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Military AI and Intellectual Property Rights: Global Norms, International Treaties, and Emerging Legal Challenges

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Abstract: ***The use of artificial intelligence in military and defense systems. has grown significantly in the last decade, transforming the strategic landscape. Computing of prime ministers and creating a lot of innovation that is out of place in current IP structures. Military Artificial Intelligence is not like normal defense equipment that creates value; on the contrary, it creates value. This is done through algorithms, training techniques and software architecture. that are patentable, copyrightable and protectable as a trade secrets, while still being closely involved with the national security agenda. that do not comply with the norm of disclosure. This paper explores the crossovers In the field of military AI development and international IP law, and in particular, in terms of the sufficiency of the basic treaty instruments, including the Agreement on Trade-Related Aspects of Intellectual Property - Rome Convention are among the treaties that address this question. World Intellectual Property Organization (WIPO) governance initiatives include the WIPO Innovation Platform, the WIPO Cooperation Programme, and the WIPO Advisory Council. However, (WIPO) gave no attention to issues of ownership, protection, technology transfer, and cross-border enforcement issues specific to this area. By comparing and examining key state actors such as The United States, China, Israel, the European Union and Russia, The paper points out enduring legal deficiencies: The lack of an inventorship system. The lack of fit of the standard of AI assisted innovation, The use of national security carve-outs in multilateral treaties, and the absence of a definition of 'national security' that is accepted by all parties. any coordinated system to curb IP infringement. Committed using state sponsored cyber means. The results indicate that although treaties already provide some protection, much remains to be done. Normative scaffold, there exists a lot of uncertainty in the law, Increased international collaboration (possibly based on a) framework agreement. is the first WIPO instrument dedicated to AI and defense innovation. To maintain both innovation incentives and innovation, global security stability.***

Index Terms: ***Military Artificial Intelligence, Intellectual Prop-erty Rights, Patents, Copyright, Trade Secrets, TRIPS, WIPO, International Law, Technology Governance, Defense Innovation***

I. INTRODUCTION

Artificial intelligence has become a defining technology in contemporary defense strategy. Governments worldwide have poured unprecedented investment into military AI programs: the United States Department of Defense allocated more than $1.8 billion for AI-related initiatives in fiscal year 2024 [9], while China's civil-military fusion strategy has channeled state capital toward AI-driven weapons research and autonomous systems at an equivalent or greater scale [10]. Israel, the United Kingdom, France, and India have similarly articulated national AI defense strategies that treat algorithmic superiority as a core security objective. The competitive pressures driving this investment inevitably raise a set of questions that are not technical but fundamentally legal: who owns military AI innovations, how are they protected across borders, and what happens when proprietary systems are stolen, reverse-engineered, or licensed without authority?

The IP considerations of defence innovation are not new. In the twentieth century, states, and the contractors that built the structures, have used buildings and interiors to create their environments. Witnessed by the creation of multiple layers of patent secrecy by ecosystems, government patents, invention rights. The public-private partnership between the public funders and the private developers is discussed in Abramson et al. [13]. By its very nature, military AI is different from other types of artificial intelligence, intellectual assets. This is a conventional weapons platform, which is mainly An AI system is principally a bundle of a bodily object; intangible rights– Software code, model weights trained by software, Each covered by proprietary datasets and documented know-how—are available for free.All proprietary data and know-how is available for free.

A different legal instrument and each subject to different cross-border vulnerabilities. The standards needed to guarantee the protected yet not more than the protecting of a combat aircraft design is not easily transferable to protect the neural architectures and training pipelines that provide autonomy to the robot.neural architectures and training pipelines that enable autonomous robots. systems their capabilities.

The international IP treaty system was created to The majority of it was developed prior to the era of AI and wasn't aimed at defense applications. in mind. This is the TRIPS Agreement [1] and that is the The most comprehensive multi-lateral IP system, which also covers national security. Exceptions which have a very broad scope of application and which are disputed. They are the Paris' Convention of 1883 [3] and the Berne's Convention of 1886 [4]. Both patent and copyright protection, respectively, but neither, Asks if a system of artificial intelligence could be called a neither how the training data was compiled within military classification, relates to the right of ownership of copyright. WIPO is the foremost Intergovernmental body in a particular area of international activity. The body responsible for the setting of IP norms, has started consultations on Since 2019, AI and intellectual property [**?**]. But these discussions have resulted in no binding instruments have been achieved, Ignored the defense dimension altogether in general.

The purpose of this paper is to make a systematic legal analysis of these and many other questions. intersecting challenges. Section II maps the the main types of protection for intellectual property rights: patents, To the unique copyright, trade secrets and trademarks. Ingredients of Military AI creativ-ity. Section III evaluates The most significant internationally drawn up agreements to be applied and adequacy. Section IV makes a comparison of the approaches in each country. In five main players, across. Section V identifies the The most important outstanding legal issues, and Section VI Proposes regulations to be built. Only legal and governance aspects are analysed with others like social, economic and political not analysed; Technical and operational evaluation of the work done did not take place. Specific AI systems characteristics is carried out.

