

Regulatory Frameworks for Artificial Intelligence Development and Deployment



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The rapid development of artificial intelligence (AI) has not only led to revolutionary changes across various industries but has also given rise to new challenges in security and regulation.

As AI technology becomes more and more popular in healthcare and clinical trials, legal and compliance issues are becoming increasingly important.

Currently, there is a lack of a unified AI regulatory framework globally, making it complicated for multinational companies and research institutions to navigate compliance issues [1].

1) Regulatory Challenges of AI



Data Security and Privacy

- AI models often require a large amount of personal, sensitive data for training and operation, significantly increasing the risk of data leakage and privacy infringement.



Ethical and Social Biases

- If the training data contains biases, AI models are likely to inherit and amplify these biases, leading to unfair or even discriminatory decisions in application.



Cross-border Legal Challenges

- AI often operate across borders, and legal frameworks can vary significantly between countries.
- Harmonising regulations and ensuring interoperability is a complex challenge for legislators.



Accountability and Liability

- Determining responsibility and liability when AI systems cause harm or make incorrect decisions is challenging.
- Legislators need to establish frameworks that define liability and accountability in AI-related incidents.

2) WHO's 6 Principals on AI Regulation

The World Health Organization (WHO) published 6 principles that governments and regulatory authorities can follow to develop new guidance or adapt existing guidance on AI at national or regional levels [2]:

Transparency and Documentation

- Be transparent about the source, nature, and quality of the data used for training AI models.
- Maintain detailed documentation about the dataset, including data collection methods, preprocessing steps, and any biases present.

Risk Management

- Identify, assess, and mitigate potential challenges and negative impacts associated with AI systems.
- Cybersecurity threats must be comprehensively addressed.

External Validation of Data

- Use external datasets that are different from the one used for training and validation.
- This helps assess the model's ability to generalise across diverse data sources.



Commitment to Data Quality

- Rigorously evaluate pre-release systems to ensure the systems do not amplify biases and errors.

Emphasis on Data Privacy

- Implement strong encryption measures to protect data during transmission and storage.
- Conduct regular privacy audits to assess compliance with data protection policies and regulations.

Encourage Collaboration

- Foster collaboration between regulatory bodies, patients, healthcare professionals, industry representatives, and government partners.

3) AI Regulations Around the World

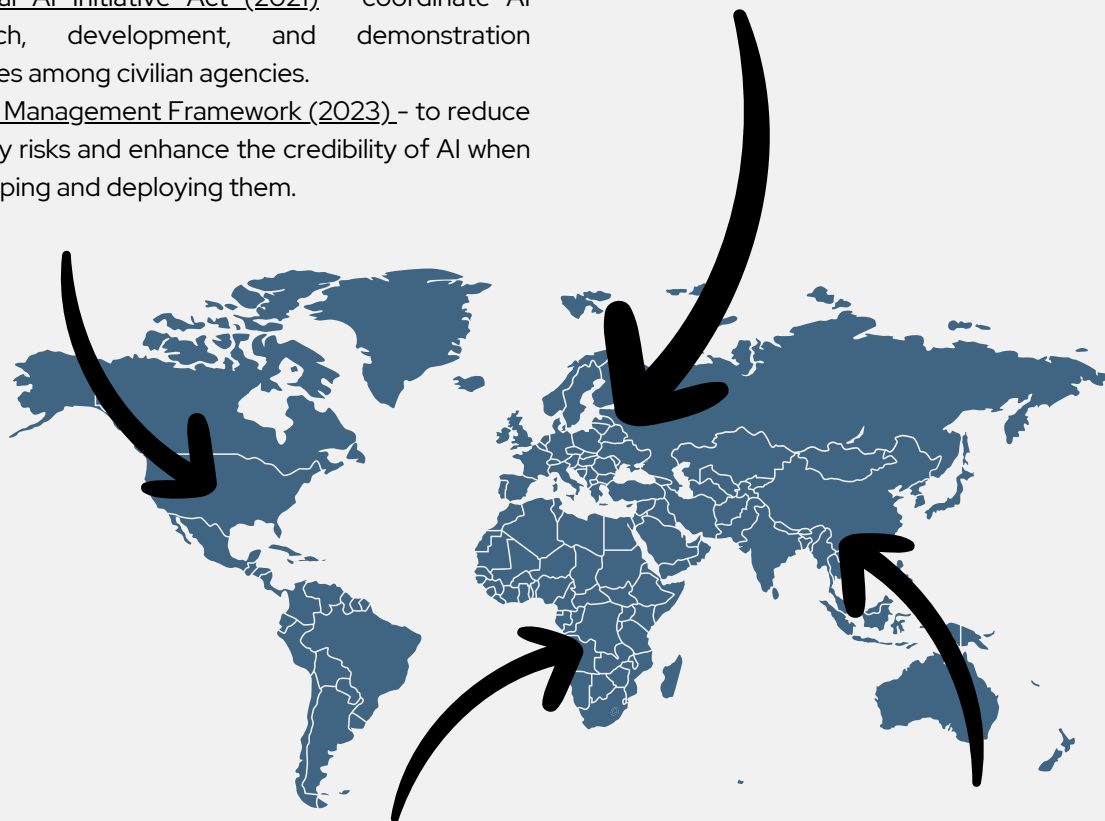
Countries around the world have gradually started implementing regulations on AI [3].

