

Statement Regarding the Ethical Implementation of Artificial Intelligence Systems (AIS) for Addressing the COVID-19 Pandemic

The Executive Committee of [The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems](#)

Digital technologies including Artificial Intelligence Systems (AIS)¹ can play an important and beneficial role in addressing the COVID-19 crisis. They can help model infection dynamics and socio-economic impact, monitor physical distancing, identify vaccines and help fight disease spread. However, these same technologies can also increase surveillance of individuals and populations and undermine fundamental human values such as privacy and human agency. As we lean on AIS technology, it is therefore important to carefully navigate the possible tension between basic ethical principles and fundamental rights and values developed in non-crisis times with the need to address major public health and individual safety issues in this crisis.

Furthermore, in the wake of the global effects brought about by COVID-19, it is imperative to not only ask how we can stop the virus, but how to do so without sacrificing our political freedoms or our environment. It is vital that we leverage the emerging solidarity and sense of a common global destiny in order to start rebuilding future societies that inclusively and holistically increase human wellbeing in symbiosis with environmental sustainability.

Technology platforms for online interaction that are being widely used to keep in touch, especially now that physical contact is not possible, may have an enlarged role even when the COVID-19 crisis has passed. So it is important that these platforms perform in a safe, supportive, and respectful manner.

By offering pragmatic recommendations inspired from other global organizations² and our work on [Ethically Aligned Design](#), while focusing on the unique role of the IEEE, we hope to contribute to the inclusion of environmental sustainability criteria and of the vital interests of humanity and future generations in general when developing and using AIS in response to the unique challenges brought about by COVID-19.

¹The IEEE Global Initiative prefers the term “Artificial Intelligence Systems” versus “Artificial Intelligence”. The term “Autonomous and Intelligent Systems” (AIS) was utilized in *Ethically Aligned Design*. For our purposes, “AIS” and “AIS” are synonymous in terms of the application of these technologies.

²In particular, the authors would like to recognize similar statements created by organizations like UNESCO with their [Statement on COVID-19: Ethical Considerations from a Global Perspective](#).

[The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems](#) offers the following responses to address issues raised by COVID-19:

1. **New Metrics of Success**. As the use and impact of AI Systems (AIS) in response to COVID-19 accelerate, it is vital we establish societal and policy metrics and guidelines³ in order for such systems to remain human-centric, serving humanity's values and ethical principles.⁴ These systems must be developed and should operate in a way that is provably beneficial⁵ to people and the environment (e.g., level of trust in technological responses to COVID-19), beyond identifying finite or regional goals in response to COVID-19 (e.g., number of individuals respecting quarantine orders), reaching functional goals or addressing technical problems. This approach will foster the heightened level of trust between people and technology providers that is needed for the fruitful use of AIS in our daily lives.⁶
2. **Human Rights**. Human rights should be a fundamental part of the ethical risk assessment of AIS being considered for addressing COVID-19.⁷ Guidelines from The United Nations provide methods to pragmatically implement [human rights ideals within business or corporate contexts](#) that could be adapted for engineers and technologists. Specific technical and design decisions—such as the decision to use privacy preserving techniques and limiting how long personal data can be retained—can have a lasting impact in protecting our right to privacy and avoid ostracizing people. In this way, technologists can take into account human rights in the way AIS are developed, operated, tested, and validated.
3. **Data Sovereignty**. The need for accurate tracking of COVID-19 should not require the loss of individual privacy or control of data or identity. This pandemic provides a crucial opportunity to prioritize sovereign data technologies, policies, and mindsets so individuals can create and curate the terms and conditions regarding access to their identity and personal data, and to control its safe, specific, and finite exchange.^{8,9} Applications addressing COVID-19 should use a decentralized approach utilizing personal data stores that can be utilized for and beyond issues related to COVID-19.^{10,11}

³For example, IEEE Std 7010-2020, IEEE [Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-being](#).

⁴For more information: [The General Principles Committee](#) recommendations of *Ethically Aligned Design*.

⁵For more information: [The Wellbeing Committee](#) recommendations of *Ethically Aligned Design*.

⁶Adapted from: The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems. *Ethically Aligned Design: A Vision for Prioritizing Human Well-being with Autonomous and Intelligent Systems*, First Edition. IEEE, 2019.

<https://standards.ieee.org/content/ieee-standards/en/industry-connections/ec/autonomous-systems.html>

⁷Adapted from [The General Principles Committee](#) recommendations of *Ethically Aligned Design*.

⁸As a precedent for data sovereignty, [e-Estonia provides a thorough and tested model](#) to emulate.

⁹Adapted from [The Personal Data and Individual Agency Committee](#) recommendations of *Ethically Aligned Design*.

¹⁰Data stores and the decentralized approach recommended here are further elaborated in the document, [Give more data, awareness and control to individual citizens, and they will help COVID-19 containment - arXiv:2004.05222v1](#) [cs.CY]

¹¹Also recommended by the French National Pilot Committee for Digital Ethics in its [opinion](#) on tracking individuals in the COVID-19 pandemic crisis context.

