IEEE-USA

POSITION STATEMENT

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# EFFECTIVE GOVERNANCE OF ARTIFICIAL INTELLIGENCE

***Adopted by the IEEE-USA Board of Directors (25 June 2021)***

IEEE-USA believes that AI systems[1] are capable of contributing to human and societal well-being in holistic and diverse ways, including by improving prosperity, competitiveness, and security. To realize these benefits, however, AI systems must be ethically designed and trustworthy, adhering to general principles including human rights, well-being, data agency, confidentiality, privacy, effectiveness, transparency, traceability, accountability, awareness of misuse, and competence. By providing the right balance of investments, incentives, and frameworks, those charged with AI governance can ensure that future AI systems possess these critical properties.

IEEE-USA divides its recommendations for maximizing the benefits of AI systems into three groups. First, an AI-capable public, workforce, and government are necessary to realize the economic benefits of AI systems while adhering to meaningful democratic governance.[2] Second, sensible legal and diplomatic frameworks can prevent controversies, critical failures, and even loss of life without excessively hampering innovation. Third, increasing funding for the development of safe, ethical, and principled AI systems will increase the likelihood that democratic values and societal well-being are prioritized by entities that develop and deploy this technology.

To realize the economic benefits of AI systems while adhering to meaningful democratic governance, **IEEE-USA recommends that the U.S. government**:

[1] An AI system is a machine-based system designed to operate with varying levels of autonomy which can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments. This includes computer systems and networks that can perform tasks which traditionally required human intelligence such as visual perception, speech recognition, learning, decision-making, control, and natural language processing.

[2] IEEE-USA, *Artificial Intelligence: Accelerating Inclusive Innovation by Building Trust*. IEEE-USA, 2020. Available: https://ieeeusa.org/wp-content/uploads/2020/10/AITrust0720.pdf.

1. Calibrate public trust, understanding, and discourse about AI systems.

2. Support AI education and retraining opportunities to meet future workforce needs.

3. Increase government access to AI technical expertise.

To generate sensible legal and diplomatic frameworks for AI, **IEEE-USA recommends that the U.S. government**:

4. Establish reliable, predictable, bias-free, and robust legal frameworks for AI systems.

5. Balance the approaches to the governance of AI systems.

6. Prioritize international cooperation for ethical, trustworthy AI systems.

To encourage the technical development of competitive, safe, and ethical AI systems worthy of public trust, **IEEE-USA recommends that the U.S. government**:

7. Ensure awareness, access, research, and testing on the fairness, safety, security, privacy, and societal impacts of AI systems.

8. Increase government investment in AI to levels that exceed those of competing nations.

9. Increase funding and quality of testing, evaluation, certification, and investigation for AI systems.

10. Identify and address vulnerabilities in AI systems.

11. Develop and promote standards for ethical, trustworthy AI systems through market-driven, consensus-based standards development processes adhering to the core principles of due process, openness, consensus, balance, and the right of appeal.

## BACKGROUND

To realize the economic benefits of AI systems while adhering to meaningful democratic governance, **IEEE-USA recommends that the U.S. government**:

1. **Calibrate public trust, understanding, and discourse about AI systems.** Responsible development and regulation of AI systems requires public understanding of their capabilities and limitations. To achieve this, the U.S. should develop public outreach strategies and educational partnerships that inform the public about AI, enable broad and inclusive participation in its design and regulation, and permit the public to develop the appropriate level of trust in

AI systems. In particular, to enable the public to make informed decisions about when AI systems can be trusted, the U.S. should ensure that the public understands when AI techniques are in use; AI systems' competency and the extent to which they might produce disparate impacts; whether they are safe and secure, and how this is evaluated; their legality and legal accountability; their impacts on privacy; whether they might constrain users' autonomy; and their potential ethical and societal impacts.

2. **Support AI education and retraining opportunities to meet future workforce needs.** The extraordinary growth in AI has created demands for AI-related talent in industry, government, and academia. Internationally, fierce competition exists for engineering talent with AI expertise, leading to the threat of a loss of AI talent from the U.S. workforce. To maintain its technological competitiveness, the U.S. must encourage domestic students to pursue degrees in AI-related disciplines, attract and retain top international students by reducing uncertainty in immigration policy, and develop AI-related continuing education programs. Addressing workforce needs will help to maintain U.S. competitiveness internationally and ensure that the workforce will possess relevant skills in the future.

