Special Conference on Artificial Intelligence (SpCf. on AI)

The Role of AI in Warfare

Research Report

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"Out of this world"

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Introduction

The swift incorporation of artificial intelligence (AI) into military applications is changing the character of conflict and the dynamics of international security. AI systems are being used in logistics, intelligence, cybersecurity, and autonomous weapon systems as countries create ever-more-advanced AI technologies for defence. Unprecedented capabilities are made possible by these developments, including quicker data processing, strategic insights, and independent decision-making. The international community must, however, address the difficult moral, legal, and strategic issues raised using AI in war settings.

Beyond conventional battlefield tactics, artificial intelligence is being used in cyberwarfare, misinformation operations, and media manipulation, posing a multifaceted danger to international security. Because they may carry out violent activities and function without human interference, autonomous weapon systems, also known as lethal autonomous weapons systems (LAWS), are especially contentious. By giving machines the ability to make life-or-death decisions, such systems violate ethical norms and international humanitarian law. They also make it more difficult to hold people accountable when mistakes are made. Furthermore, worries about an AI arms race are growing as nations compete to develop these technologies, which might undermine current deterrence models and result in unanticipated escalations.

In this regard, the UN is essential in promoting multilateral dialogue to create global frameworks that guarantee the ethical application of AI in combat contexts. Since there is currently an unstable void in global security due to the absence of regulatory norms, international cooperation is desperately needed.

Definition of Key Terms

Artificial Intelligence (AI)

A general-purpose technology that makes it possible for machines to carry out operations like data processing, problem-solving, and decision-making that often need human intellect. AI is utilised in military applications to improve strategic planning, logistics, and decision-making by analysing data quickly.

Autonomous Weapon Systems (AWS)

Autonomous weapons systems that are capable of autonomously locating, choosing, and attacking targets without assistance from humans. Because these systems can behave in both protective and offensive ways, there are moral questions about who should be held accountable for making deadly decisions.

Lethal Autonomous Weapon Systems (LAWS)

A section of AWS that is especially developed for offensive operations and can carry out deadly tasks on its own. Due to the possibility of indiscriminate assaults that could violate international law, the UN supports restrictions that ensure human control of LAWS.

AI Arms Race

The competitive effort to create cutting-edge military AI technology by countries including the US, China, and Russia, which runs the risk of destabilising the world. This competition has the potential to worsen tensions and upend established security frameworks in the absence of regulatory protections.

Mutually Assured Destruction (MAD)

A Cold War deterrence model in which nuclear-armed states prevent conflict through the threat of mutual destruction. The rapid development of military AI could destabilise MAD by removing the human judgement necessary for maintaining strategic balance.

Asymmetric Warfare

Conflict in which fewer technologically sophisticated actors—such as smaller governments or non-state organisations—oppose more powerful military forces using unusual tactics made possible by artificial intelligence. AI technology accessibility reduces conflict barriers and may result in more frequent interactions.

Cyber Warfare

The use of AI's ability to automatically identify, take advantage of, and protect against cyberthreats in digital warfare. AI-powered cyberattacks have the potential to unintentionally worsen hostilities and target civilian infrastructure without human control.

Information Warfare

The manipulation of information using AI-driven tools, such as deepfakes and disinformation, to sway public opinion and topple governments. By undermining confidence and raising tensions, information warfare affects international relations and makes resolving conflicts more difficult.

Automation Bias

A cognitive bias that occurs when people place too much trust in the judgements and suggestions provided by AI systems, which can result in risky mistakes. Automation bias could have life-or-death repercussions in combat contexts if human operators blindly trust AI outputs.

Black Box Effect

The opacity of AI decision-making processes, particularly in machine learning systems, makes it challenging to understand how the AI reached a specific decision. This lack of transparency complicates accountability, especially in cases of unintended harm caused by autonomous systems.

Geneva Conventions

The foundation of international humanitarian law, made up of treaties that regulate armed conflict and protect civilians.

International Humanitarian Law (IHL)

A body of laws that regulate conduct during armed conflict, especially to protect civilians, such as the Geneva Conventions. Concerns regarding compliance with the IHL standards of proportionality, necessity, and distinction are brought up by the development of military AI.