4. **Regulation.** The COVID crisis cannot be a pretext for designing AIS that do not comply with laws and fundamental rights. Furthermore, principles and standards of transparency, competence, accountability, and evidence of effectiveness should govern the development of AIS in the wake of COVID-19.¹² In addition, if new regulations and directives, adopted to deal with the current COVID crisis, suspend personal rights and freedoms in any way, they should be expressly temporary in nature through definitive expiration dates and earlier revocability.
5. **Widest Availability.** Through affordable and widespread access to communications networks and the Internet, we should do our best to make AIS and resources addressing COVID-19 available to and benefit populations as widely as possible. This includes recognizing and working with the fact that half the world's population [still doesn't have access to the Internet](#). Those without connectivity should not be forgotten in our fight against COVID-19. In order to avoid the unequal distribution of medical supplies, food, or mental health services required for any global population, AI systems designed to address COVID-19 must be inclusive, fully taking into account human gender diversity (e.g., research on the impact of the virus across the nonbinary gender spectrum) and economic condition along with environmental sustainability. Such efforts could be facilitated through the recognition of and adherence to established indicators of societal flourishing such as the [United Nations Sustainable Development Goals](#) or the [Happy Planet Index](#) so that human wellbeing and environmental sustainability are utilized as a primary success criteria for AIS development.¹³
6. **Agile Governance.** To ensure that governments best adapt and quickly serve the public interest in the wake of such events as COVID-19, policymakers should: support, promote, and enable internationally recognized ethically based legal norms; develop government expertise in related technologies; ensure governance and ethics are core components in research, development, acquisition, and use; regulate to ensure public safety and responsible system design; and educate the public on societal impacts of related technologies.¹⁴ To best expedite agile governance, it is recommended that governments strategically pair with experts in each of the aforementioned areas, as well as all relevant stakeholders, to best adapt and quickly respond to COVID-19 in regard to the application of AIS.
7. **Values-Based Design.** Technological solutions to the crisis will only be successful if they are adopted and embraced by users. Thoughtful consideration of stakeholder and societal values (e.g., privacy of patients, transparency with the public, and non-discrimination) in the development and deployment phase of the technology is key.¹⁵ Systems developers should employ values-based design methods in order to create systems that can be evaluated in terms

¹²Adapted from [The Law Committee](#) recommendations of *Ethically Aligned Design*.

¹³Adapted from The [A/IS for Sustainable Development Committee](#) recommendations of *Ethically Aligned Design*.

¹⁴Adapted from [The Policy Committee](#) recommendations of *Ethically Aligned Design*.

¹⁵For a step-by-step guide on discovering and considering relevant values for AIS, see Open Roboethics Institute's Fairness into AI Ethics toolkit, <https://openroboethics.org/ai-toolkit/>.

of providing benefits for all impacted populations, and not only economic value for organizations. This includes considering the long term human and ecological advancement and creating sustainable and energy efficient systems.¹⁶

8. **Cultural and Values-based Norms.** While prioritizing human rights, AIS must also be expected to recognize and honor each community’s social and moral norms. Embedding norms in AIS requires a clear delineation of the community and context in which deployment will take place while being inclusive of minorities and other vulnerable social groups (e.g., refugees and undocumented immigrants). To avoid any forms of techno solutionism, culturally contextual design methodologies in accordance with a recognition of baseline ethical values are critical to observe with the application of AIS for COVID-19.¹⁷
9. **Manipulation versus “Nudging” in Vulnerable Populations.** AIS “nudges” (algorithmically or technologically enabled reminders via phone calls, apps, or other means) may be deployed in response to COVID-19 to encourage individuals to express behaviors that have community benefits such as public health practices. However, even a well-intentioned nudge could have unanticipated consequences, whether positive or negative, for the individual and/or society. The intent of AIS nudging a person should be well characterized via explicit disclosure and consent in the design of AIS when being deployed for COVID-19 to avoid negative consequences.¹⁸
10. **Mental Health.** The application of widespread physical distancing¹⁹ and stay-at-home mandates is bringing much-needed attention to human mental health. Of particular concern is the potential increase in severity of domestic abuse or affects of confinement on autistic or populations affected by dementia. In their 2014 report, The World Health Organization estimated that globally, less than 5 percent of general government health expenditures are allocated to address mental health, and this figure is significantly less in lower-income countries.²⁰ It is critical to prioritize work on designing technology to avoid negative effects on mental health, to avoid other health crises in addition to the direct issues arising from COVID-19.

¹⁶Adapted from [The Methods to Guide Ethical Research and Design](#) Committee recommendations of *Ethically Aligned Design*.

¹⁷Adapted from [The Embedding Values into Autonomous and Intelligent Systems](#) Committee and [The Classical Ethics in A/IS](#) Committee recommendations of *Ethically Aligned Design*.

¹⁸Adapted from [The Affective Computing Committee](#) recommendations of *Ethically Aligned Design*.

¹⁹We support the [World Health Organization's](#) use of the term “physical distancing” versus social distancing.

²⁰Source: [Mental Health is a Human Right](#). The American Psychological Association.

Author Information / Disclaimer

This document represents the views of the Executive Committee of [The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems](#) (A/IS), a program of the IEEE Standards Association that created [Ethically Aligned Design](#), First Edition (EAD), a comprehensive in-depth document created by over six hundred global experts outlining over one hundred specific recommendations to guide design, develop, deployment, and use of Artificial Intelligence Systems (Autonomous and Intelligent Systems). EAD also inspired the creation of education programs and multiple [IEEE standards working groups](#) addressing the pragmatic implementation of EAD recommendations and corresponding [certification programs](#).

The views and opinions expressed in this document are those of the authors and do not necessarily reflect the official policy or position of their respective institutions or of The Institute of Electrical and Electronics Engineers (IEEE).