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AI AND MODERN WARFARE: OPPORTUNITIES AND RISKS IN SOUTH ASIA

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Abstract

This study investigates the impacts of AI in modern warfare, focusing on its opportunities and risks. The military has access to a revolutionary tool in artificial intelligence. To top it all off, it lets the military operate with a great deal of independence. Several countries have recently taken a more aggressive stance in response to the increasing militarisation of AI. The militarisation of AI means that by using advanced measures, one can affect the regional security of its opponents. Using 5G- warfare and impactful espionage, the opponent's sovereignty can be breached. State security can be affected. This is the militarization of AI. The exceptional efficacy of AI is largely responsible for this. The objectives of the study include discussing the impact of AI on strategic balance in South Asia and also, assessing how AI is impacting global security and international politics for the region. The descriptive method was used to carry out this study, in which secondary sources, including previous research, books, and articles, were analyzed. AI has offered military forces a strategic advantage by filtering enormous data, boosting detection, and streamlining logistics. These advancements offer risks, particularly in nuclear deterrence and contemporary conflict. It was concluded that in military operations, AI improves situational awareness, decision-making, targeting, and operational access. Policymakers and military leaders must bargain to explore AI's benefits in war while reducing its risks to global security and stability.

Keywords: Conflict, Operations, Opportunities, Risks, Politics

Introduction

Pakistan and India are arch-rivals. Since 1947, the two countries have been exchanging conflictual moments, where from wars and skirmishes, they have displayed animosity. In the modern world, AI has evolved in a militarized manner. Leveraging AI, countries can engage in realistic maneuvers, where innocent human lives are affected. AI is a revolutionary tool for the armed forces and with its captivating measures, it has the potential to harm, disarm and antagonize opponents using swift measures. Furthermore, it allows for considerable independence in the execution of military operations. First-world governments are increasingly turning to AI for military usage as a way to get an edge over their adversaries. Due to its unparalleled efficiency, some countries have recently taken a more confrontational stance towards the growing militarization of AI. (Ali et al 2021) states that there will be less room for error and more room for complexity as a result of its superior intelligence, which is orders of magnitude higher than that of humans. For this reason, the world's powerful nations see it as something they can utilize to their advantage. earliest firearm. Andrade (2016) claims that gunpowder was loaded into a bamboo tube and then attached to the point of a spear to make a burning lance. The technology of today can significantly aid in the creation of a bullet that can guide itself through a rifle. Weapons used during World War I included bayonets, rifles, revolvers, machine guns, grenades, artillery, mortars, and tanks. During World War I, frontline artillery was the deadliest weapon at a soldier's disposal. It is crucial to have the fullest possible knowledge about nuclear weapon systems. They include not only the nuclear weapons and delivery systems, but also everything connected to the nuclear force, such as the nuclear command and control, early warning, and intelligence, reconnaissance, and surveillance networks. Not just nuclear weapons, but also long-range, high-precision missiles, unmanned combat aerial vehicles (UCAVs), and ballistic missile defence systems are examples of essential non-nuclear strategic weapons. The nuclear threat in South Asia is less discussed in scholarly and professional literature than the issue of strategic stability. (Rind, Pirali, 2024), there may be a lack of precise context around the usage of the phrase "nuclear risk" due to its widespread application in the fields of nuclear weapons and non-proliferation and nuclear safety and security breaches. This might be a contributing factor. Because of the fear of being seen as a weakness, researchers in India and Pakistan generally avoid looking into the prospect of nuclear weapon use and nuclear safety and security breaches hurting their own countries (Nayan, 2018). As per Morgan et al (2020), Research and development (R&D) for military applications of AI, therefore, is far more extensive than any attempts at basic research on AI. This is because the majority of AI research funding goes toward applications for the military. The military does R&D on AI in conjunction with a wide variety of other R&D projects. This is because AI is a rapidly expanding industry. Keep in mind that the potential incorporation of AI into nuclear weapons is only one way in which AI might affect the maintenance of strategic stability. Several programs have been created, such as ones that facilitate command and control decision-making. I've been working now for close to three decades. AI's skills are growing, though, and it will play a crucial role in the future of a field that is increasingly important to daily operations. This raises concerns that have been the subject of scholarly investigation, such as placing too much stock in technology or not enough, being unable to smoothly adjust course when disaster strikes, having a wide range of human involvement, and being susceptible to a host of cyber threats and

algorithmic biases.1 The dangers of AI are not limited to the use of such technology in nuclear weapon systems; rather, they extend to the use of such technology in non-nuclear military technologies, which could be used to have an impact on the nuclear realm as well (Hawley, 2017).

