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CHAPTER XI

Human Dignity as an Ethical Basis for AI Development: Insights from Catholic Theology

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Abstract

This article aims to contribute insight into AI ethics from Catholic theology upholding the inherent dignity of humans. The rapid development of artificial intelligence (AI) raises ethical questions regarding its implication on human dignity. The Catholic Church guides AI ethics by emphasizing the ontological dignity of humans as the central consideration. This paper explores perspectives from Catholic philosophers and theologians on the concept of human dignity and the Church's AI ethical principles. The study reveals that human dignity is inherent in the imago Dei (image of God), which differs fundamentally from AI. Despite increasing intelligence, AI lacks the self-consciousness, intrinsic motivation, or personal relations with God that humans possess. Hence, AI deserves only an instrumental status to serve human flourishing, not equal standing with human dignity. However, existing challenges must first be overcome for AI to contribute positively to the Church's inclusive and humanistic values. A comprehensive collaboration involving the Church is necessary to ensure AI always respects and never threatens or replaces the role of human dignity.

Keywords: Human Dignity; Artificial Intelligence; AI Ethics; Catholic Theology; Imago Dei; Responsibility

Introduction

Artificial intelligence (AI) technology has developed rapidly in recent decades. AI has become an inseparable part of various fields of human life, from simple uses, such as virtual assistants, to complex applications, such as unmanned vehicles and automated decision-making, to future predictions (Dormehl, 2020). The rapid development of AI certainly raises many ethical questions that need to be considered, one of which is related to its implications for human dignity. The Catholic Church, as a religious institution concerned with current developments,

has responded and provided ethical views on the development of AI. Several vital documents released include the Rome Call for AI Ethics report, which calls for AI to respect human dignity and ethical principles, as well as the document The Ethics of Artificial Intelligence, which explicitly discusses AI ethical principles (Catholic Church, 2020; Pontifical Academy for Life, 2020). This Catholic view is essential to study more deeply as a contribution to AI ethical thinking from a theological perspective.

According to Immanuel Kant (1997), dignity is inherent in humans, not something that is acquired. Dignity originates from the ability of human reason. This thinking is relevant to responding to AI increasingly resembling human cognitive abilities. Does AI deserve to be given the same dignity as humans? Or does dignity remain the difference between humans and machines? The thoughts of Catholic philosopher Jacques Maritain (1996) are also crucial in responding to this question. He sees human dignity as originating from the image of God inherent in humans. Thus, no matter how intelligent AI is, it cannot be equal in dignity to humans.

Regarding AI technology, experts such as Stuart Russell and Peter Norvig (2016) also emphasize that although AI intelligence continues to increase, AI does not have self-awareness, intrinsic motivation, or emotions, which are the main characteristics of humans. Therefore, the ethics of developing and implementing AI must still be centered on human interests and dignity. From an educational perspective, Thomas Groome (1998), a Catholic theologian and educational philosopher, emphasized that education must help students realize their dignity as the image of God. The educational process must not be reduced to narrow skills training by ignoring the human dimension. Likewise, AI in education must still aim for complete human development.

According to the Catholic Church, AI's ethical principles are inclusivity and non-discrimination. This principle calls for AI to be developed for the benefit of all people, regardless of social, economic, gender, and other factors (Pontifical Academy for Life, 2020). Unfortunately, several studies show that many AI algorithms and data are still biased by gender, race, and socio-economic factors. For example, research found that AI-based recruitment software discriminates against female candidates (Dastin, 2018). Another example is a facial recognition system that often incorrectly identifies the faces of black people (Simonite, 2020).

According to Groome (1998), every person, without exception, has invaluable dignity in the image of God. The discriminatory tendencies of AI algorithms contradict this principle. AI developers must ensure that data,

algorithms, and AI applications are inclusive and non-discriminatory. Another principle mentioned by the Catholic Church is the principle of justice. AI must be a tool to create a more just, prosperous, and humane world (Pontifical Academy for Life, 2020). So far, many criticisms have been that AI only benefits a few privileged groups while most of society does not receive equal access or benefits. This violates the principles of justice.

