Ethics and Computing

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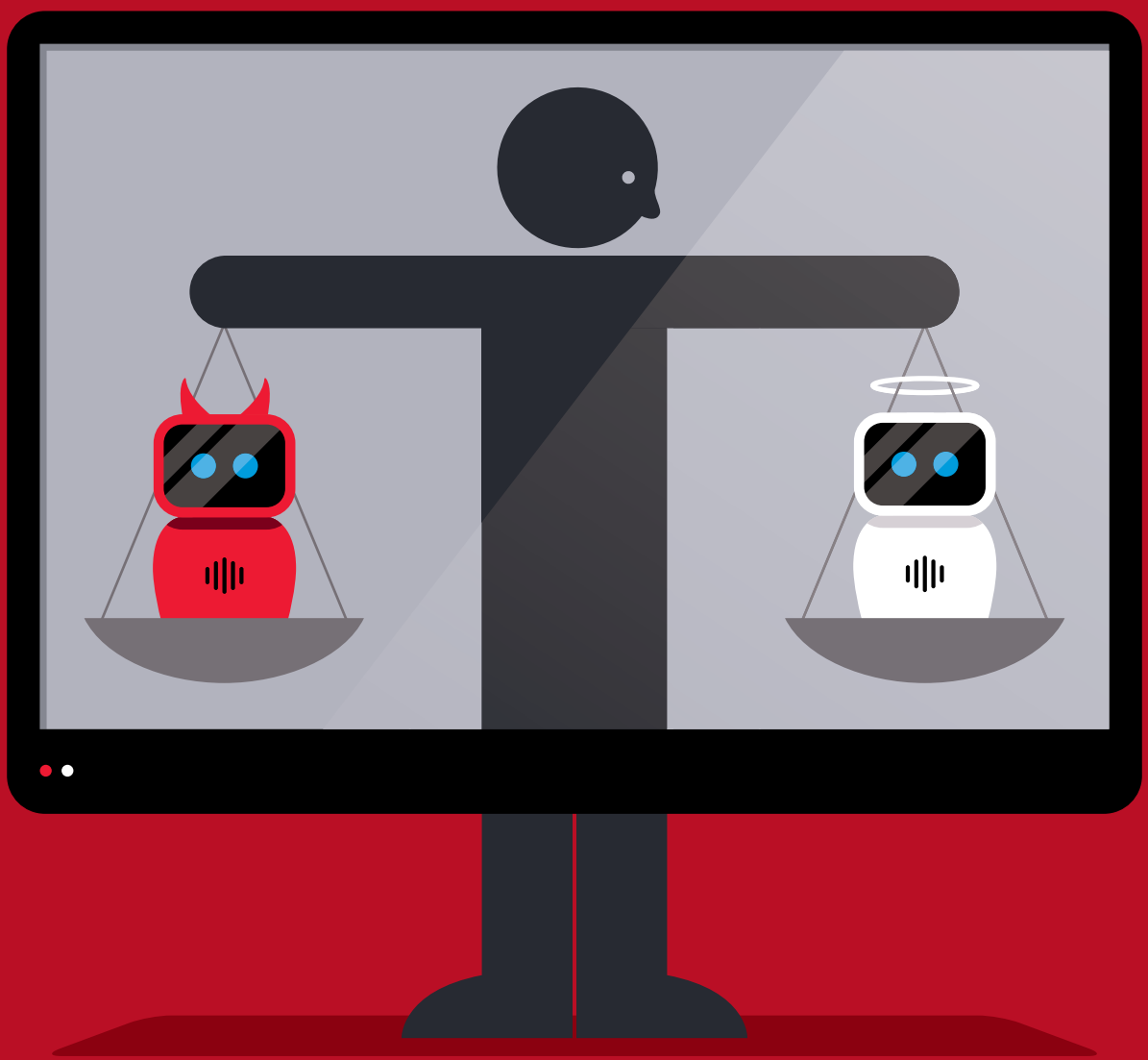

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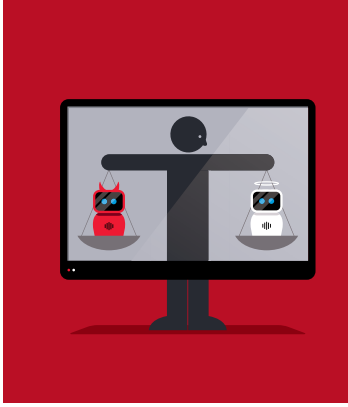

Disruptive technologies, especially artificial intelligence, are affecting all of us. But are we using this technology in an ethical way?

"The silicon computer chip has become the new life form. Eventually, the only worth of man will be to service and serve the computer. Are we there? In a lot of ways we are."
—Keith Haring (1978).