Proprietary Algorithms

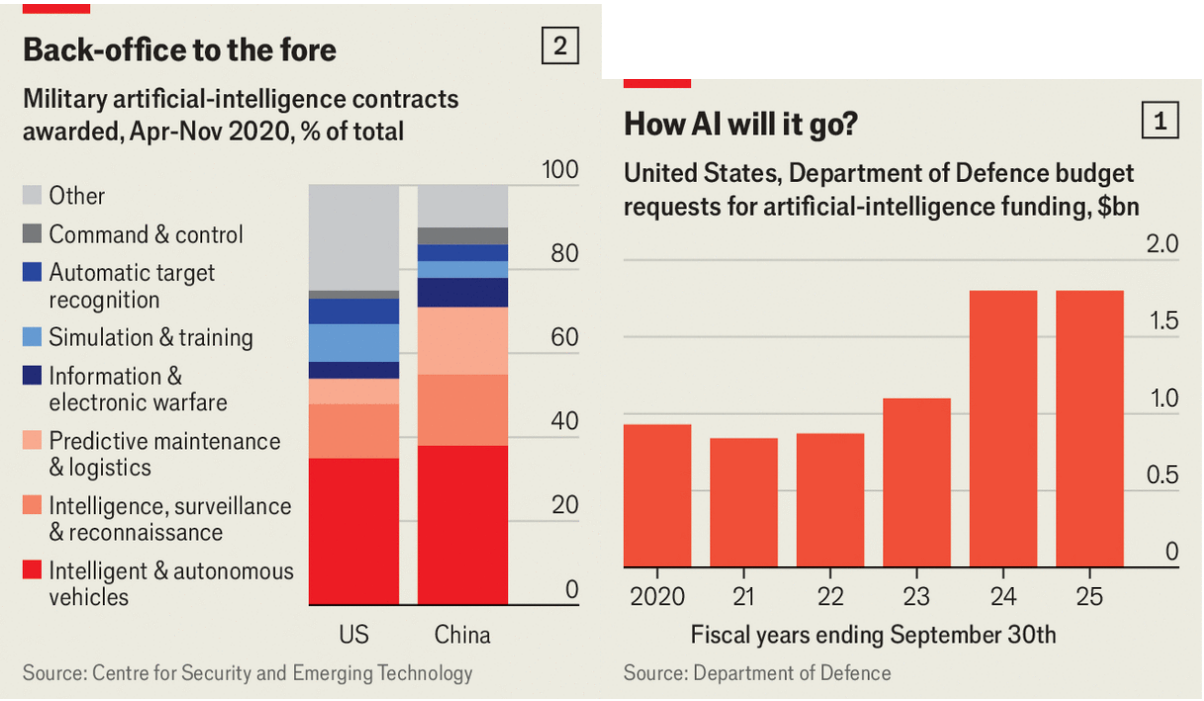
Private company-owned AI systems that are frequently employed in military settings. Because governments might not completely comprehend how proprietary algorithms function in conflict situations, they restrict transparency and make accountability more difficult.

General Overview

The Rise of Military AI and Strategic Implications

Artificial intelligence (AI) has become central to military operations, spanning everything from intelligence gathering to autonomous weapon systems (AWS). As a general-purpose technology with wide-ranging adaptability, AI has been implemented across defence systems to enhance logistics, decision-making, and strategy on the battlefield. Unlike previous military technologies, AI provides unparalleled speed and precision in data analysis, enabling rapid decision-making that humans alone cannot achieve. Its influence extends across physical and digital domains, being utilised in logistics, intelligence, cyber defence, and automated surveillance.

AI's strategic applications in warfare have created a competitive global environment, as countries like the United States, China, and Russia race to develop superior AI technologies for national security. This competitive dynamic risks an "AI arms race," where rapid advances in AI technology proceed without adequate regulatory safeguards. An AI arms race raises concerns over deterrence models—such as Mutually Assured Destruction (MAD)—which rely on stable human-led decision-making. AI, unlike humans, cannot intuit the long-term ethical consequences of military actions, which may destabilise global power balances if AI-driven systems lack adequate human control. Additionally, the ease of AI access allows smaller states and non-state actors to engage in asymmetric warfare. The affordability of drones and other autonomous systems gives even resource-limited actors the power to threaten more technologically advanced militaries, reducing barriers to global conflict and potentially leading to more frequent military engagements.