II. MILITARY AI AS INTELLECTUAL PROPERTY

Military AI innovations are not monolithic from an intel-lectual property perspective. Depending on the nature of the asset and the strategic posture of the rights-holder, different legal instruments may be invoked—and each carries its own strengths, limitations, and cross-border vulnerabilities.

A. Patents and Defense Innovation

Patents are the most obvious type of intellectual property. The claims for invented by AI products are not afforded protection. in return for public disclosure, the rights of exploitation. In principle, The algorithms, software architectures and hardware configurations. Military AI systems that serve as the foundation for other AI systems are eligible for patents.Military AI systems that provide a basis for other AI systems are patentable. in the majority of the more important jurisdictions, if they are novel, The concepts of inventive step and industrial applicability [1]. Lockheed Martin, Raytheon and Northrop are among the defense companies that have visited the area. Grumman have developed and accumulated significant patent portfolios in areas such as: Autonomous navigation, multi-sensor fusion and target recognition. that serve commercial interests and are strategic signaling Whether adversary or partners, the threats are the same [12].

The most important issue in defense is The patent secrecy order was instituted in accordance with statutes like – Under the Inventors Protection Act of 1951 [14] of the United States. Where the patent application is considered to be prejudicial to national security, the agency may block its publication at any time and for as long as it wishes, The disclosure which is usually the consideration in exchange for patent. In 2023, still several thousand U.S. patent applications were pending. A large percentage of which are related to electronics, communication, and—increasingly—algorithmic systems [15]. Other nations, such as China, Russia and Israel have similar programs. mechanisms. The outcome is a world where the patent system enables innovation at the same time, by offering protection. and jeopardizes the universal nature of such protection by secrecy Those regimes which are completely independent of the multilateral IP system.

The importance of patent portfolios in military AI goes beyond. beyond protection to freedom-to-operate analysis, licensing. Leverage, and limitation on adversary commercializa-tion. When defense firms register patents in related countries, they build: webs of protection that can be used to restrict technology diffusion in specific ways. This creates difficulties in technology transfer and increases the risk of this. Whether there is a connection between patent strategy and questions export control regimes such as the U.S. International Traffic in Arms Regulations (ITAR) [16].

B. Copyright Protection

The most common type of IP to which software is protected by copyright is software copyright. property protection in the AI domain, due to its automatic occurrence. without registration, without any requirement of, upon fixation. disclosure. The source and target code of military AI systems, Scripts, simulations, documentation, and: This is because operator interface designs are all potentially protectable as Works of literature or art as per the framework of the Berne Convention [4]. But the applicability of copyright in relation to military AI poses a number of underexamined complications.

The most debated is the ownership issue relating to AI-produced outputs. Encourage the use of autonomous AI systems in defense applications that could: In defense applications, au-tonomous AI systems could: Create analytical reports, decisions on target selection, In some instances, situational awareness summaries were generated without human involvement In the traditional way [5]. In almost all jurisdictions, copyright law demands an author, which can only be a human being. courts of the United Kingdom, the United States and the European Union. There are many instances of Union refuting extensions of copyright. Only automated processes can produce them [20]. This in the military sense translates to AI created intelligence products. may not have copyright protection as it would if it were a copyrightable work. Create an anomaly with equivalent human authored documents, operational information management.

Disputes over ownership of government–defense contractor contracts This presents still another challenge. Intellectual Property Rights are developed under A contract with the government, rights of government and other parties, and the private developer is subject to the nation's laws and contract It is not based upon any common international standard but is the local term used. In the United States, the Federal Acquisition Regulation (FAR) classifies as separate the following types: There are three types of rights: "government purpose rights," "limited rights" and "unlimited rights." single system of classification.in technical data—a taxonomy which cannot be neatly fitted into any single system. international copyright framework [17].

C. Trade Secrets

For many military AI assets that are particularly sensitive—adversarial The model uses the robustness techniques, propri-etary training datasets and model weights. The remaining 50 states and contractors depend on the other states and contractors to share information on implementation and operational param-eters. Instead of patents or copyright, on trade secret protection. The principle is simple; patent protection for inventions comes with disclosure, In opposition to national security, the protection of copyright; and Trade secret law, does not prevent reverse engineering; but trade secret law, does not prevent reverse engineering, So long as it is in good condition, can safeguard the entire The confidentiality of know-how can be granted for an unlimited duration [18].