In this rapidly changing world, evolving technologies such as artificial intelligence (AI), robotics, machine learning, cloud computing, big data, the Internet of Things, and mobile computing are combining to disrupt traditional models and radically change how we live, work, and interact.

More importantly, these technologies change the way we live and do business: The world's largest bookstore is a cloud computing provider, and the largest fleet of cars in the world is operated by an app provider. Areas such as health care have been transformed dramatically, with better analysis, imaging, detection, diagnosis, treatment, robot-assisted surgery, and even significant advances in sharing health records. We eagerly await the day when cars, buses, trucks, and railways are self-driven, and Industry 4.0 is already upon us, and of course we seemingly claim the use of AI in just about everything.

Many advances in the mainstream media attribute much to AI that actually does not use any AI but is taking advantage of power and speed to use existing technologies in new and imaginative ways. Indeed, a recent survey of AI startups in the United Kingdom found that almost 80% of them used no AI technology whatsoever.

Nevertheless, many media outlets and indeed Silicon Valley luminaries have raised concerns about how we embrace technology, and especially AI. Are we really developing systems that can turn on us and destroy humankind? In the shorter term, we are using "AI algorithms" to determine health care, who will get parole from prison, and who will be admitted to prestigious colleges and other institutions. But what bias do we inherit from the original authors of those algorithms, who are ultimately human, not machines, and who have natural biases even if they are unintentional. How do we determine if a pedestrian or driver is more important in a collision with a self-driving vehicle? How do we justify the prevalence of "fake news" and other forms of misinformation generated by AI and other technologies?

All these issues raise great concerns about our current ethical application—or lack of ethical application—of technology, and especially AI.

Kreps and de Roche, both members of the board of International Federation for Information Processing (IFIP) reflect on "The International Federation for

APPENDIX: RELATED ARTICLES

A1. D. Kreps and M. de Roche, "The international federation for information processing code of ethics in context," *Computer*, vol. 57, no. 2, pp. 24–32, Feb. 2024, doi: 10.1109/MC.2023.3327628.

A2. G. Ramos, M. Squicciarini, and E. Lamm, "Making AI ethical by design: The UNESCO perspective," *Computer*, vol. 57, no. 2, pp. 33–43, Feb. 2024, doi: 10.1109/MC.2023.3325949.

A3. F. S. Grodzinsky, M. J. Wolf, and K. W. Miller, "Ethical issues from emerging AI applications: Harms are happening," *Computer*, vol. 57, no. 2, pp. 44–52, Feb. 2024, doi: 10.1109/MC.2023.3332850.

A4. K. K. Greene, M. F. Theofanos, C. Watson, A. Andrews, and E. Barron, "Avoiding past mistakes in unethical human subjects research: Moving from artificial intelligence principles to practice," *Computer*, vol. 57, no. 2, pp. 53–63, Feb. 2024, doi: 10.1109/MC.2023.3327653.

A5. D. Gotterbarn and K. W. Miller, "Cui Bono? Software professionals should always ask 'who benefits'?" *Computer*, vol. 57, no. 2, pp. 64–69, Feb. 2024, doi: 10.1109/MC.2023.3340886.

Information Processing Code of Ethics in Context."[A1] They emphasize the difference between ethics and morality or legality and provide a whirlwind tour of the history of ethics, introducing the IFIP Code in that context. The Code has been approved by the board of IFIP, founded under the auspices of UNESCO in 1960 following the first World Computer Congress and endorsed by its 65+ member societies across five continents.

In "Making AI ethical by design: The UNESCO perspective,"[A2] UNESCO Assistant Director General for Social and Human Sciences Gabriela Ramos, Mariagrazia Squicciarini, and Eleonora Lamm put forward UNESCO's Recommendation for member states on ethical standards for AI and the development of AI in particular domains. The Recommendation was subscribed to by its 193 member states (the United States was not a member at the time).

In "Ethical issues from emerging AI applications: Harms are happening,"[A3] Grodzinsky et al. point to the ethical issues arising as a result of new AI-based applications and the consequences and concerns about a lack of regulation.

Watson et al. from National Institute of Standards and Technology point to the need to consider the harm of AI in unethical treatment of human subjects in "Avoiding Past Mistakes in Unethical Human Subjects Research: Moving from Artificial Intelligence Principles to Practice."[A4]

Finally, two well-known ethics evangelists, Gotterbarn and Miller ask "Cui Bono? Software Professionals Should Always Ask 'Who Benefits'?" and point to how computer ethicists can make software development a more professional field.[A5]

In the context of how we are using AI and whether we are using it for good, rather than evil, I leave the final comment to President of Ireland, Michael D. Higgins in his speech to the United Nations General Assembly in 2022: "It is nothing less than a moral outrage that our boundless capacity for creativity and innovation, and the fruits of new science and technology, are turned, not to the promotion and preservation of peace, but to the pursuit and prosecution of war."

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