Problem Statement:

The use of artificial intelligence (AI) in modern warfare is not without its opportunities and risks. Artificial intelligence (AI) has the potential to enhance military capabilities, decision-making, and the capacity to reduce human casualties. However, this rapid advancement has raised concerns about the ethics, misuse, and unanticipated consequences of AI in armed combat. Regional security is an important element in fomenting peace. AI has the potential to disrupt it. Using advanced measures and 5G warfare, Pakistan and India can engage in warfare. Recognizing and resolving these risks and opportunities is critical for guiding the development and proper usage of AI-enabled combat in the future.

Objectives of the Study:

1. To examine the opportunities and risks associated with the Use of AI in modern warfare and see how relations are being affected by its use.
2. To evaluate the impacts of AI integration in weaponry on international politics, global security, and strategic balance in South Asia.

Research Questions:

1. What are the opportunities and risks associated with the use of AI in modern warfare?
2. What are the impacts of AI integration in weaponry on international politics, global security, and strategic balance in South Asia?

Significance of the Study

AI and modern warfare studies are essential to understand the opportunities and risks of using AI in military operations. AI can optimize military logistics, resource allocation, and battle scenario decision-making. Researchers in this discipline have developed autonomous weapon systems and predictive analytics for risk assessment. Studying artificial intelligence in current combat is important because it will change military technology, affect international relations, and raise severe ethical and legal issues (Haney, 2020).

Literature Review

(Haug and Drazen 2023) points out that machine learning and automation can greatly enhance situation awareness in India's military. Unmanned aerial vehicles (UAVs) are already being utilized for various purposes, such as maritime oil monitoring, border security, and surveillance. Additionally, CAIR is developing the Order Data and Choice Emotionally Supportive Network (CIDSS), providing commanders with efficient decision support and visualization capabilities. Himshakti, an electronic integrated combat system, has been developed to safeguard electronic equipment on the battlefield and assist in reconnaissance investigations and sign insight sticking operations. Bistro & Piotrowski (2021) argues that automation and machine learning are also working to mechanize threat detection and deal with cyber threats to the tactical assets of countries. The influence of AI in militarization can have both favourable and unfavourable impacts on regional stability in South Asia. While these technologies can enhance armed capabilities and decision-making competencies, they can also pose severe threats and potentially lead to pre-emptive attacks in the region. The potential of AI in military applications necessitates careful consideration of its implications on regional security and stability in the context of South Asia. Chesney & Citron, (2019), highlight that cyber warfare is another aspect where AI could potentially disrupt the tactical stability