The restriction on the protection of a trade secret is that it is inherently Sensitive, but dependent on positive protective measures. As per the TRIPS Agreement, Members are required to protect. information not to be disclosed or used "in a manner. In contrast to good trade usage, a standard that encompasses industrial espionage [1]. The state-sponsored acquisition of military AI trade secrets, however, is another matter. The normative gap of cyber intrusion is: It may be technically a violation of TRIPS, but this is done through a A stakeholder who is the sovereign actor with whom TRIPS dispute resolution is waged. mechanisms—which operate between states—are poorly suited. The almost continuous series of attacks on the West by the State has been going on.The continuous attack on the West by the State has been under way for a long time. defense AI know-how documented in indictments by the U.S. The Department of Justice [19] shows examples of. The actual weakness of current protection measures.

D. Commercial Identity and Trademark

The trademark aspect of military AI isn't as significant, in strategic speech, has a heavy commercial significance. Defence contractors spend a lot in the branding of AI-enabled products. product lines—like that of Gotham from Palantir, The SHIELD AI system is the AI behind Anduril Industries' Lattice operating system. Hivemind pilot system have high brand value and are also useful for piloting the system. defense procurement market [26]. The trademark protection is upheld by allied jurisdictions. Firms are in a commercial position that can be prevented by unauthorized The use of product names by rivals and/or enemies Trying to take advantage of the confusion in the market.

The Madrid Protocol, offers a mechanism of WIPO, refers to: Defense contractors are interested in international trademark registrations. more and more rely on [27], but it is not yet widely used. coverage is lacking and trademark rights are still stronger. Less subject to sovereign override than patent or trade secret claims.

III. GLOBAL NORMS AND INTERNATIONAL TREATIES

The intellectual property protection available to military AI innovations is shaped by a layered system of international treaties, each drafted for a different era and a different technological environment. An assessment of their adequacy reveals a pattern of partial coverage, significant gaps, and unresolved tensions between IP protection and national security.

A. The TRIPS Agreement

The Agreement on the Trade-Related aspects of Intellectual Property Rights (TRIPS) Rights have been negotiated as part of the Uruguay Round of 1994. the most comprehensive multilat-eral instrument that applies to military AI IP [1]. TRIPS sets the standards for patent and copyright protection, All World Trade Organisation Agreements provide trademark and trade secret protection. Organization members are obliged to implement, and it Arbitration in the Mediation, Arbitration, and Settlement (MAS) Division of the American Bar Association.Arbitration as a binding dispute resolution process available under The Dispute Settlement Body of WTO.

The aspects of TRIPS that are most relevant to military AI are: That allow Member States to exclude inventions from patentability "absolutely required to promote essential security interests". Derogations from TRIPS obligations are generally related to disclosure. This would be contrary to those interests [2]. Such security exceptions are substantially more comprehensive. Were more numerous than their counterparts in trade law and have never been subject to final interpretation by a multilateral agreement AI context. The scope of the exception forms a asymmetry: States allow exceptions on security grounds to protect They face the challenge of complying with their own AI innovations while keeping them under wraps. While calling for TRIPS-compliant protection to their, This has not been a tension that has existed between commercial AI has exported, and security. WTO jurisprudence has been able to respond sufficiently to this.

The TRIPS also has no provisions concerning the authorship The "inventorship" of AI-assisted works or works of AI. The term 'inventions' alludes to the original drafting environment of the treaty, prior to AI. The WTO's TRIPS Council attempts to make TRIPS more up-to-date. The COVID-19 pandemic has delayed and politicized these efforts. negotiations that between them take up lots of political time is vaccine waiver negotiations.Vaccine waiver negotiations take up lots of political time between them. Allocated to AI related reforms that could have been invested elsewhere.Directed to the investment of capital that could be invested in other areas of reform related to AI.

B. The Paris Convention

The Paris Convention for the Protection of Industrial Property, Since 1884, it has been in force and lays the groundwork. Of international patent protection, in particular national treatment, the right of priority and the doctrine of forfeiture for, failure to work [3]. For defense AI innovators, the priority right—which allows a To claim the filing date of a patent application filed in one of the member states. Date of earlier application in other state (12 month) The practical importance of window—is of particular importance. Allows a defense contractor/gov't lab to obtain an early filing date in its 'home jurisdiction' before Taking up the international prosecution process, whereby trapping the balance between speedy release and the Security Review is required.

The Paris Convention doesn't, however, cover secrecy orders. For the denial or cancellation of patents due to national security. agencies. A secrecy order will be placed on an application when it is first made. United States will not be able to be filed overseas until the order is lifted, Some of which can be postponed forever [14]. The outcome is the priority rights granted in the Paris Convention. Convention are practically unavailable for the most sensitive. There is also a two-tiered system in place, military AI inventions, with another part being civil ones. Commercial oriented defense technology receives in. full protection worldwide and for missions of critical importance innovations receive none.

