

Toward a global convention on AI warfare

Samuel Ariyo Okaiyeto¹, Weipeng Zhang², Jingshou Zhang¹, Jun Wang^{3*}, Hongwei Xiao^{1*}

(1. College of Engineering, China Agricultural University, Beijing 100083, China;

2. School of Computer and Artificial Intelligence, Beijing Technology and Business University, Beijing, China;

3. College of Economics and Management, China Agricultural University, Beijing 100083, China)

Abstract: The military application of artificial intelligence (AI) is advancing far faster than global governance, with AI-assisted targeting, reconnaissance, and autonomous systems already deployed in active conflicts such as those in Ukraine and the Middle East. It not only restructures the tempo and scale of warfare but also brings profound ethical and operational risks, including algorithmic opacity and the excessive dilution of meaningful human control over lethal military decisions. Existing international humanitarian law and voluntary corporate commitments are insufficient to address these challenges. Drawing on lessons from historical arms control regimes, this article calls for an urgent global binding convention to regulate AI warfare, with scientists and international mechanisms like the Convention on Certain Conventional Weapons (CCW) playing key roles in promoting rule-making.

Keywords: AI warfare, Convention on Certain Conventional Weapons, lethal autonomous weapons systems

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1 AI warfare is advancing faster than governance

Artificial intelligence (AI) is entering warfare faster than the world is building rules to govern it. The recent wars in Ukraine and the Middle East both have shown that AI-assisted targeting, navigation, and reconnaissance are no longer speculative capabilities but operational tools on the battlefield. Stuart Russell has argued that the conflict demonstrates the need for a ban on AI weapons that select and engage targets without human intervention^[1]. Yet while military uses of AI are scaling rapidly, international law has not kept pace. No binding treaty specifically regulates AI in warfare, and negotiations under the Convention on Certain Conventional Weapons (CCW) have moved more slowly than the technology itself^[2,3]. The gap between capability and governance is now large enough to become dangerous.

Recent developments suggest that this governance gap is no longer theoretical but operational. Emerging evidence indicates that AI-assisted systems are already being used to accelerate intelligence processing and target identification in active conflict environments. By enabling the prioritization of large numbers of targets within compressed timeframes, these systems risk shortening decision cycles beyond the limits of meaningful human deliberation. AI is

therefore not merely augmenting warfare—it is restructuring its tempo and scale, while legal and ethical frameworks remain largely unchanged.

Warnings from scientists make this governance gap harder to dismiss. Stephen Hawking warned in 2014 that “the development of full artificial intelligence could spell the end of the human race”^[4]. In 2015, Hawking joined other prominent figures in warning that autonomous weapons could become a destabilizing new class of arms^[5]. Geoffrey Hinton has since warned that advanced AI systems could escape human control^[6], and more recently argued that autonomous weapons could make war easier to start because governments may face “dead robots, not body bags”^[7]. Yoshua Bengio, Stuart Russell, and thousands of AI researchers have similarly backed international limits on autonomous weapons^[5,8]. These interventions matter because they show that concern over AI warfare is not abstract moral panic; it is a documented position held by many of the scientists most responsible for modern AI.

2 Ethical and operational risks of AI systems

Military institutions are drawn to AI for understandable reasons. Machine-learning systems can process imagery, signals, and sensor data far faster than human analysts. They can support target recognition, optimize logistics, improve navigation in contested environments, and help commanders make decisions under severe time pressure^[9,10]. AI also enables autonomous and semi-autonomous systems, especially drones, to operate in areas where communications are jammed or where the physical risks to soldiers are high. In that sense, AI may be the next major revolution in warfare after gunpowder and nuclear weapons^[11]. But the same attributes that make AI militarily useful also make it politically and ethically hazardous. AI systems are often opaque, brittle outside their training environment, and vulnerable to error, bias, or adversarial manipulation^[9,12]. In medicine or finance, these failures are serious. In war, they can be fatal. The central danger is not merely that machines will act badly, but that states may delegate lethal decisions to systems that cannot exercise human judgment,

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Biographies: Samuel Ariyo Okaiyeto, PhD candidate, research interest: food drying technology and equipment, Email: samuclariyo496@gmail.com; Weipeng Zhang, Associate Professor, research interest: agricultural products processing technology and equipment, Email: zhangwp@btbu.edu.cn; Jingshou Zhang, PhD candidate, research interest: agricultural products processing technology and equipment, Email: zjs15036220905@163.com.