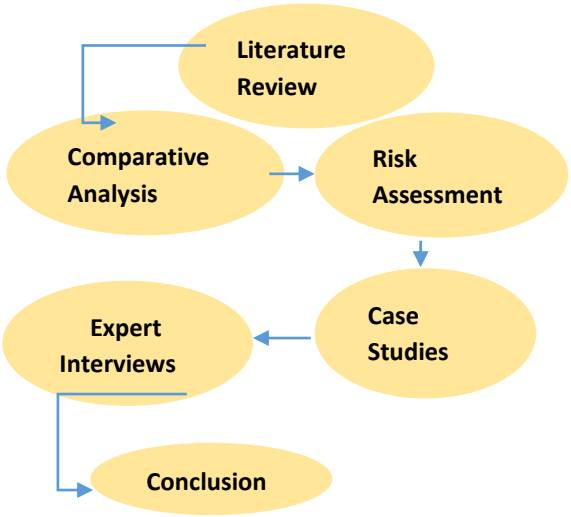
of the South Asian region. Machine learning plays a significant role in enhancing the performance of radar systems for signal processing and generating alerts, which could aid in situational awareness in space and assist cyber defenders in monitoring intrusion detections. These advancements in cyber security communication systems have the potential to reinforce tactical stability in the region. However, the same cyber capabilities could be utilized to spread misinformation and deliberate false information on social media platforms, posing risks to regional stability. Yusuf, (2019), concludes that such information manipulation may result in major problems and implications for escalation in the South Asian region. The conflicts following the 14th of February 2019 Pulwama assault in Indian-administered Kashmir exemplify how information manipulation can escalate tensions. An in-depth examination of the key strength condition in South Asia reveals a shift in India's policy towards counterforce and preemption. India has designed, deployed, and funded ballistic missile defence systems with integrated multilayers. According to (Lalwani & Segerstrom 2023), in 2019, India approved an agreement with Russia to purchase five regiments of the S-400 Trium air defence framework. Additionally, India has two internal strategies—Advance Air Defense and Prithvi Defense—for intercepting missiles at low and high altitudes, respectively. On March 27, 2019, (Lalwani and Sagerstorm 2023), India conducted a test of its anti-satellite missile system, targeting one of its satellites in low-Earth orbit. This capability suggests that India can target long-range strategic missiles as well as an adversary's military satellites. (Verma 2023) argues Furthermore, India's space research agency demonstrated the possibility of launching multiple independently targetable reentry vehicles by launching 104 satellites from a single rocket. These recent developments in India's arsenal put Pakistan under increased pressure, adversely affecting the strategic stability of the South Asian region.

Research Methodology

This examination involves a comprehensive approach to overseeing research to investigate the adoption of Artificial intelligence in the context of warfare, with a particular spotlight on a general evaluation of India and Pakistan. Recognizing the intricate dynamics of modern warfare and the evolving role of AI within it, understanding both the valuable open doors and risks related to the blend of AI technologies in military undertakings. It does this by perceiving the marvelous parts of contemporary battle and the developing job of reenacted knowledge inside it. The primary structure of this audit is a comprehensive evaluation of the existing writing, which includes previous investigation attempts, insightful articles, and conclusive texts. By solidifying experiences from different sources, this audit figures out key models, difficulties, and developments associated with the use of mechanized thinking in contemporary combating conditions. Utilizing a reasonable procedure, this appraisal takes an understanding, as far as possible, and perceptions concerning reproduced information gathering inside the essential plans of India and Pakistan. By depicting practically identical characteristics, aberrations, and key ramifications, this appraisal means to give important snippets of data into the headings of repeated information coordination in the different military rules of the two countries. Hardening a bet assessment system, this study assesses the typical deficiencies, moral conditions, and key results related to the improvement of information drives in combating settings. Through a deliberate assessment of obvious dangers and control techniques, this evaluation endeavours to edify strategy talk and dynamic cycles at both public and overall levels. This study explains the essential effects and useful aspects of PC-based insight-

enabled military drives by utilizing appropriate context-oriented analyses and real-world models. This section of the study provides significant insights into the valuable implications and practical goals of computerized reasoning compromise in current conflict situations by separating undeniable perspectives and contemporary relevant examinations. This study uses coordinated gatherings to add pieces of information from space subject matter experts, policymakers, and military experts to the specific examination. By referencing expert points of view on critical requests like innovative courses of action, key targets, and moral contemplations, this part chips away at the importance and liberality of the appraisal disclosures. This study means to add to keen talk and system discussions on this fundamental intersection point of development and security by using a complex way of thinking that integrates a composing review, comparative examination, risk assessment, context-oriented investigations, and expert meetings.

Results and Discussion:



Opportunities of AI in modern warfare

AI improves military skills related to situational awareness. It gives military systems the ability to filter through vast volumes of data to locate information that is pertinent to the situation, to combine data from a variety of sensors, and to monitor whether the circumstances have changed. These capabilities boost the likelihood of locating targets and activities across the board in the military's several areas of conflict.

