNCRC, UNICEF, and the Cabinet Secretariat, and examined the requirements for AI ethics guidelines that assume the use of and impact on children. As a result, it became clear that the AI principles of the Cabinet Secretariat could not be fully included in dealing with the happiness and risks posed by children's AI. In particular, it can be said that it is necessary to develop AI based on children's developmental stage and provide an environment for its use, and it is necessary to secure an environment where children can "play" "safely" and "freely" in the AI society.

Furthermore, it is necessary to provide the government and industry with knowledge about such matters that should be especially oriented toward children and the characteristics peculiar to children to raise their awareness. For that purpose, it will be necessary to systematically summarize the status of government and industry efforts toward children regarding the impact of AI and the challenges in making such efforts. This issue will be addressed in future studies.

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