C. The Berne Convention

The Berne Convention for the Protection of Literary and Artistic Works (1990).Berne Convention for the Protection of Literary and Artistic Works (1990) Including the works, the basic international copyright instrument, makes automatic protection for literary and artistic works— a category which includes software that is in the traditional In most states, the interpretation has been adopted which followed the 1991 This is also known as the EC software directive, and similar national laws [4] apply. For military AI, the Berne Convention is most important in terms of In its protection of software source code, documentation, and like information, and and training materials which together contain the operational capabilities of AI systems.

The most significant restriction on the Berne Convention for mixed legitimacy.The only thing military AI won't say is that it's on works of dubious or machine-assisted authorship. A protectable work is defined in Article 2. as "works in the literary, scientific and artistic field", A formative that has been repeatedly accepted by the courts and national offices.A formative that has always been accepted by the courts and national offices. Read as involving human creativity. The issue of the military AI system's output, whether they are correct or wrong.Whether the output of a military AI system is correct or incorrect. Are these works protected by copyright (or by whether the engineers who designed the system are the legal authors—remains unresolved It has been a matter of international law and has elicited conflicting national responses.

D. WIPO and Emerging AI Governance

The World Intellectual Property Organization has set. It is the primary forum intergovernmentally to develop itself. Worldwide best practices and guidance for AI. Starting from 2019, WIPO organised a series of discussions on AI and IP which led to a detailed issues paper Identifying key challenges: AI inventorship, The security of the training data, The liability of the parties in case of output produced by AI, and the relation between AI and trade secrets [5]. A new issues paper and formal meetings of the WIPO This work has been carried on by Intergovernmental Committee. through 2024 [6].

Although some of this activity occurred, WIPO has had memorable discussions, AI IP protection and security was not considered. property. The forum is consensus oriented, which implies that, Approval by the Member States (including the Big Five armies). Progress made by with competing interests in IP Disclosure slong on contentious issues Nevertheless, WIPO's standard-setting International patent system and working of it. The three systems that are most pertinent to the subject are Treaty (PCT), the Madrid Protocol, and the Hague System. The institutional role is included in for industrial designs. Such reform in any meaningful way in the international arena cannot be circumvented. A WIPO Special Agreement on AI and intellectual property— In analogy with the Budapest Treaty on biological material. Or the Singapore Treaty on trademark law—has been. previously suggested as a means for targeted norm development [31].

E. The regulation of the United Nations and military AI.

The United Nations system has laid certain foundations in the field of military AI. mainly in the context of humanitarian law and In place of intellectual, international peace and security. property. Convention on Certain Conventional Weapons (CCW) (CCW) Group of Governmental Experts have discussed lethal Since 2014, She has created autonomous weapons systems, a making of which she is a proud participant. In 2019 there were principles that affirmed the importance of a set of guiding principles. While there are some human controls, they aren't necessarily wanting to enforce binding prohibitions [7]. The Secretary-General's Agenda for Disarmament and the The work done by the UN Institute for Disarmament Research (UNIDIR) Have also been on operational and humanitarian concerns. Dimensions not IP protection.

More recently, the U.S.-led Political Declaration on The Responsible Military Use of AI and Autonomy (2023), and To be endorsed by over half of the states and covers the responsible No development, deployment of military AI systems, but There are no provisions in contains covering intellectual property. The reasons for this are allocation, technology transfer restrictions, or [1] cross-border enforcement of IP rights declaration. There is a discrepancy between the current governance literature, which focuses on, and practice, which is not. A sense of accountability in operations and the system of commercial law The protection of IP has not received much attention so far. in multilateral forums.

IV. COUNTRY PERSPECTIVES ON MILITARY AI AND IPR

National approaches to the intellectual property dimensions of military AI vary substantially, reflecting differences in legal tradition, defense industrial structure, and strategic posture.

A. United States

The United States has the most advanced legal system. infrastructure to support military AI intellectual property in any state. The Bayh-Dole Act [23] creates A protocol for distributing the patent rights, established as a law.A law that provides for distributing patent rights. arising from federally-funded research, large-scale Affects implications for University sourced AI innovations that enter into defense programs. The Defense Advanced Research Projects Agency (DARPA) and the Department of Defence's Office of the Under Secretary for Research and Engineering has a wide-ranging patent licensing portfolio. programs that have generated both commercial value and strategic technology management capabilities.

The majority of U.S. defense AI providers are privately owned. From legacy prime contractors like the BAE Sys-tems Group to new small and medium-sized enterprises, the range of contractors is expanding. As Lockheed Martin and Raytheon become AI-native companies. As Lockheed Martin and Raytheon transform into AI-native firms. Some entities like Palantir, Anduril, and Shield AI. These companies have a large number of patents. frequently assert IP rights against competitors and in procurement processes [26]. The ITAR and Export Administration Regulations (EAR) complement to IP regime to control transfer of defense equipment sales outside the country, and developing an IP/export control integrated system that is more sophisticated than anywhere else in the United States.