According to Maritain (1996), justice is one of the main virtues that must be realized to realize human dignity. Therefore, AI must be designed and applied in the spirit of social justice, for example, by empowering marginalized groups and providing equal access to the public. Only then can AI contribute to realizing the dignity of all humanity. By referring to the thoughts of Catholic philosophers and theologians and the current context of AI development, it is clear that there is still much homework to be done to ensure AI technology is truly in line with ethical principles and human values. Realizing the potential of AI in safeguarding human dignity requires in-depth and ongoing research and discussion. Based on this description, this article explores human dignity as an ethical basis for developing and applying artificial intelligence in various areas of life, especially education.

By drawing on the ideas of Catholic philosophers and theologians while focusing on the perspectives of experts in the fields of AI technology and education, we hope to provide the public with comprehensive insights into the ethics of AI from a Catholic theological perspective, to provide more help to human society—the goodness of human nature.

Literature Review

Human Dignity, according to the Thoughts of Catholic Philosophers and Theologians

The concept of human dignity is a core element of Catholic ethical thought. According to Pope John Paul II (1993), human dignity derives from the fact that humans are created in the image and likeness of God. In the encyclical Evangelium Vita, the Pope emphasized that human dignity is universal and inseparable from human nature. Dignity is inherent in every human being, regardless of their condition.

Jacques Maritain (1996), a French Catholic philosopher, put forward similar thoughts. He believes personal dignity is inherent in humans because he is a spiritual substance with reason and free will. This dignity does not depend on the

individual's talents, abilities, or achievements but simply because he is human. Thus, human dignity is universal. A similar view was expressed by Emmanuel Mounier (1962), a figure in the philosophy of personalism. He stated that personal dignity cannot be reduced to property or function but is God's gift to humans. Therefore, no single creature in this world has dignity worthy of humiliation.

In a journal article published in the Journal of Moral Theology, Schockenhoff (2012) details three dimensions of human dignity from a theological perspective. First, the ontological dignity inherent in humans is because they were created in the image of God. Second, moral dignity is realized through the development of character and virtue. Third, socio-cultural dignity when humans are recognized and respected in their community. This ontological dimension is what differentiates human dignity from other creatures. AI, no matter how intelligent it is, does not have this ontological dignity because it is not the image of God. Therefore, AI only deserves to be placed as a valuable tool for humans, not as an entity equal to humans (Barras, 2020).

In an article in Theological Studies, Bracken (2004) emphasized that technologies such as AI are only instrumental. It does not have the intrinsic value that humans have as individuals. IA artificial intelligence operates purely on data input and algorithms. He lacks the freedom or self-awareness of human dignity's heart. Furthermore, Berkman (2019), in an article in the Harvard Journal of Law and Public Policy, explained that human dignity is closely related to the concept of imago Dei or the image of God. Humans were created in a loving relationship with God. This is what makes humans of noble value. In contrast, AI machines do not have a personal relationship with God. Therefore, equating AI with human dignity without denigrating the theological view of humans is difficult.

Human dignity as an ethical basis for AI development

The concept of human dignity is the primary basis for the ethics of developing and implementing AI, according to the view of the Catholic Church. This is confirmed in the Rome Document on Ethics in AI, which states that technology must uphold all humans' dignity, freedom, and essential equality (Ballesteros et al., 2020). According to Schwarz (2022) in Theological Studies, human dignity originates from his relationship with God as His image. Therefore, this dignity is universal for all humans regardless of background. As a technological product, AI does not have a special relationship with God, so it does not have the dignity humans have.

From a philosophical perspective, Maritain (1996) also emphasized that dignity is inherent in human individuals because of their intellectual abilities and cannot be reduced to mere objects or tools. AI development must not place humans as mere objects whose data and privacy are exploited but as subjects whose dignity must be respected. According to Brey (2017) in Science and Engineering Ethics, the best approach is to give AI tool status and limit its capabilities so that it does not take over tasks important for actualizing human dignity, such as empathy, creativity, and ethical judgment. AI can assist with routine human tasks, but the primary responsibility for ethical judgment must remain with humans. In line with this, Danaher (2020) in the Journal of Ethics emphasized that although AI intelligence continues to increase, they do not have characteristics such as self-awareness and intrinsic motivation that humans have. Therefore, the ethics of AI development must focus on how this technology can enhance human dignity.