***Corresponding author:** Jun Wang, Lecturer, research interest: futures and agricultural markets. College of Economics and Management, China Agricultural University, No. 17, Qinghua East Road, Beijing 100083, China. Tel: +86-10-62737830, Email: cauwangjun@cau.edu.cn; Hongwei Xiao, PhD, Professor, research interest: agricultural products processing technology and equipment. College of Engineering, China Agricultural University, No. 17, Qinghua East Road, Beijing 100083, China. Tel: +86-10-62736900, Email: xhwcaugxy@163.com.

contextual understanding, or moral restraint. As the International Committee of the Red Cross (ICRC) has argued, autonomous weapons systems raise humanitarian, legal, and ethical concerns precisely because they reduce or displace human control and judgment in the use of force^[13,14].

This is why the debate has focused on lethal autonomous weapons systems (LAWS), the CCW term for weapons systems that may select and engage targets without further human intervention after activation^[3]. The gravest concern is the use of such systems against people. A machine may classify movement, heat signatures, or patterns; it does not understand surrender, vulnerability, fear, or the moral weight of killing. This is also where the increasingly important concept of meaningful human control becomes relevant. Although definitions vary, the core idea is that human decision-makers must remain sufficiently informed, deliberate, and responsible when deciding to use force^[15]. Meaningful human control, therefore, means more than a person being somewhere in the loop. It requires human understanding of the system's functioning, the context of use, the target environment, and the consequences of attack, together with the practical ability to supervise, intervene, and abort^[16].

Current legal frameworks are not enough on their own. Some states argue that existing international humanitarian law (IHL) already regulates all weapons, including AI-enabled systems, through principles such as distinction, proportionality, and precaution. That is true in a narrow sense: IHL does apply. But the existence of general principles does not resolve the operational and accountability problems posed by autonomy. IHL was developed on the assumption that humans exercise judgment in attack decisions. Once machine-driven systems compress targeting cycles, operate at scale, or act unpredictably in dynamic environments, applying those principles becomes harder in practice^[13,17]. That is why the UN Secretary-General, the ICRC, and many states have all called for new rules, not merely reliance on old ones^[13,14,18].

Voluntary corporate commitments are not a sufficient substitute. Technology companies can revise their use policies, negotiate exemptions, or be pressured by governments to broaden permissible military uses. Nature's 2026 editorial was therefore right to argue that AI should not be used in war until specific rules are agreed^[9]. Where the use of force is at stake, governance cannot rest on private discretion alone. Binding public rules are needed.

3 Lessons from historical arms control

Historical arms-control regimes offer both caution and guidance. Nuclear, chemical, and biological weapons each triggered governance efforts after states recognized that unconstrained competition would increase global insecurity. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) did not eliminate nuclear arsenals, but it established a durable non-proliferation norm and linked it to verification through the International Atomic Energy Agency^[19]. The Biological Weapons Convention (BWC) and Chemical Weapons Convention (CWC) likewise codified prohibitions and, in the chemical case, paired them with a substantial verification system^[20,21]. These treaties do not provide a simple template for AI, which is dual-use, software-intensive, and widely distributed. But they do demonstrate an essential point: when emerging technologies pose grave humanitarian and strategic risks, the international community can construct norms, institutions, and monitoring mechanisms before unconstrained competition becomes irreversible.

4 Toward practical verification and compliance

AI is harder to regulate than fissile material or toxic stockpiles, and skeptics rightly emphasize this. A military AI treaty cannot depend on counting warheads or inspecting barrels of precursor chemicals. Compliance will be harder to observe because relevant capabilities are embedded in software, data, sensors, and procurement chains. Yet difficulty is not impossibility. Recent scholarship and policy work suggest several feasible layers of verification and compliance support: mandatory weapons reviews; audit trails for testing, validation, and deployment; documentation of target-selection parameters; restrictions on systems designed to apply force against persons; review of procurement contracts; and transparency measures for doctrine, training, and command responsibility^[10,13,14,17]. Verification in this domain would therefore be less like disarmament accounting and more like a hybrid regime of technical audits, legal review, reporting obligations, and behavioral constraints.