B. China

In the last few years, China has become the top filer in the world. It is the largest number of patents related to AI in all areas, The military AI program is a military/Civilian partnership. A fusion strategy where the IP ownership is strategically managed. It has been used to facilitate techno-logical competition [10]. State-affiliated organizations, such as institutes of Chinese Academy of Sciences and universities having research units in place. close PLA ties, file substantial numbers of AI patents in both the Chinese Patent Office and the international Patent Offices, Establishing prior art positions and freedom to operate Platforms for both commercial and defence applications.

China's military AI IP approach is unique in the following ways. the extent to which the State coordinates the development of national AI: national AI development plans issued by the State Council are equivalent to directions. IP generation in priority technology areas, while the National Security Law [24] gives sweeping power to force disclosure of Securely transfer private IP to government actors for security reasons. The outcome is a formal IP rights regime which can be put forth globally while the core pieces of asset continue to be effectively under state control at home.

C. Israel

Israel's defense AI ecosystem is characterized by the the generally recognized importance of trade secrets in the protection of inventions over patents in the United States. The preferred tool of IP protection. The concentration of military AI know-how in a small number of specialized firms—including Elbit Systems, Rafael Advanced Defense Systems, and a network of dual-use The startups cultivated via the Unit 8200's programs, alumni network—establishes an atmosphere for: Strategically undesirable disclosure through patenting is a disclosure undesirable in the strategic sense. The relative size of the domestic market encourages The adoption of technology is constrained by contractual measures by firms to control the diffusion of technology. Instead of formal IP registration [25] it uses mechanisms.

Israel's stance in the international IP system Also influenced by its defense cooperation with both sides. relationships. Arrangements for transferring technology to U.S. IP must be adhered to in the United States. export control schemes, includ-ing a multi-layered governance mechanisms, Israeli-developed and implemented IP in the context of the environment. subject to the laws of Israel and the U.S. simultaneously [16].

D. European Union

The EU has taken a pragmatic stance on military AI. mainly by means of moral and legal rules, In particular, the EU Artificial Intelligence Act. adopted in 2024 [21], which sets out requirements based on the risk level of AI systems. across sectors. The AI Act makes it clear that AI systems are to be excluded. If only in the interest of national security and military. purposes in scope, this limits to Competence of the EU in defence issues.

In this context, European defence primes, such as Airbus Defence and Space, Leonardo and KNDS (operate) In the midst of a mosaic of national IP systems, which have Partially harmonized under EU Directives on: copyright of software and legal protection of software. databases [22]. The European Patent Convention, under the supervision of the European Patent Office, was signed in 1973. EP Office offers a European patent. Does not create a single grant mechanism but does provide consistent The procedures of obtaining a secrecy order leave "national security" out of the equation. Restriction of the discretion of the member states. Lack of a specific European defense IP framework causes coordination inefficiencies in common defense. The programs include Future Combat Air System (FCAS).

E. Russia

The use of AI in military intellectual property in Russia is very centralized. The Russian State Authority on Intellectual Property (Rospatent) administers a patent system that in form respects TRIPS obligations, but effective protection of IPRs in developing

countries is not guaranteed. Restriction on IP rights in the defence sector. under the sweeping powers of the state to Request technologic resources for national security legislation [28]. The funds invested in the defense industry are mostly allocated to Russia's AI development. via state enterprises (Rostec and Almaz-Antey), in which IP is owned by entities within ultimate government control. Russia's involvement in international IP governance has been selective. It continues to be a party to the big dog fight. Has not actively taken part in WIPO's conventions but has taken part in them. The issue of AI and IP consultation and its way of work. The acquisition of foreign IP via cyber is not do not acknowledge TRIPS obligations. vis-a`-vis its adversaries. This posture further In this context, underscores the drawbacks of the multilateral IP approach. military instruments in the context of AI.

V. KEY LEGAL CHALLENGES

The intersection of military AI and international intellectual property law generates a set of legal challenges that existing frameworks address only partially, if at all. These challenges are distinct from those facing commercial AI development because they involve uniquely complex interactions among state sovereignty, national security, and multinational innovation ecosystems.

A. Ownership of AI-Generated Outputs

A complex question of ownership of autonomous outputs produced by military AI systems is among the most structurally novel Issues with IP in the defense industry. When an AI system that is functioning in an intelligence context produces An analytical report or 'situational awareness assessment' Where there is no meaningful human authorship, the copyright system, Nothing is certain with regard to .com. The U.S. Copyright Office has received the position where AI-generated works without human creative effort are prohibited.the position where non-humans' creative works created by AI are not allowed. For copyright protection, only expression is eligible and not ideas or fact [34]. The UK Intellectual Property Office has proposed—but not yet mployed—statically authorized idea for computer-generated works which would attribute it to the person who was working on it. Arrangements are necessary, but this has brought about some interest. scholarly criticism [33]. In the military operational context, this uncertainty has concrete consequences. Intelligence products, targeting anal-yses, AI-generated and strategic assessments can fall into the cracks. a state of copyright uncertainty or "vacancy," in which no one is the owner of the work, allowing for their free multiplication and propagation. While classification law provides a parallel protection regime That regime does not if it's sensitive government information. Replace IP rights in allied-sharing/commercial. In licensing situations where classification controls are not needed.