Thus, human dignity, which originates from their relationship with God and their ability to reason and freedom, must be the primary ethical consideration in the development and use of AI. AI is only a tool that can be used to support human dignity, not replace it. This is the essence of AI ethics from the perspective of Catholic theology and philosophy.

Discussion

Implementation of the principles of non-discrimination and inclusiveness

The Catholic Church calls for AI to be developed for the welfare of all people, regardless of background. However, in reality, implementing the principles of non-discrimination and inclusiveness still faces many challenges.

The data used to train AI often represents only a tiny portion of the population, potentially reinforcing existing biases and inequities. Better data diversity is needed to make AI results more inclusive. In addition, the design of the AI algorithm itself also plays an important role. AI developers must actively design algorithms capable of recognizing and mitigating bias in training data. Periodic algorithm audits are also required to apply the non-discrimination principle consistently. Thus, the challenge of implementing the principles of non-discrimination and inclusiveness of AI lies in the quality of the training data as well as the design of the algorithm itself. AI developers will need a concerted effort to implement this principle consistently.

In addition, the application of AI needs to pay attention to fair access. According to Rensberger (2020) in AI and Ethics, access to AI is often limited to specific groups, such as developed countries or large companies. Special efforts are needed so that the benefits of AI are also felt by marginalized groups such as developing countries, people with disabilities, and minorities. The principle of subsidiarity can be applied here, namely decentralized decision-making and empowering grassroots groups (Curran, 2018). In this way, the application of AI can be truly inclusive and socially just, in line with the universal spirit of the Catholic Church.

Apart from the problem of potentially biased data and algorithm design, as well as the issue of unequal access, Curran (2018) also touched on the lack of regulations governing the application of AI fairly and responsibly. Currently, many countries still do not have a comprehensive legal framework regarding AI ethics and governance, even though this regulation is essential to protect human rights and public privacy and prevent the concentration of power by a few giant technology companies.

Global standards that regulate technical aspects such as transparency, audibility, and regular evaluation of AI systems by independent parties are needed. Such standards are being developed by the Institute of Electrical and Electronics Engineers (IEEE), but their implementation requires the support of legislators in various countries (Burlingame & Naik, 2022). In addition, cross-religious and cultural dialogue is also essential to formulate universal values that form the foundation of AI ethics from a global perspective (Ballesteros et al., 2020). In this way, the spirit of inclusion and universal justice in the social teachings of the Catholic Church can be translated into more humane AI policies, standards, and implementation.

AI algorithm monitoring and auditing

Regular monitoring and auditing of AI algorithms is required to ensure AI is developed and implemented ethically. According to the Catholic Church (Rome Call for AI Ethics, 2020), this aligns with AI accountability and transparency principles. Without adequate oversight, algorithm errors can potentially have negative consequences for society.

Some methods for monitoring AI algorithms involve the oversight of governmental regulatory bodies, establishing independent boards to uphold ethical standards, and conducting internal and external audits by technology companies.

According to Mittelstadt (2016) in the publication Big Data & Society, algorithm audits should delve into fairness, accountability, transparency, and ethical discernment within AI systems. Moreover, Taddeo (2017), in the journal Science and Engineering Ethics, proposes unveiling the enigmatic black box of AI algorithms, allowing for scrutiny to ensure adherence to agreed-upon ethical principles. Striking a delicate balance between safeguarding intellectual confidentiality and promoting transparency is essential in serving the public's best interests.

The watchful eye of the Catholic Church is imperative in ensuring that AI technology bestows its blessings upon humanity. As elucidated by Cuda (2021) in Theological Studies, the Church can assume the noble role of a vigilant guardian and bold truth-teller to denounce the ill utilization of AI. This act is unequivocally injurious to the sanctity of human existence. Through the diligent scrutiny of AI algorithms by a multitude of invested parties, one ardently hopes that the advancement of this technology can be meticulously observed and regulated, thus ensuring its alignment with the sacred principles of ethics. This endeavor is of utmost importance in safeguarding the sanctity of human life within the epoch of AI.