1. AI for Detection

Anti-submarine warfare is a significant use of this technology. The use of AI can facilitate the detection of submerged objects by enabling more effective control of capabilities. These capabilities include lower-frequency active sonar, ambient noise, and non-acoustic sensors (such as bouncing laser beams). In addition, AI is useful for mapping the seafloor and tracking currents, both of which contribute to making the seas more visible and accessible (Loureiro et al 2024). Another significant use is the examination of satellite images, which may be used, for instance, to identify the building of military facilities, the transportation of mobile launchers, or changes in military stations (Pratomo et al 2024). The capacity of nuclear-armed governments to conceal their nuclear arsenals is one of the key ways they use to ensure the survivability of their nuclear weapons (Lieber & Press, 2017). This is a crucial component of the policies governing nuclear deterrence. To guarantee that they have the potential to launch a second attack, the US of America, the United Kingdom, and Russia rely on submarine-class ballistic missile submarines (SSBNs), which are difficult to locate underwater (Brixey-Williams, 2016). On the other hand, improved detection capabilities in the naval and aerial domains have the potential to undermine concealing measures. A nation will be more inclined to conduct a first strike if it believes that it can discover and destroy the nuclear assets of its adversary, or if it fears that its adversary would destroy its assets in a 'use it or lose it' scenario. Both factors increase the likelihood that the country will launch a first attack (Rickli, 2020).

2. AI for Decision Making

The utilization of AI is anticipated to have a significant impact on the decision-making procedures within the military domain. The integration of AI into military logistic planning software has the potential to decrease the duration required for force deployment significantly. The initial demonstration of this capability occurred during the 1990-1991 Gulf War (Hedberg, 2020). This implies that military alternatives may be acquired within a minimum, as seen by historical records. As the intensity of the fight escalates, the capacity for civilian decision-makers to engage in mutual consultation and provide their insights will diminish. There exists a potentiality wherein military leaders may exhibit a failure to comprehensively evaluate all available choices, granting victory to adversaries who demonstrate greater rationality and composure.

3. AI for Precision

AI-generated counterfeit photographs possess a remarkable level of authenticity, potentially deceiving both the military and the general populace. These fabricated visuals, such as satellite footage showcasing the building or movement of mobile launchers, can mislead observers (Tucker, 2019). In reaction, certain individuals may experience heightened fury and seek retaliation from grassroots levels. This anger might potentially be fueled by extensive botnets disseminating misleading information, therefore creating an illusion of more widespread indignation than what truly exists. Although AI cannot be solely held responsible, its presence might complicate the task of averting potential disasters within the existing framework of the internet's infrastructure. The utilization of AI can substantially increase the level of stress experienced by individuals responsible for making decisions. The presence of a strategic environment fraught with danger, potentially on a global level, can arise from either expeditious actions or erroneous decision-making, both of which possess the capacity to expedite the onset of a crisis (Tucker, 2019).

4. AI for combat domain access

Furthermore, AI facilitates or enhances entrance into previously inaccessible areas of armed combat. The underwater realm was previously mentioned as one that might be easier to access because of AI. Extremely difficult conditions include both Polar Regions and outer space. Space and the ocean floor near the Arctic ice cap pose extreme dangers to human life, yet these environments are perfectly suitable for unmanned devices to operate in. AI is what makes this feasible. Satellites can more readily avoid space debris and other obstacles and perform real-time geographical analysis with the help of AI. Unmanned sensors in the Arctic can track ships, planes, and submarines. (Zainab, Ambreen, 2023), Mission planning, system monitoring, and the implementation of fixes may all benefit from the use of AI in any sector. However, nuclear nations often rely on these planets' inaccessibility to safeguard their nuclear weapons. The US uses satellites for its nuclear NC3 infrastructure, while Russia deploys a sizeable percentage of its SSBN force to the Arctic. The increased accessibility puts in danger the nuclear assets that are stationed there. AI plays a crucial role in cyber warfare and electromagnetic warfare due to the high degree of convergence between all three technologies. Malicious software may now learn to circumvent cyber protections that are constantly being upgraded, thanks to the power of AI. It's become abundantly clear that cyber technologies play a crucial role in preserving strategic equilibrium. Cyber-attacks aimed at bringing down air defence systems or missiles reduce the reliability of nuclear weapons. (Kayali, Yavuz, et. al. 2023), To find the best frequency to operate in a spectrum that is already rather crowded, AI is crucial for the use of electromagnetic weapons. 23 Leaders may be more inclined to employ these weapons if they believe that