3. **Increase government access to AI technical expertise.** Creating a policy, legal, and regulatory environment that allows innovation to flourish and continue American technology leadership while protecting the public interest and our values requires continued access to technical expertise. The U.S. should take steps to recruit experts with AI systems knowledge and experience into the government and should develop mechanisms to better access expertise in academia, national labs, and the private sector. Additionally, the regulatory environment must be informed by the best scientific information available. It is recognized that societal needs can preempt what the science recommends when the preemption is made by an authority accountable to the public. Nevertheless, the scientific underpinning should come from researchers with *bona fide* credentials in the relevant subject whose views are representative of the broader field.

To generate sensible legal and diplomatic frameworks for AI, **IEEE-USA recommends that the U.S. government**:

4. **Establish reliable, predictable, bias-free, and robust legal frameworks for AI systems.** Legal frameworks that are reliable, predictable, free from bias against any particular group or class of individuals, adaptable, robust, and in accordance with recognized legal norms in the US and internationally are necessary to: (a) ensure accountability, including allocating liability, from developers, owners, and implementers of AI systems; (b) encourage continued support of investment in AI research and development; and (c) protect persons who are impacted by the adoption of the AI technology whether or not they are users or customers.

   To the extent possible, existing U.S. laws, procedures, and standards should govern most aspects of AI. Before new legal rules, procedures, or standards are

developed for special-case aspects of AI, existing legal frameworks, especially those for computer-implemented, complex, and enabling technologies (with which AI shares several commonalities), should be reviewed for analogous models from which to develop a solution.

Rather than building new legal frameworks for AI alone, courts, legislators, and governmental agencies should address the problems generally facing existing legal frameworks, especially those for all computer-implemented, complex, and enabling technologies. As an example, updating the rules of procedure and evidence, especially those related to discovery, in view of technological advances is an activity from which AI would greatly benefit.

5. **Balance the approaches to the governance of AI systems.** Methods and applications of AI systems will continue to push the boundaries of regulation and social norms for the foreseeable future. To address these issues, institutions of all kinds should harness a diverse toolkit of strategies to manage the technology. For instance, when flexibility and experimentation are of value, soft law (programs that create substantive expectations, but are not directly enforceable by government) in the form of guidance, principles, standards, among others, can serve as a basis to evaluate and identify effective solutions. However, flexibility and experimentation should not be interpreted as allowing a suspension of ethical principles. When enforcement is prized, regulation or hard law at the national or local level should be designed with the input of stakeholders in all sectors.

6. **Prioritize international cooperation for ethical, trustworthy AI systems.** AI systems have pervasive, global implications which are transforming societies including human rights, economies, labor, intellectual property rights, and consumer and personal data protection. The U.S. should proactively identify and address how these transformations will affect international relationships and the relevance of international legal, regulatory, and policy frameworks. Broadly, the U.S. should prioritize international cooperation, including developing countries and stakeholders, across global and regional fora to ensure the core principles of ethical, trustworthy AI systems: human rights, well-being, data agency, confidentiality, privacy, effectiveness, transparency, traceability, accountability, awareness of misuse, and competence.[3] The goal should be to align and harmonize best practices to ensure these principles are embodied in the development and use of AI systems, and codify these best practices into international norms, treaties, and multi-stakeholder, consensus-driven global technical standards as necessary. To this end, the U.S. should assure sufficient U.S. representation on international standards-setting bodies. The U.S. should also identify and address ways in which AI systems can enhance the practice of diplomacy, for example, by predicting disinformation campaigns, or challenge the

[3] An augmented list of principles including those from IEEE Ethically Aligned Design. 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. Available: https://standards.ieee.org/content/ieee-standards/en/industry-connections/ec/autonomous-systems.html

practice of diplomacy, for example, by creating vulnerabilities in data privacy and security and fostering asymmetries in nation-state AI system capabilities.