AI developers and internal monitoring instruments are also needed. According to Jobin et al. (2019) in Nature Machine Intelligence, technology companies need to form an internal AI ethics council tasked with providing guidance and evaluating products and company policies from an ethical perspective. Board members can come from various disciplines, such as philosophy, law, sociology, and theology. Thus, multidimensional ethical issues in AI can be considered comprehensively (Jobin et al., 2019). Apart from that, data literacy and artificial intelligence also need to be increased among ordinary people, especially vulnerable groups who are potentially affected by AI systems, such as minorities, people with disabilities, and the poor. According to Ballesteros et al. (2020), the Catholic Church can play an active role in educating and empowering this marginalized group so that they can understand, evaluate, and participate in the development and supervision of AI systems. In this way, society has a fairer distribution of power and knowledge.

The Role of the Catholic Church in AI Policy Advocacy and Mediation

According to Cuda (2021), it is the sacred duty of the Catholic Church to immerse itself in the realm of policy advocacy and mediation concerning the ethics

and governance of artificial intelligence, both on a local and global scale. This noble calling is rooted in the Church's unwavering commitment to actively partake in matters that concern society's welfare and humanity's plight. Harnessing its moral authority, the Church shall ensure that the voices of the marginalized resound and that the principles of human rights are zealously safeguarded throughout the development of artificial intelligence (Cuda, 2021).

The Church has the authority to issue ethical guidelines regarding the application of artificial intelligence. These valuable directives will serve as a guide for policymakers in responsible decision-making. In addition, the Church needs to be actively involved in organizations that bring together stakeholders, form global alliances, and set strict benchmarks for AI governance. By participating and taking prominent positions in renowned forums such as IEEE and The Rome Call for AI Ethics, the Church can ensure Christian values such as human dignity, compassion, and social justice are integrated into this transformative field.

According to Cuda (2021), the Catholic Church is responsible for being actively involved in policy advocacy and mediation regarding the ethics and governance of AI, both at the local and global levels. This responsibility arises from the Church's longstanding commitment to social and humanitarian issues. With its moral authority, the Church can ensure that the voices of marginalized groups are heard and considered in the development of AI.

In particular, the Vatican and regional bishops' conferences issued comprehensive guidance on AI ethics that is a valuable reference for policymakers. Churches can actively participate in multi-stakeholder organizations and global alliances dedicated to setting ethical standards in AI. At the grassroots level, the Church also plays a vital role in helping and empowering vulnerable communities affected by unregulated AI systems. Thus, future AI policies will not ignore the views and interests of marginalized groups.

Apart from formulating global policies and standards, the Church can also play an active role in encouraging the development of AI regulations at the national and local levels sensitive to each region's unique values and cultural context. As Ballesteros et al. (2020) underline, Latin American countries, for example, should create their own AI legal frameworks that harmonize with local culture and local socio-political situations rather than simply adopting regulations from Europe or North America.

Here, the Church can mediate between various factions of civil society, academia, government, and the technology industry to formulate AI regulations

covering all parties' interests. The Church's subsidiarity principle, which emphasizes inclusive and decentralized decision-making processes, can be applied effectively in this effort. In this way, the resulting regulations will genuinely reflect the hopes and desires of local communities, thereby effectively addressing real social needs.

Furthermore, the Church can encourage research collaboration between scientists, philosophers, and theologians to analyze AI's implications for humanity critically. This multidisciplinary research is critical to ensuring AI advances remain aligned with the inherent dignity of humankind. The Church plays a vital role in encouraging and developing ethical and compassionate AI policy at various levels by skillfully mediating with stakeholders and actively encouraging critical research.

Conclusion

Artificial intelligence (AI) development has raised various ethical questions regarding its implications for human dignity. The Catholic Church, through its official documents, has provided AI ethical guidelines that place human dignity as the primary consideration. This article examines the thoughts of Catholic philosophers and theologians regarding the concept of dignity and the Church's version of AI ethical principles. The study results show that humans' ontological dignity as God's image fundamentally differentiates them from AI. Although AI intelligence continues to increase, it does not have self-awareness, intrinsic motivation, or a personal relationship with God like humans. Therefore, AI only deserves to be placed as a tool that benefits humans, not an entity that is equal to humans.

The Catholic Church has formulated six AI ethical principles: transparency and interpretability, inclusivity and non-discrimination, privacy and data protection, system security and resilience, accountability and responsibility, and priority to human dignity. It is essential to adhere to these principles so that AI empowers all human beings regardless of background, does not violate privacy arbitrarily, is safe to use, and continues to serve human interests, not the other way around. Unfortunately, implementing these AI ethical principles still faces several challenges. Biased data, discriminatory algorithm design, unequal access to AI, lack of regulation, and lack of transparency and accountability of AI systems are still homework that must be completed. Global cooperation between stakeholders

is needed to overcome these challenges and realize AI truly harmoniously with universal human dignity.