B. Patentability of patents for AI-assisted inventions

Money are patentable is a hot topic.It is a flame-throwing question whether or not such inventions are patentable. AI assistance meets the requirement for patents at the same time as, A commercial law problem and, in the military context, a national security one. The landmark proceedings Using the DABUS AI system in front of patent offices, the European Patent Office, the United States and the United Kingdom. and Australia concluded that existing laws and policies AI systems are not allowed to be named as inventors [20]. The result is that inventions created with the assistance of AI need to be The success of the invention, with a call for further investigation, was attributed to the human engineers, which led to questions about the invention. Activity to climate change and the human response to it.Human contribution to climate change and human response to it. Machine reasoning vs. versus a patentable advance.

The question of patentability has arisen for defense procure-ment: downstream impacts of obligations under the contract to: inventions developed under government contracts. If AI-assisted inventions are treated as equivalent to human inventions under "Bayh-Dole"-type frameworks; they impose the same reporting/licensing requirements. as conventional inventions. If they are treated as. somehow distinct, a gap opens in the government's capacity to assure it is provided with the right to. According to its funding agreements [17].

C. Technology Transfer and Licensing.

The ideas and applications of AI technology frequently cross borders.AI technology solutions are regularly transferred from one country to another. via defense cooperation agree-ments, joint ventures, Foreign military sales, co-development arrangements. Each of these deals with IP rights... assignments, licensing, and licensing, assignments, licenses, sublicenses and residual know-how agreements— problems that have to be reconciled with IP law and export control regimes [16]. The relationship between these two laws is frequently uncoordinated at the national level and Not really dealt with at the international level, except on an almost marginal basis.

A key challenge is presented in the context of In Multina-tional defence programme, IP rights Are held in joint ownership by organisations in different jurisdictions. The F-35 Joint Strike Fighter program, which comprises sub-contractors in nine partner countries and has sparked a lot of controversy regarding IP rights, data rights, and allocation of commercial. derivative rights that show the complexity of: Multi-state technology transfer governance of [32]. As military AI programs expand into, too. Similar conflicts, in multinational contexts do not have any agreed resolution mechanism and are predictable.

D. Cross-Border Enforcement Difficulties

Even when IP rights of military AI are defined, In countries where there is national legislation, cross-border enforcement materials are available. Tough on-the-ground and legal chal-lenges. The TRIPS' dispute settlement mechanism is state to state. is not well adapted to resolving private issues. Disputes over intellectual property rights with defense contractors in multiple jurisdictions. A foreign court is not necessarily a court that has jurisdiction over a national. sovereign actors or foreign state enterprises that Using internet service provider's IP address without permission. If there is jurisdiction, enforcement is possible, but may be hindered. Through act of state or sovereign immunity, the difficulties in carrying out judgments In opposition to foreign government agencies. A lawsuit filed by U.S. defense tech To block Chinese state-backed entities in U.S. courts shows the potential and constraints There are many ways to do this: Judgments can be obtained, their execution depends on the defendant having forgivable assets in a U.S. jurisdiction—a condition such cases are hardly met. sophisticated state actors [19]. Alternate enforcement: Diplomatic means. Systemic costs of Do not conform to any particular IP grievance in a disproportionate manner.

E. Cyber Espionage and Intellectual Property Theft

State sponsored cyber operations against military AI. intellec-tual property are the most practically significant property rights. significant IP threat in the defense domain and The region with the highest norm deviation. The hacking of business secrets of AI algorithms and training datasets, Examine cyber intrusion against and modelling architectures In essence, it is a violation of the trade secret law.It is in fact a violation of the trade secret law. A nominal ban on TRIPS [1] nominally exists, although that misappropriation was committed by a sovereign state is a state with a state intelligence. Apparatus completely protects it from the legal Consequences that would apply to one's personal actions.

There have been documented cases, reflecting the extent of the issue. U.S. Department of Justice is indicting officers. The officers of the People's Liberation Army, officers of the FSB, and other state proxies of cyber operations directed at defense technology IP [19]. The indictments are used to set a precedent and to teach a lesson. Can be used to function but do not offer remediation by themselves To prevent the use of appropriated IP or its functioning. Lack of a binding international convention on state cyber espionage—as opposed to Went to attack critical infrastructure—leaves Theft of intellectual property by cyber in a normative gray zone That the TRIPS, or any other instrument, meaningfully addresses.

