Auditing of Automated Decision Systems

Adopted by the IEEE-USA
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IEEE-USA emphasizes the need for immediate legislative action to establish robust auditing protocols for automated decision-making systems (ADS)[i] with varying degrees of human oversight or intervention. This urgency is particularly relevant as Americans increasingly engage with ADS that can have significant impacts on their rights. It is imperative such systems are not only reliable and trustworthy, but also demonstrably fair and equitable. Further, AI developers and deployers should be assured of a leveled playing field in an environment with transparent and well-established rules. Such rules include having access to clearly defined audit criteria and processes. These measures should balance societal risks and the need for innovation, while simultaneously safeguarding the confidentiality of proprietary competitive information.

IEEE-USA RECOMMENDATIONS:

A. ESTABLISH AN INSTITUTIONAL STRUCTURE FOR AI AUDIT OVERSIGHT

PROMOTE PUBLIC TRUST AND SAFETY. ADS operating in high-risk domains[ii] (e.g., welfare, housing, healthcare, employment, finance, education, critical infrastructure, etc.) can provide essential life-altering and life-sustaining services, while also protecting human safety, rights, and dignity. However, these systems have been known to encode historic biases and produce unfair outcomes. Verifying that these systems are performing in accordance with U.S. laws and regulations requires rigorous auditing; the benefits of which build and maintain public trust and safety.

PROVIDE CLEAR GUIDELINES WHICH ENABLE FAIR COMPETITION. ADS developers choosing to conduct business in a high-risk domain must adhere to the laws and regulations governing these sectors. Standards, such as those developed by IEEE, are designed to inform laws that help to create a leveled playing field for competition. For instance, these guidelines can shape governance practices and set up liability guardrails across the industry, making the competitive playing field more equitable for all.

Establish an ADS Audit Ecosystem: The Federal Government must establish an ecosystem comprising various agencies, actors, and accountable parties to ensure that ADS in high-risk domains are compliant and maintain public trust. The Federal Government must ensure each player performs their respective roles, in concert with the entire ecosystem, including but not limited to:

- Domain-specific regulations and corresponding ADS audit criteria
- Criteria for assessing the societal legitimacy of ADS
- Risk-based approach for prioritizing auditing activities, focusing on ADS -- with the highest potential impact on safety, rights and public trust
- Investigatory functions to examine infractions and violations

- Standards and/or guidelines for ADS audit processes and procedures, authorizing private organizations to train and certify independent auditors and oversee certification program compliance; training government ADS auditors; and periodically updating and evaluating materials for effectiveness
- Cross-section collaboration for understanding emerging issues and risks; refining auditing standards and practices; and tackling unique challenges that Small and Medium Enterprises (SMEs) face when auditing, due to resource constraints
- Training and certifying organizations focused on domain-specific auditing criteria, processes and procedures
- Mechanisms for enhancing transparency of the auditing process, and its outcomes for the general public
- Channels for collecting and integrating ADS user feedback
- Cooperation with international parties working on ADS auditing

Establish a Sustainable ADS Auditor Network:

- **Government ADS Auditors**: The Federal Government must establish a base of government ADS auditors to conduct routine audits on high-risk ADS, within government and regulatory enforcement investigations on high-risk ADS, within the private sector. Interdisciplinary teams should include technical experts and professionals from fields such as law, ethics, sociology, psychology, and other social sciences to comprehensively evaluate ADS from a sociotechnical perspective.
- **Independent ADS Auditors**: The Federal Government must allow and enable external independent ADS auditors to conduct routine audits -- to protect consumers and build public trust in ADS -- especially high-risk and critical decision systems (e.g., conformance with NYC Law 144).
- **Government oversight of organizations that certify independent AI auditors**: The Federal Government must issue "authorizations to operate" to private organizations that certify independent auditors and monitor their activities. In doing so, it must validate the quality of the certification program(s) and oversee the ongoing efficacy of the program(s). Specifically, the Federal Government must verify that certification programs are domain relevant, include rigorous education and training on all elements identified in the recommendations herein, and require a proctored exam administered by an authorized certifying organization. Continuing education must also be required for an AI auditor to maintain current knowledge. In addition, the Federal Government must monitor for unauthorized actors attempting to usurp the system.