To encourage the technical development of competitive, safe, and ethical AI systems worthy of public trust, **IEEE-USA recommends that the U.S. government**:

7. **Ensure awareness, access, research, and testing on the fairness, safety, security, privacy, and societal impacts of AI systems**. Independent testing of proprietary or government AI systems by litigants, academics, journalists, and other researchers is needed to ensure that AI systems are properly vetted and held accountable. The Government should clarify whether and how proprietary AI systems may be reverse engineered, modified, and evaluated under laws such as the Computer Fraud and Abuse Act and the anti-circumvention provision of the Digital Millennium Copyright Act, and rules of procedure and evidence. More broadly, the Government should take steps to affirmatively promote awareness, access, research, and testing including: ensuring accountability and transparency in government procurement and contracting for AI systems; identifying and disclosing the AI systems used by the government; adopting clear procedures relating to collection, usage, storage and sharing of personal information; providing constituents notice about AI system decisions, explanations for those decisions, and processes for challenging decisions or data; and, specifically, in legal disputes, tribunals should permit disclosure under appropriate protective orders of intellectual property related to AI systems when necessary to obtain evidence in compliance with other judicial requirements, including constitutional requirements, discovery laws, or subpoenas.[4]

8. **Increase government investment in AI to levels that exceed those of competing nations.** Greater investments in AI research and development, enterprises, workforce, automation, and data and infrastructure are essential to maintain U.S. leadership and competitiveness, enhance national security, stimulate the economy, create high value jobs, and improve governmental services to society. Increased research and development will help expand AI innovation, while also maximizing societal benefits and mitigating any associated risks. Increasing the quality and quantity of AI companies and start-ups, combined with related investment capital, will lay the groundwork for a strong domestic AI industry that will continue to innovate. Acquiring and training a talented AI workforce is essential to improving the development and implementation of AI systems, attracting businesses, and ensuring the educational pipeline has the educators necessary to train future generations of the AI workforce. AI systems rely on data and infrastructure such that leading in high-quality data and hardware will accelerate development while reducing dependency on other nations.

9. **Increase funding and quality of testing, evaluation, certification, and investigation for AI systems.** The adoption and acceptance of AI systems requires developing and sustaining public confidence in their quality, reliability,

[4] See, IEEE-USA, *Artificial Intelligence: Accelerating Inclusive Innovation by Building Trust*, supra note 2.

and compliance with regulations and social norms. Increased government funding for government and independent third-party evaluation and certification of AI systems is essential to ensure efficacy, transparency, traceability, accountability, and competency. Development of design requirements, methods, metrics, and environments so that AI systems can be tested and evaluated for interactions with different autonomous agents, including humans, and adversarial exploitation is critical in the adoption and acceptance of AI. To this end, mechanisms must be developed for identifying and accounting for the features of AI systems that could cause current testing, evaluation, certification, and investigation methods to misinform decision makers or the public about the risk of system deployment or the causes of system malfunction.

10. **Identify and address vulnerabilities in AI systems.** While AI is a powerful tool and methodology, it is also vulnerable to threats such as spoofing, evasion attacks, transfer learning attacks, and data poisoning. Additionally, adversaries are developing attacks that require little knowledge about specific AI systems. Policy, standards, and regulations addressing these vulnerabilities are vital to protect our national security, public safety, and privacy. Caution must be used when applying AI to critical applications, and AI systems must avoid collecting unnecessary personal or confidential data. Proper funding is necessary to ensure these practices can be realized.

11. **Develop and promote standards for ethical, trustworthy AI systems through market-driven, consensus-based standards development processes adhering to the core principles of due process, openness, consensus, balance, and the right of appeal.** Standardization provides a number of benefits, including setting the foundation on which technology innovation is based, enabling the development of complex solutions at a better cost structure, fueling growth of global markets, expanding consumer choice, supporting interoperability, and helping protect the health and public safety of workers and the general public. To ensure these benefits are realized, governments should prioritize the development and promotion of standards for ethical and trustworthy AI systems. They should also require that such standards be generated through market-driven, consensus-based development processes that adhere to the core principles of due process, openness, consensus, balance, and the right of appeal.

*This statement was developed by the IEEE-USA Artificial Intelligence Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of the nearly 150,000 engineering, computing, and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE, or its other organizational units.*