United States

- AI Bill of Rights (2022) - to protect people's personal data and limit surveillance.
- AI in Government Act (2020) - to ensure that the use of AI across the government is effective, ethical, and accountable by providing resources and guidance to federal agencies.
- National AI Initiative Act (2021) - coordinate AI research, development, and demonstration activities among civilian agencies.
- AI Risk Management Framework (2023) - to reduce security risks and enhance the credibility of AI when developing and deploying them.

European Union

- General Data Protection Regulation (GDPR) 2016 - to strengthen and unify data protection for individuals within the European Union.
- European Data Governance Act (DGA) 2023 - to facilitate data sharing across borders.



Nigeria

- National Information Technology Development Agency (NITDA) Act 2007 - mandates the planning, research, development, standardisation, application, coordination, monitoring, evaluation and regulation of information technology.

Australia

- No regulation on AI but adopted an AI Ethics Framework (2022), which is a set of voluntary ethics principles to ensure AI applications are safe, secure, and reliable.

China

- Provisions on the Administration of Algorithm-generated Recommendations for Internet Information Services (2021) - to standardise the use of algorithm recommendation technologies when providing online services within China.
- Provisions on the Administration of Deep Synthesis in Internet Information Services (2022) - mandate providers and technical supporters of deep synthesis services to obtain consent from individuals whose bio-information are used.
- Interim Measures for the Management of Generative Artificial Intelligence Services (2023) - to regulate a broader range of generative AI.

4) Conclusion

In the forefront of the AI field, regions like North America, Europe, and Asia are swiftly advancing and refining their AI regulation frameworks. However, many developing countries are still in the early stages of AI regulation, facing the primary challenge of finding a balance between technological innovation and considerations of ethics and safety. While some countries have initiated the development of basic AI strategies and policies, most have yet to establish a comprehensive regulatory framework.

Apart from domestic regulatory measures, international organisations such as the United Nations, the World Economic Forum, and the Organization for Economic Co-operation and Development also play a crucial role in actively promoting global cooperation in AI regulation. These organisations primarily focus on assessing the impact of AI on the global economy, society, and security, aiming to construct a fair, transparent, and sustainable global AI ecosystem.

Looking forward, global regulations governing AI will continue to progress and enhance to keep pace with the rapid development and widespread application of AI technology. Simultaneously, the regulatory process must strike a delicate balance among various considerations, including technological innovation, privacy protection, ethics, and social responsibility, to ensure the sustainable development and responsible application of AI technology.

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Further Readings

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