B. ESTABLISH STANDARDIZED AUDIT PROCESSES AND CRITERIA

RELIABLE AUDIT OUTCOMES. Clear and transparent ADS audit criteria and processes enable auditors to follow predictable practices generating reliable and consistent audit reports. Trustworthiness in auditing practices and processes will ensure clear and concise failure points are identified within risky systems. Clear audit criteria will allow developers to establish governance mechanisms aligning with risk mitigation needs; while constant and reliable audit reports will allow developers to focus on curing the failure points the auditor identifies.

PREDICTABLE IP PROTECTION AND ENFORCEMENT. ADS audits not only foster public trust in new technologies, they can also protect intellectual property (IP) and trade secrets of developers through the use of non-disclosure agreements. This protection is vital in maintaining the integrity and competitive edge of ADS innovations. Moreover, well-defined enforcement measures are necessary to

ensure fair competition among market players. These measures should be clear, enforceable, and balanced to protect all involved stakeholders' interests, maintaining a healthy and competitive AI industry landscape.

Establish ADS Registration and Licensing Rules and Systems

- **Registration:** The Federal Government must require all public and private developers of high-risk and/or critical ADS to register their systems in a central, federally-hosted (Federal Government provides technical and administrative support), publicly-accessible database. This registry must comprehensively identify the accountable party, core frontier models embedded in the system (if any), current algorithmic impact assessment, date of the most recent audit, the intended use(s) of the system, known misuses, prohibited uses, and adverse incident reporting contact information, at a minimum. This level of detail is essential to ensure transparency and accountability in the use of critical ADS systems. Similar to the device registration and listing for medical devices at the FDA, the Federal Government can construct an open-access searchable database for high-risk ADS.
- **Licensing:** For ADS systems deemed as "red line" due to their high-stakes nature, such as facial recognition technologies used in public settings, the Federal Government must require a licensing regime to regulate the use of these systems in highly sensitive environments, ensuring they are used ethically.

Define expectations for audit processes. The Federal Government must establish clear and transparent guidelines that govern the exchange of information between auditors and auditees, to ensure fair and trustworthy audit practices. Such guidelines should include provisions for non-disclosure agreements, defining the scope and methodologies of audits, protecting intellectual property, detailing the requirements for documentation, setting standards for certification validity, and establishing disclosure norms. Additionally, the guidelines should outline corrective measures for audit failures, including timelines for remediation -- and enforcement actions for repeated failures or non-compliance. These steps are critical in fostering fair and reliable auditing practices.

Develop audit criteria by industry domain and use cases. It is imperative that the Federal Government develop clear, transparent, measurable, and achievable audit criteria relevant to each domain and use case (e.g., autonomous vehicles/geolocation privacy vs. fair housing/benefits determination), balancing society's safety and rights-respecting needs with the implementation challenges developers face. The audit criteria should encompass a comprehensive range of different evaluations (e.g., pass/fail, etc.) across the AI lifecycle, including but not limited to: ethical validity criteria (e.g., stakeholder engagement, risk identification and mitigation mapping, ethical choices verification, data representativeness and robustness, etc.); technical validity criteria (e.g., data traceability, model documentation, infrastructure reliability, etc.); statistical testing, evaluation, verification and validation criteria (e.g., over-fit/under-fit performance, 4/5ths test, performance consistency, etc.); and deployment validity criteria (e.g., adverse incident management system verification, legal compliance, drift monitoring verification, organizational management policy compliance, etc.)

These recommendations aim to establish a robust framework for the registration, licensing, and auditing of ADS systems -- ensuring these systems are used responsibly, ethically, and transparently, while also being adaptable to the unique needs and challenges of different industry sectors and use cases.

This statement was developed by the 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.

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i Automated decision system as defined by the Algorithmic Accountability Act of 2023 is: "any system, software, or process (including one derived from machine learning, statistics, or other data processing or artificial intelligence techniques, and excluding passive computing infrastructure) that uses computation, the result of which serves as a basis for a decision or judgment."

ii High risk domains are critical fields, defined in Executive Order (E.O.) 14110 on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence in the following manner: "critical fields like healthcare, financial services, education, housing, law and transportation, where mistakes by, or misuses of, AI could harm patients, cost consumers or small businesses, or jeopardize safety or rights."