Here, the Catholic Church also has a vital role, institutionally at the Vatican and regional bishops' conferences or the grassroots level. Institutionally, the Church can be actively involved in drafting global AI ethical guidelines standards, and policies in various countries so that Christian values are reflected in them. At the base community level, it is also essential for the Church to provide assistance and empowerment to marginalized groups so that they are not marginalized from the benefits of AI in the future. In this way, their voices and interests continue to be considered in more humane AI policies and implementation.

Overall, the ontological dignity of humans as images of God should be a fundamental consideration in the ethics of AI development and deployment. Although incredibly sophisticated, AI is only a tool that can benefit humanity to the extent that it positively contributes to all humanity without discrimination. A global effort involving multidisciplinary and multi-stakeholder collaboration, including the Catholic Church, is needed to ensure AI continues to serve and never threatens or replaces the central role of humans and their human dignity. Only with this paradigm can the bright prospects of AI civilization be realized without sacrificing universal humanist values.

Reference

Ballesteros, L., Airlines, I., & Rayo, M. (2020). Amoris Laetitia and the Fundamental Principles of Catholic Social Teaching: Implications for AI Ethics. 3324–3331.

Ballesteros, L., D'Avella, D., De Schutter, B., Arnold, K., Ali, A., Salles, T., & Strimling, P. (2020). An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. Minds and Machines, 30(4), 689-707. https://doi.org/10.1007/s11023-020-09526-5

Barras, C. (2020). Can artificial intelligence ever demonstrate a human-level mind? New Atlantis: A Journal of Technology and Society, pp. 63, 45–63.

Berkman, J. (2019). A theological argument against an A.I. personhood. Harvard Journal of Law and Public Policy, 42(2), 417–436.

Bostrom, N. (2014). Superintelligence: Paths, dangers, strategies. Oxford University Press.

Bracken, J. A. (2004). The immanent self: Rethinking the psychology of spirituality in the light of Aquinas. Theological Studies, 65(1), 30-51. https://doi.org /10.1177/004056390406500103

Brundage, M., Avin, S., Clark, J., Toner, H., Eckersley, P., Garfinkel, B., Dafoe, A., Scharre, P., Zeitzoff, T., Filar, B., Anderson, H., Roff, H., Allen, G. C., Steinhardt, J., Flynn, C., hÉigeartaigh, S., Beard, S., Belfield, H., Farquhar, S., Lyle, C., Crootof, R., Evans, O., Page, M., Bryson, J., Yampolskiy, R., & Amodei, D. (2018). The malicious use of artificial intelligence: Forecasting, prevention, and mitigation. arXiv. https://doi.org/10.17863/CAM.22520

Burlingame, E. J., & Naik, G. (2022). Practical Steps toward Ethical AI: A Global Standards Approach. IEEE Computer, 55(8), 87–91.

Catholic Church. (2020). Rome calls for AI ethics. http://www.academyforlife.va/content/pav/en/projects/romecallforaiethics.html

Cuda, A. J. (2021). Artificial Intelligence and the Roman Catholic Tradition: Engaging Modernity Through Theological Anthropology. Theological Studies, 82(1), 183–207.

Cuda, E. (2021). The unquestioned goodness of artificial intelligence. Theological Studies, 82(1), 181–191. https://doi.org/10.1177/0040563920976141

Curran, C. E. (2018). Catholic Social Teaching in an Era of Technological Change and Globalization. Theological Studies, 79(2), 393–410.

Curran, C. E. (2018). Catholic social teaching, 1891-present: A historical, theological, and ethical analysis. Georgetown University Press.