AI's role in warfare is not limited to physical battlespaces; it has also transformed cyber warfare and information operations. Autonomous AI systems can detect vulnerabilities, autonomously conduct cyber-attacks, or defend critical infrastructure. In cyber warfare, AI operates at speeds that human operators cannot match, launching counterattacks and defences autonomously. However, because AI may mistakenly select civilian targets or intensify strikes without human interaction, this high-speed automation in cyber battles runs the risk of unintentional escalation. AI has also changed information warfare, with systems that can produce and spread deep fakes and misinformation on a large scale. Peacebuilding efforts can be made more difficult by these AI-driven disinformation campaigns, which have the potential to topple governments, sway public opinion, and increase international mistrust. The absence of an international framework for cyber-AI restricts efforts to preserve stability in the digital sphere, even if the UN places a strong focus on cooperative regulation.

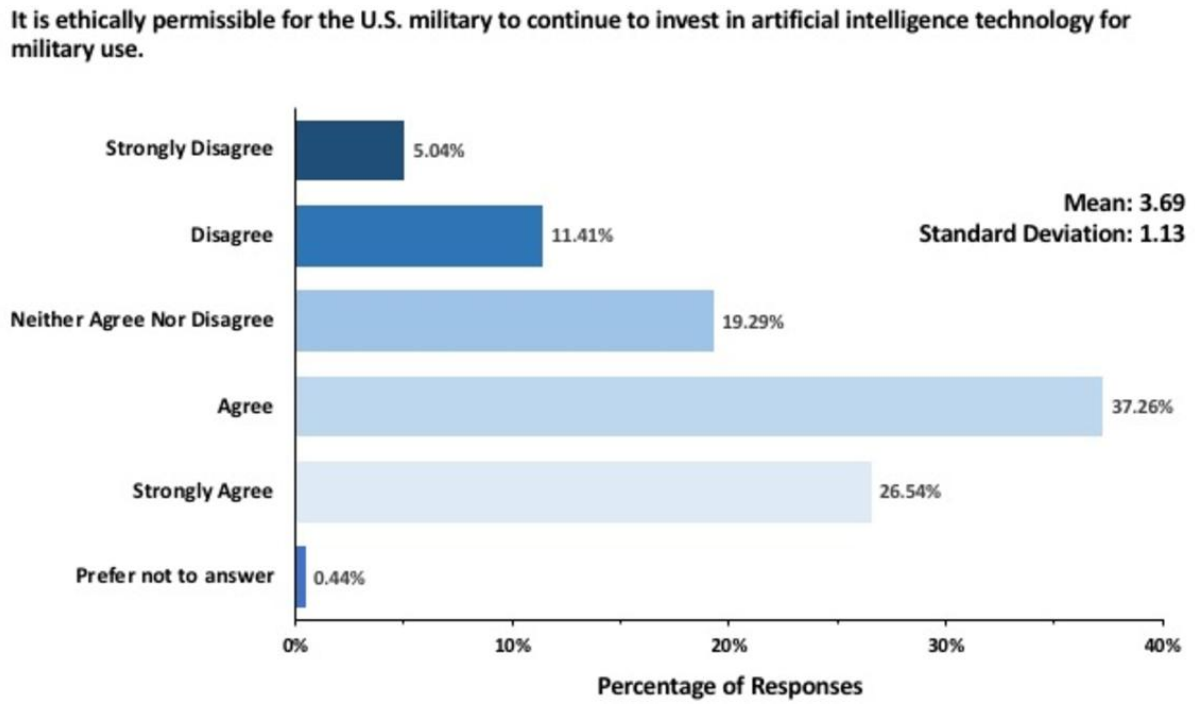
Ethical Challenges of Autonomous Weapon Systems and Decision-Making

One of the most controversial applications of AI in combat is AWS, Autonomous Weapon Systems. Particularly those that employ AI to make deadly decisions. Lethal activities can be automated thanks to AWS's ability to recognise, choose, and engage targets without human intervention. While some AWS are defensive in nature, such as anti-missile systems, others are intended for offensive combat, raising serious ethical questions regarding the accountability of machine-made life-and-death decisions. AI systems operate based on pre-programmed rules and algorithms and lack the moral judgement that human soldiers apply in battle. AI cannot make context-sensitive decisions or assess ethical issues like humans can, but it is being used more and more in circumstances where these kinds of judgements are required.