doing so would result in a slower rate of escalation than would be the case if they used weapons delivering kinetic impacts. One possible use would be to disrupt satellite-based command, control, and communications. As a result, interactions between the conventional and nuclear realms are more likely to become entangled. It has a lot of features with other technologies, and its effects are conditioned by how well it is integrated into existing systems. It has more potential applications than nuclear technology and is easier to implement. As a result, the impact of AI on strategic stability extends far beyond the nuclear arms and security industries. Detection capabilities can be improved by the employment of AI in non-nuclear technologies, making it harder to hide nuclear assets and defend against a first assault. Furthermore, it enhances the accuracy of conventional weaponry, allowing it to be deployed against submarine-launched ballistic missile (SSBN) launchers and armoured missile launchers. It also speeds up the decision-making process, increasing the probability that countries may rush to escalate a conflict. (Delcker, Heil, et. al. 2024), AI also creates new battlefields, both physically and virtually, which might leave nuclear assets exposed and raise the likelihood of retaliation.

5. Risks of AI in modern warfare

Johnson repeatedly brought up the implications of AI technology on nuclear deterrence and catastrophic nuclear war throughout his remarks. His book is structured on this subject. He began by outlining the potential ways in which adversaries may use AI-cyber weapons to attack nuclear assets, command, control, and communications networks, and swarms of drones to hit military objectives. It may be more difficult to decide whether to escalate a potential nuclear catastrophe or to "stand back from the brink." This is because optimized AI systems might misunderstand an opponent's signals (Johnson, 2020). The increasing prevalence of AI technology is also likely to increase the risk of escalation due to the increasing frequency of interactions between people and machines. AI technologies will influence decision-making at all levels, regardless of whether a person is "in the loop," and this will change the dynamic between humans and computers. AIs would have to understand not just the goals and plans of human commanders but also the actions of their human and maybe machine enemies. Differences in strategy using force between the opposing sides are inevitable and will undoubtedly make this hurdle more formidable. A concept from the Cold War era was used to examine how third-party actors' access to artificial intelligence technology may incite nuclear hostilities or perhaps start a nuclear war. Non-state actors can use AI-enhanced cyber tactics to manipulate information and spread conspiracy theories. They can also impair command and control systems, early warning satellites, radars, and communications (Johnson, 2020).

6. Special emphasis on the following four recommendations was given research:

- To enhance the security of nuclear weapons, it is necessary to implement additional protections and conduct risk assessments against hackers.
- The likelihood of an unintentional nuclear launch can be reduced by implementing authentication codes, which will help reinforce command and control processes and systems.
- Establish reliable safeguards to forestall the fallout from slip-ups and mishaps.
- Developing more strategic dialogue and potential weapons control agreements are two examples of confidence-building steps that AI management can take on a global and bilateral scale.