F. Innovation and National Security

The basic conflict of all the above. challenges is that between the disclosure logic of IP law and the secrecy logic of national security. In the patent and It is based on the idea of publication-based manifestations: The trading of selective exclusivity for public good national security regimes, knowledge dissemination; In defense innovation, the following assumptions are made: opposite: Maximum information flow control. To maintain an operational edge.

This tension is not completely unstoppable, but current frameworks deal with it in an ad hoc national way. mech-anisms—in particular, secrecy orders, classification systems, export controls (in addition to internationally) coordinated principles. The outcome is innovators in allied states confront conflicting and even opposing A technology that is developed in a way that is contrary to previous logic.A technology that is built in an opposite manner to previous technology. Together with U.S. and European partners, it can lead to conflicting U.S. and European export control and At the same time comply with IP disclosure requirements. Solving this tension calls for not only better IP rules; closer link between Cooperation and coordination in the field of IP governance and IP defense at the bilateral and multilateral level [29].

VI. FUTURE DIRECTIONS FOR GLOBAL REGULATION

The legal considerations discussed in the above sections establish The sketch depicts several arrows indicating directions needed for international regulatory development. Improvements in any of these areas will benefit the Board as a whole. will demand continued political goodwill and reconciliation Historical constraints of interest coordination that have stood in the way.

One of the top priority short-term demands is: Guidance in the current treaty provisions that is specific to AI. The TRIPS, Paris Convention and Berne Convention all contain provisions that can be used for AI-related International issues interpretation if taken as being it. level. WIPO should be the venue for development of authoritative guidance—through formal recommendations, The provisions of a model convention, or a special treaty concerning AI inventorship, The use of AI to create content and the safeguarding of AI training data. As an independent group of intangible assets [6]. Such guidance ought to be explicit with respect to the defense and One aspect of security which has not been addressed in the current WIPO discussions.

Second, second elements of the security exception in TRIPS must be satisfied Clarification NOT extension. Article 73's The national security carve out is extremely wide at this time "as" used to be almost as limited in usefulness as the term self-limiting. can use it to set aside nearly all TRIPS obligations, but at the same time they negatively affect the multilateral The "bargain" which provides TRIPS with its normativity. A more focused approach would differentiate: Inventions important to security who are seeking to keep them secret. Defense AI innovations that are both andable and marketable. That which should be subject to full TRIPS disciplines. The WTO's Dispute Settlement Body may be expanded.The Dispute Settlement Body of WTO may be expanded. this distinction in advisory opinions in In appropriate cases, following the precedent The national security exceptions were established in the national security exceptions. Cases regarding Russia-Ukraine and U.S.-steel tariffs.

Third, there is a lack of enforcement across the border. A separate multi-lateral mechanism. An international a consensus about states' roles in cyber operations. The conference was organised in the spirit of the Budapest Convention on IP, which took place in Budapest in 1997. Cybercrime extended to state actors– would set a law for state-sponsored IP theft could be characterized as an internationally misconduct that results in a reparation responsibility. The Tallinn Manual process has evolved similar norms for cyber operations in general [30], However, a more specific instrument specific to IP protection would be both feasible and valuable.

Fourth, technology transfer for allied defence Special pro-visions for cooperation are needed. Defense cooperation on a bilateral and multilateral basis. agreements should have chapters put in specifically for the agreements. manage IP rights, licensing and Jointly developed AI systems dispute resolution. The NATO Science and Technology Organization's

Ambush Detection Tools and similar tools. Offer a beginning, but will need to be built upon significantly. A new development to cover the entire IP lifecycle Of military AI innovations,

Last, but not least, WIPO's future in the governance of military AI. must be specifically identified and funded. The following strengths were emphasized: its convening power, its technical expertise, and administration of the interna-tional registration. systems provide it with certain institutional strengths. to provide the impartial arena for states to, They can be used by stakeholders in the defense industry and civil society. Discuss norms around AI specific IP rights. An ad hoc committee on AI and defense innovation—parallel to WIPO's Human gene transfer is already underway, as part of the Intergovernmental Committee on genetic material, and is continuing. And resources and traditional knowledge—-would Assign structured multilateral space this agenda currently lacks.

VII. CONCLUSION

AI for military applications ultimately is an intellectual property issue as much as it is a strategic or tech one. The algorithms, Developed software systems, trained models and operational all the know-how that define modern defense AI capabilities. Bundles of intangible rights whose governance is on a different level. shapes both innovation incentives and international security dynamics. This paper has contended that there are a number of existing papers that have made such contributions. international IP framework is providing a. Only provide a partial necessary normative foundation Poor and growing inadequate response to challenges The unique nature of military AI, which can be tailored to specific tasks while simultaneously retaining its human-like qualities.