Many people worry that AI systems won't be able to accurately differentiate between combatants and civilians, which has led to calls for regulation due to ethical considerations around AWS. The unpredictability of AWS in chaotic combat environments further complicates their use, as these systems, especially those that learn through machine learning, may act in unexpected ways. Machine learning algorithms may misinterpret novel circumstances or be unable to adequately address dynamic and unpredictable battlefield settings since they rely on past data when making decisions. Given that it is frequently unclear how AI arrived at a particular conclusion in intricate, real-world scenarios, the "black box" effect—where AI's decision-making process is opaque and challenging to understand—poses difficulties to openness and accountability.

The UN has repeatedly raised similar moral issues, arguing that human oversight should be maintained by autonomous systems to guarantee adherence to international humanitarian law, which mandates responsibility, distinction, and proportionality in combat. Without human control, fully autonomous systems could violate international law principles, leading to indiscriminate attacks that

contravene the mandates of humanitarian law. The Geneva Conventions, which emphasise avoiding civilian casualties and ensuring proportionality, do not currently address the unique nature of AI-driven systems, leaving a legal gap. This gap has resulted in a lack of accountability for AWS actions, as it becomes challenging to determine who is responsible if autonomous systems cause harm. Legal experts and the UN advocate for regulations that would require human oversight to ensure compliance with international humanitarian standards. However, a major obstacle to implementing this ethical monitoring is the absence of internationally recognised standards for AWS.



Legal, Strategic, and Governance Challenges

The quick uptake of military AI has presented hitherto unheard-of difficulties for global governance, accountability, and international law. Military accountability is typically attributed to commanders or operators who oversee making morally sound choices. Autonomous AI systems, on the other hand, make this process more challenging because they frequently function autonomously or with little human intervention, making it challenging to assign blame for unexpected consequences. There is a legal grey area because autonomous systems are not covered by international law, particularly the Geneva Conventions, which establish guidelines for preventing injury to civilians and guaranteeing proportionality. It can be difficult to comprehend AWS's operational choices when they are privately designed and use proprietary algorithms, which further complicates accountability.

The possibility of "automation bias," a condition in which decision-makers place excessive trust in AI advice without enough investigation, exacerbates the accountability problem. Because reliance on AI forecasts and recommendations can lead to oversights, especially if the AI's decision-making

process is opaque, automation bias becomes particularly dangerous when decisions have life-or-death consequences. Many AI systems' black-box nature makes accountability and transparency more difficult, and it increases the possibility of serious mistakes that could go against humanitarian ideals in high-stakes situations like combat.

Recognising these difficulties, the UN has called for global governance structures to responsibly handle military AI. A legally binding worldwide agreement to govern some Lethal Autonomous Weapon Systems (LAWS) that function without human monitoring has been promoted by the UN Secretary-General since 2018. This stance is supported by the UN's New Agenda for Peace, which calls on nations to create a legally binding pact by 2026 that forbids autonomous weapon systems that are not supervised by humans. To comply with international law, the UN advises military AI to follow a "human-centred approach," in which fatal choices are still subject to human oversight. Despite these demands for action, reaching an agreement has been difficult because nations with sophisticated military AI capabilities, like China, Russia, and the United States, are reluctant to curtail their technological advantages.

International regulation is made more difficult by the possibility of an AI arms race, in which nations compete to create increasingly advanced AI-powered weaponry to keep a competitive military advantage. Without international norms, nations vying for supremacy in military AI run the risk of escalating tensions and upending established security frameworks. Another regulatory problem is the dual-use nature of many AI technologies, which can be used for both military and civilian purposes. Strict regulations on military AI may inadvertently impede the development of AI in non-military fields. It is challenging to create effective international laws because of the overlap between civilian and military applications.

Beyond LAWS, a developing area of global security concern is AI's role in information operations and cyberwarfare. With little to no help from humans, AI-driven systems in cyberwarfare can independently identify weaknesses, initiate assaults, and even carry out counterattacks. AI systems have the potential to inadvertently target civilian infrastructure or escalate conflicts without proper control, which adds to the hazards associated with the speed and scope of AI-driven cyberattacks. Concerns regarding AI's influence on information warfare have also been voiced by the UN, especially as it becomes more difficult to identify and combat AI-generated misinformation. Deepfakes and other types of misinformation are examples of manipulated content that has the power to sway public opinion, topple governments, and sow discord around the world.