7. Dangers of AI in Nuclear Deterrence

Despite the extensive use of AI in nuclear deterrent systems worldwide, several

concerns remain associated with it. Any nation-state's apparent or actual adoption of new AI capabilities might make a nuclear-armed state worry about the reliability and survivability of its nuclear deterrent. The AI-nuclear security dilemma may lead to the implementation of countermeasures that could jeopardize nuclear stability. The potential for a technological failure or the unauthorized use of AI-powered military systems to increase the likelihood of an accidental escalation into a nuclear conflict is a real concern. (Rahman, Sabbir, et. al. 2023), A large quantity of data is necessary for artificial intelligence systems to do their tasks. Consequently, the data may be biased, or incorrect, which might lead to skewed conclusions or outcomes. To trick an AI into thinking a nuclear attack is imminent, it is possible to intentionally contaminate data that feeds it, such as early warning systems, unmanned systems, or transmitters. Non-state actors may harm command and control systems, communications networks, early warning satellites, and radars using cyber tactics enhanced by artificial intelligence; they might even distort information to spread conspiracy theories. All of the following are just hypothetical. By injecting false information into adversary or opponent-related command and control systems, they might cause escalation (Johnson, 2023). That being said, third-party actors' access to AI might potentially provoke a nuclear war or at least nuclear confrontations between nuclear powers. According to James Johnson's book, there is a possibility that adversaries may use AI-cyber weapons to attack nuclear command, control, and communications systems, swarms of drones to attack military targets, and even target nuclear assets. Further complicating matters in the case of a nuclear disaster, he claims, would be the possibility of AI systems misinterpreting signals transmitted by an adversary (Jalil, 2023). Some are worried that the decision-making processes involved in handling a nuclear calamity are already moving at a breakneck pace. The reduced frequency of using artificial intelligence (AI), even in sensor and targeting form, will decrease the available time for deciding whether or not to launch an assault. The likelihood of making irrational judgments or using inaccurate calculations may increase due to this. Since it will be more difficult to conceal weapons and nuclear-armed submarines using artificial intelligence in intelligence-detection systems and satellites, this increases the hazard already present. Governments with nuclear weapons will be encouraged to use them earlier in a conflict before their opponent can neutralize them, and thresholds may be decreased as a result. Experts expect that the increasing prevalence of artificial intelligence technologies will heighten the risk of escalation. The algorithms that AI employs will influence decision-making at every level, including missile launches, even if AI itself isn't making those decisions. This, in turn, will affect the dynamics between humans and machines. So, AI is making an already dangerous situation much worse by introducing another layer of danger (Johnson, 2023).

Aspect	Authors	Key Points
AI for detection	Loureiro et al (2024)	AI enhances detection capitalism in anti-submarine warfare. It aids in mapping the seafloor.
	Pratomo et al (2024)	AI can analyze satellite imagery to detect military activities, such as construction of facilities
	Lieber & Press (2017)	Nuclear-armed nations rely on concealment to protect their nuclear assets. Improved detection capabilities in naval and aerial domains may undermine concealment.
AI for decision-making	Hedberg (2020)	AI integration in military logistics planning reduces deployment time, as

		demonstrated during the Gulf War.
AI for Precision	Tucker (2019)	AI-generated counterfeit visuals, like satellite images, can deceive military and civilian observers.
AI for combat domain access	Acton (2018)	AI enables access to previously inaccessible combat domains like underwater and outer space.
	Johnson (2020)	AI may be used to attack nuclear assets, command, control, and communication

Conclusion

The integration of artificial intelligence (AI) into military operations has significantly enhanced situational awareness, decision-making capabilities, accurate targeting, and the ability to access battlefields. The utilization of AI in filtering vast amounts of data, enhancing detection capabilities, and optimizing logistics has undeniably granted the armed forces a significant strategic edge. Nevertheless, these advancements bring forth significant risks and apprehensions, particularly in the realm of nuclear deterrence and contemporary conflict. AI's advanced detection capabilities pose a risk to nuclear resources' secrecy, potentially undermining established nuclear deterrence strategies. Although AI facilitates rapid decision-making, it also raises concerns about the potential risks of unintentional escalation or miscalculations, especially in critical scenarios involving nuclear armaments. Furthermore, the amalgamation of AI with cyberwarfare and electromagnetic technologies introduces novel complexities and hazards. Malicious actors could use AI-powered systems to disrupt command and control structures, disseminate false information, or modify critical infrastructure, leading to growing instability and potentially catastrophic consequences. To address these challenges, it is necessary to implement stringent measures such as enhanced security protocols, authentication codes, safeguards against data tampering, and strategic discussions on armament control. Policymakers and military leaders must engage in meticulous negotiations to navigate the intricate dynamics of AI in war, to optimize its advantages while mitigating the associated threats to global security and stability.

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