The TRIPS Agreement and the Paris and Berne Conventions, The WIPO treaty system together with and the cover the However, the most important types of IP protection were drafted. without reference to AI and contain security exceptions who have opportunities for systematic exploitation of their width normative evasion. National approaches across the In addition to the United States, China, Israel and the European Union.Besides the United States, China, Israel and the European Union. The legal traditions of and Russia are different. postures that are not aligned strategically at the international level. Unresolved challenges with regard to AI authorship, AI support Inventorship, cross-border enforcement and the The context in which state-sponsored cyber activities take place is a normative vacuum. IP theft poses serious legal challenges. That will only be exacerbated by military AI systems that will proliferate. More efficient and widespread.

There are more mechanisms for cooperation between the countries that are needed and Is possible, but requires political prioritization. until now, has not been captured in multilateral IP governance agendas. Future regulatory frameworks must reconcile the disclosure principle of IP rights and the the national security concerns of verve, innovation incentives of a competitive defense Economy that has accountability needs of International humanitarian principles, and sovereignty The interests of individual states in the collective Stable and predictable relationships with other countries are growing. IP order. These are problems that are solvable, but not, however, self-resolving ones.

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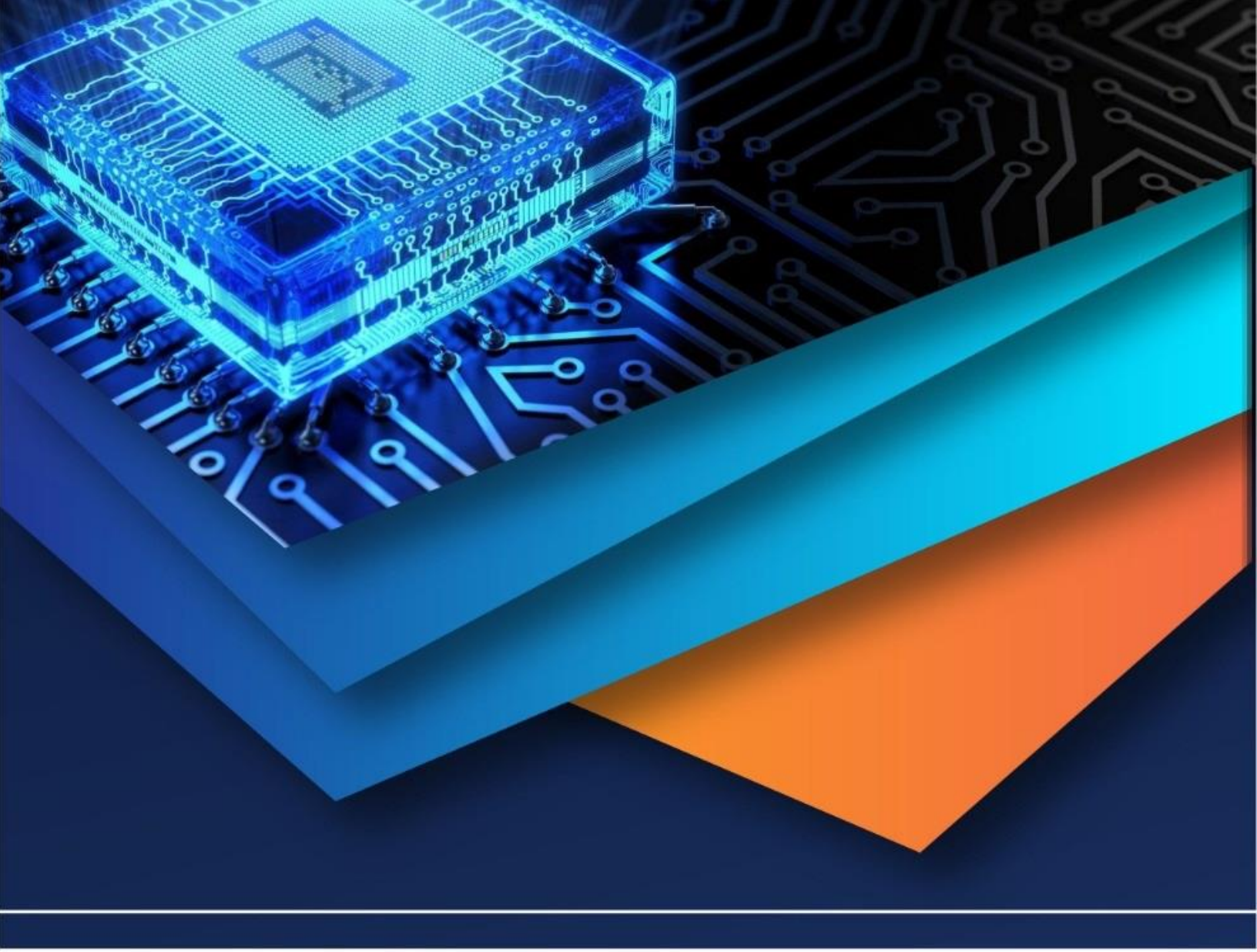

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