A major worldwide challenge continues to be striking a balance between military AI progress and the ethical and security risks it presents. Although AI technology can increase military operations' speed, accuracy, and efficiency, its opacity and unpredictability call for close supervision and adherence

to moral principles. AI in combat has the potential of turning into a destabilising force that might intensify hostilities and jeopardise peace initiatives in the absence of adaptive restrictions. To provide a flexible yet effective regulatory framework and guarantee that the development of military AI is consistent with humanitarian ideals and global stability, the UN is essential in promoting multilateral cooperation. The ability of the international community to create norms that strike a balance between technological advancement, responsibility, openness, and a dedication to peace will determine how AI is used in combat in the future.

Major Parties Involved

The United States of America (USA)

The USA has a strong interest in creating and implementing AI for military use since it is a world leader in AI research and defence technologies. With initiatives like the Joint Artificial Intelligence Centre (JAIC) concentrating on integrating AI throughout military operations, the Department of Defence (DoD) has made AI a top priority for improved combat and logistics capabilities. With export restrictions on vital parts like semiconductors, U.S. policy also aims to restrict other countries' access to cutting-edge AI technologies. Despite expressing worries about the moral ramifications of lethal autonomous weapons systems (LAWS), the U.S. government is still reluctant to back a ban on these technologies, preferring to see responsible development conducted under human supervision.

China

With the aim of dominating the global AI market by 2030, China has made AI a key component of its national plan. The People's Liberation Army (PLA) places a strong emphasis on "intelligentised warfare," incorporating AI into combat, intelligence, and surveillance activities. China's desire to attain technological parity with or superiority over the United States and other sophisticated militaries is demonstrated by the government's significant investment in AI, especially for military modernisation. China has, however, also shown a desire to have conversations on the appropriate application of AI in combat, so long as those debates don't impair its technological development. China's role in the matter is vital since its advancements in AI have an impact on both geopolitical stability and the global arms race, especially in the Asia-Pacific area.

Russia

Russia has made artificial intelligence (AI) a top goal in its military modernisation strategy, with a particular emphasis on cybersecurity, robotic ground systems, and autonomous drones. Due to financial

limitations, Russia's AI capabilities are more constrained than those of the US and China; yet the government has nevertheless made significant expenditures in military AI. Though they are cautious of legally binding international agreements that would limit its military capabilities, Russian officials have indicated an interest in influencing global AI governance. Russia is a major player in discussions on AI regulation in warfare because of its typically practical approach to AI governance, which supports laws that do not jeopardise its military might.

The European Union (EU)

The European Union has taken a legislative approach to AI, focussing on uses that are morally and human centred. Despite lacking a unified military, the EU has created the first comprehensive AI regulatory framework in history, the AI Act, which may serve as a template for international norms. The EU supports stringent regulation of military AI and the ban on completely autonomous lethal weapons, even if the AI Act currently does not cover military applications. Since it sees itself as a potential leader in establishing moral guidelines and standards, the EU has taken the initiative to demand for international frameworks to regulate military AI. The EU is an important participant in multilateral talks on AI governance because of its emphasis on a rules-based approach.

India

India, a newcomer to the AI space, has shown interest in both military and civilian uses of AI. With an emphasis on fields like drone technology, cyber defence, and border surveillance, the government is investing in AI for national security. India emphasises responsible AI development and human control in lethal applications, which is essentially in line with other major democracies' positions on military AI regulation. But given China's advances in military artificial intelligence, India is likewise worried about regional security. India has a major influence on regional conversations around AI governance and security as a participant in a number of multilateral venues, such as the UN and the Quadrilateral Security Dialogue (Quad).

Group of Governmental Experts on Lethal Autonomous Weapon Systems (LAWS)

Under the auspices of the UN Convention on Certain Conventional Weapons (CCW), this group is responsible for investigating potential regulatory frameworks and analysing the ramifications of LAWS. To address the moral, legal, and technical issues raised by LAWS, officials from UN member states convene as part of the Group of Governmental Experts (GGE). Due in large part to disputes between the main countries, the GGE has not advanced much since its founding in terms of a legally binding agreement on autonomous weapons. However, the GGE continues to shape international standards for AI in combat and is one of the most significant platforms for talking about military AI on a worldwide scale.