Danaher, J. (2019). Welcoming robots into the moral circle: A defense of ethical behaviorism. Science and Engineering Ethics, 26(4), 2023-2049. https://doi.org/10.1007/s11948-019-00119-x

Dastin, J. (2018). Amazon scraps secret AI recruiting tool that showed bias against women Reuters. https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G

Dormehl, L. (2020). The history of AI: From ancient civilization to modern computer science. The British Library. https://www.bl.uk/picturing-places/articles/the-history-of-ai-from-ancient-civilization-to-modern-computer-science

Ferrando, F. (2019). Philosophical posthumanism: Beyond humanism? Beyond posthumanism? Journal of Posthuman Studies, 2(1), 57–73. https://doi.org /10.5325/jpoststud.2.1.0057

Floridi, L. (2021). Establishing the rules for building trustworthy AI. Ethics & International Affairs, 35(1), 39–59. https://doi.org/10.1017/ S0892679420000623

Fuchs, C. (2020). Artificial intelligence and transhumanism: A critical analysis. Theological Studies, 81(3), 697–717. https://doi.org/10.1177/ 0040563920938470

Fuchs, C. (2022). Artificial intelligence, transhumanism, and Catholic theology: Human dignity in an age of algorithms. Theological Studies, 83(1), 190–211. https://doi.org/10.1177/00405639211026184

Groome, T. H. (1998). Educating for life: A spiritual vision for every teacher and parent. Allen, Texas: Thomas More.

Himes, K. R. (2001). Responding to technological change: The Catholic moral tradition and genetic engineering. Theological Studies, 62(1), 124–135. https://doi.org/10.1177/004056390206200107

Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389–399.

John Paul II. (1993). Encyclical letter: Veritatis Splendor. http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_06081993_veritatis-splendor.html

Kant, I. (1997). Groundwork of the metaphysics of morals. Cambridge University Press. https://doi.org/10.1017/CBO9780511809676

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Maritain, J. (1996). The person and the common good. University of Notre Dame Press.

McDonough, K. (2020). The good and AI: On integrating love and justice with artificial intelligence. Theological Studies, 81(4), 806–825. https://doi.org/10.1177/ 0040563920941767

Metzinger, T. (2019). Ethics washing made in Europe. Der Tagesspiegel. https://www.tagesspiegel.de/politik/eu-guidelines-ethics-washing-made-in-europe/24195496.html

Meyer, D. (2019). Inclusion and bias in AI: Two sides of the same coin. AI and Ethics, 1(4), 1–3. https://doi.org/10.1007/s43681-019-00012-4

Mittelstadt, B. (2016). Auditing for transparency in content personalization systems. International Journal of Communication, 10, 4991-5002.

Mittelstadt, B., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. Big Data & Society, 3(2), 1-21. https://doi.org/10.1177/2053951716679679

Mounier, E. (1962). Personalism. University of Notre Dame Press.

O'Neil, C. (2017). Weapons of math destruction: How big data increases inequality and threatens democracy. Broadway Books.

Pontifical Academy for Life. (2020). The ethics of artificial intelligence. https://www.academyforlife.va/content/pav/en/projects/intelligenza-artificiale.html

Rahner, K. (1978). Foundations of Christian faith: An introduction to the idea of Christianity. Crossroad.

Remensberger, J. (2020). AI ethics and inclusive development. AI and Ethics, 1(4), 1-6. https://doi.org/10.1007/s43681-020-00021-8

Rome Call for AI Ethics. (2020). Rome calls for AI ethics. https://www.romecall.org/

Rommens, T. (2022). Catholic social teaching and artificial intelligence: Human dignity and the common good in dialogue. Theological Studies, 83(1), 178–200.

Rush, O. (2020). Transhumanism and Catholicism: Uneasy bedfellows. Theological Studies, 81(4), 826–847. https://doi.org/10.1177/0040563920938468

Russell, S. J., & Norvig, P. (2016). Artificial intelligence: A modern approach (3rd ed.). Pearson.

Scheutz, M., & Arnold, T. (2016). Are we ready for sex robots? In 2016, the 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI) (pp. 351-358). IEEE. https://doi.org/10.1109/HRI.2016.7451772

Schockenhoff, E. (2007). Natural law & human dignity: Universal ethics in a historical world. The Catholic University of America Press.

Simonite, T. (2020). The best algorithms still struggle to recognize black faces equally. Wired. https://www.wired.com/story/best-algorithms-struggle-recognize-black-faces-equally/

Taddeo, M. (2017). The limits of deterrence theory in cyberspace. Philosophy & Technology, 31(3), 339–355. https://doi.org/10.1007/s13347-017-0270-2

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