Article 36 weapons reviews are particularly important. Under Additional Protocol I, states must determine whether a new weapon would be prohibited by international law. In principle, this obligation already applies to AI-enabled weapons^[22]. In practice, however, national review processes are uneven, opaque, and poorly adapted to learning systems whose behavior may change with data, environment, or updates^[17,22]. A future convention should therefore strengthen and harmonize Article 36-style review for AI-enabled weapons, including lifecycle oversight rather than one-time predeployment approval. The relevant question is not only whether a system is lawful in design, but whether it remains predictable, understandable, and controllable in realistic operating conditions.

A global convention on AI warfare should therefore rest on four pillars: Prohibition, Restriction, Accountability, as well as Transparency and Verification, PRAT for short.

- **Prohibition.** States should prohibit autonomous weapons systems that are inherently unpredictable, that cannot be sufficiently understood or explained, or that are designed or used to target human beings directly.
- **Restriction.** Other AI-enabled weapons systems should be permitted only under strict limits that preserve meaningful human control, constrain time and geographic scope, and ensure robust human supervision.
- **Accountability.** States should assign legal responsibility across the AI lifecycle, from design and testing to procurement, deployment, and post-strike review, so that responsibility does not disappear into the machine.
- **Transparency and Verification.** States should commit to reporting, auditability, procurement oversight, and strengthened weapons review procedures.

5 Role of scientists and governance frameworks

China's Global AI Governance Initiative should be treated seriously in this context, not as a rhetorical aside. The Initiative calls for international cooperation, risk prevention, and the development of AI governance frameworks, norms, and standards based on broad consensus, with the stated aim of making AI more secure, reliable, controllable, and equitable^[23]. Although the Initiative is broader than military AI, it provides diplomatic language that could support the negotiation of rules on warfare applications. In parallel, China's 2021 position paper on regulating military applications of AI emphasized the need to avoid misuse, maintain human control over weapons systems, and oppose the

pursuit of absolute military advantage through AI^[24]. These positions do not by themselves solve the politics of negotiation, but they do show that one major power has already endorsed principles compatible with an eventual convention.

The CCW process remains the most plausible formal venue for such work, even if it has been frustratingly slow. The 2025 and 2026 sessions of the CCW Group of Governmental Experts on LAWS continued deliberations on autonomy, human control, and possible elements of a future instrument^[3]. That process should now move beyond broad principles toward a focused legal instrument. One practical route would be a two-tier model: a legally binding prohibition on systems that target people or are unpredictable, combined with legally binding positive obligations for all other AI-enabled weapons systems, including review, human oversight, transparency, and accountability requirements^[13,14,18]. This would be more realistic than trying to ban every military use of AI, while still addressing the morally and legally most dangerous applications.

Scientists also have a continuing responsibility here. Their role should not end with warning letters. The 2015 and 2017 open letters helped build global awareness, and more recent worker activism within frontier AI companies has shown that technical communities can influence policy and procurement choices^[5,8]. Researchers can help define measurable standards for explainability, auditability, reliability, and human control. They can refuse work that directly enables unlawful or unaccountable lethal autonomy. And they can support the construction of international norms before battlefield urgency normalizes what should never become normal.

The strongest objection to a treaty is that the field is moving too quickly and that the law will always lag. But that is precisely why negotiation must begin before military AI becomes more deeply entrenched. Arms control has always struggled to keep pace with technology. Waiting for perfect definitions or effortless verification has never been a serious strategy; it is simply a way of accepting drift toward proliferation. The better lesson from nuclear, chemical, and biological governance is that imperfect but binding norms, established early, can shape behavior, stigmatize unacceptable practices, and create institutional foundations that improve over time^[19,21].

6 Conclusions: A narrow window for action

The world and human beings have a narrow window to shape the military uses of AI before those uses shape the world. A global convention will not eliminate conflict or remove every danger posed by artificial intelligence. But it can do something vital: keep lethal decisions under meaningful human responsibility, prohibit the most dangerous forms of autonomous violence, and prevent military competition from defining the future of AI governance by default. That goal is no longer idealistic; it is urgently practical.

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