South Korea

With uses in both military and commercial sectors, South Korea has established a robust AI industry. With an emphasis on defensive technologies like threat detection and surveillance, the South Korean government has made investments in AI for national security. South Korea strongly supports UN debates on military AI regulatory frameworks and promotes responsible AI development because it is located close to areas of strategic concern. South Korea is an important participant in the ethical and strategic governance of AI technologies in conflict areas due to its experience with regional security issues, particularly those pertaining to North Korea.

Israel

Israel is leading the way in the development of military AI, especially in the areas of autonomous defence systems, drone technology, and surveillance. Israel's position on military AI, particularly regarding autonomous weapon systems, has been shaped by its experience using AI in crisis circumstances. Regarding limitations on autonomous defence technologies, which it considers essential for national security, the administration has voiced caution. Israel is amenable to talks on upholding moral principles in the application of AI, particularly in venues that concentrate on restricting offensive capabilities. Israel is uniquely positioned to offer useful perspectives to UN debates on autonomous systems because of its experience with military AI.

Timeline of Events

November 21st, 2012	To guarantee moral application in conflict, the U.S. Department of Defence publishes Directive 3000.09, which sets rules for autonomy in weapon systems.
May 30th, 2013	In a report to the Human Rights Council, UN Special Rapporteur Christof Heyns urges a halt to the creation and application of completely autonomous lethal weapons.
August 20th, 2017	More than 100 specialists in robotics and artificial intelligence have signed an open letter from the Future of Life Institute urging the UN to stop an arms race in autonomous weapons.
April 9th, 2018	UN Secretary-General António Guterres urges for a worldwide ban on LAWS, calling it "morally repugnant and politically unacceptable."
July 24th, 2019	In its National Defence white paper, China promotes AI-driven military modernisation and highlights "intelligentised warfare."

February 24th, 2020	With an emphasis on ethics and cooperation with allies, the Joint Artificial Intelligence Centre (JAIC) of the U.S. Department of Defence has released new principles for AI in military situations.
February 15th-16th, 2023	To encourage responsible AI use in defence and set ethical norms, the Hague, Netherlands hosted the REAIM Summit (Responsible AI in the Military Domain). copyright concerns in AI training practices.
August 18th, 2023	US District Court Ruling (Thaler v. Perlmutter): A US federal court upholds the "human authorship" paradigm by confirming that AI-generated works devoid of human authorship are not entitled to copyright protection.
May 15th-19th, 2023	The UN's Group of Governmental Experts on LAWS convenes but is unable to reach a consensus on legally binding laws; instead, they resolve to continue their conversation on frameworks for autonomous weapons.
January 10th, 2024	A change in the employment of AI in defence industries is indicated by OpenAI's revision of its usage policy, which removes specific prohibitions on military applications.
January 17th, 2024	The European Union urges a global effort to create international military AI regulation, emphasising human control and ethical use.

Possible Solutions

Establishing an International Treaty on Military AI and Autonomous Weapons

With an emphasis on the creation and implementation of lethal autonomous weapon systems (LAWS), an international agreement might offer a legally binding framework for the application of AI in military settings. In accordance with international humanitarian law, the treaty would place a strong emphasis on "meaningful human control" over all AI-based systems that can carry out deadly deeds. It would place stringent restrictions on completely autonomous systems, restricting their use in war and instituting transparency measures like third-party audits and reporting to promote responsibility and confidence, much like the Nuclear Non-Proliferation Treaty. Although it could be difficult to win over big military countries, multilateral diplomacy inside the UN could allay these worries by providing security guarantees. This strategy offers a transparent, legally binding framework designed to stop abuse and unintentional conflict escalation.

Establishing an International Treaty on Military AI and Autonomous Weapons

To create moral guidelines for the military application of AI, a worldwide AI governance framework might be created. This would allow for responsible AI research without being constrained by a treaty. This framework will establish universal ethical standards that prioritise accountability, transparency, and human rights protections over enforcing stringent prohibitions. It would contain rules for developing, evaluating, and implementing military AI systems, along with procedures for compliance and independent ethics review committees. This framework, which is based on well-known standards organisations like the International Organisation for Standardisation (ISO), would include a number of stakeholders, including governments, businesses, and civil society. This all-inclusive framework encourages the growth of ethical AI practices within a versatile, internationally accepted norm. This strategy promotes international agreement and cooperative adherence by offering a framework that is both flexible and morally sound.

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