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# IMPACT OF TECHNOLOGICAL CHANGES ON STRATEGIC STABILITY IN SOUTH ASIA



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# Author

**Shiza Khan** is an undergraduate student of strategic studies at National Defence University, Islamabad. She has immense interest in the theory and application of nuclear strategy, along with national and international security issues.

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## Center for Security, Strategy and Policy Research (CSSPR)

1-Km Defence Road  
Lahore  
Email: [csspr@siss.uol.edu.pk](mailto:csspr@siss.uol.edu.pk)  
[www.csspr.uol.edu.pk](http://www.csspr.uol.edu.pk)

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## University of Lahore (UOL)

1-Km Defence Road  
Lahore  
Email: [info@uol.edu.pk](mailto:info@uol.edu.pk)  
T: +92 423 2233888  
[www.uol.edu.pk](http://www.uol.edu.pk)

# IMPACT OF TECHNOLOGICAL CHANGES ON STRATEGIC STABILITY IN SOUTH ASIA

Today, the world is in the midst of the “Fourth Industrial Revolution” which is generally marked by the emergence and the rapid advancement of technologies, such as Artificial Intelligence (AI), cyber technology, and the development of space-based technologies. All this is supplemented by the convergence of these technologies to create and develop capabilities at both commercial and state levels. As much as these technologies are considered important additions to the military capabilities of states around the world, the situation is quite different in South Asia due to the complexity of its security architecture. Gregory Koblenz defined three characteristics of the second nuclear age. First, the security trilemma, a situation in which the pursuit of weapons (and technology) by China is taken as a threat by India, resulting in India’s aggressive buildup of defensive and offensive capabilities which, in turn, makes Pakistan take steps to maintain the credibility of its deterrent. Second, technological development, and third, disputes and terrorism. According to him, due to these factors, the “probability of the breakdown of strategic stability has become greater than ever”. Indeed, the pace with which technological developments are taking place in South Asia as a result of the security trilemma and power-maximization objectives amidst regional disputes and terrorism, will certainly disturb strategic stability in the region.

In South Asia, the two nuclear weapon states, India and Pakistan, have been pursuing and developing AI and cyber capabilities for a variety of economic and military reasons. The development of these technologies is focused on the military domain as compared to the commercial domain. Thus, the debate on the implications of these sets of technologies on strategic stability is but important.

## **Technological Developments in South Asia**

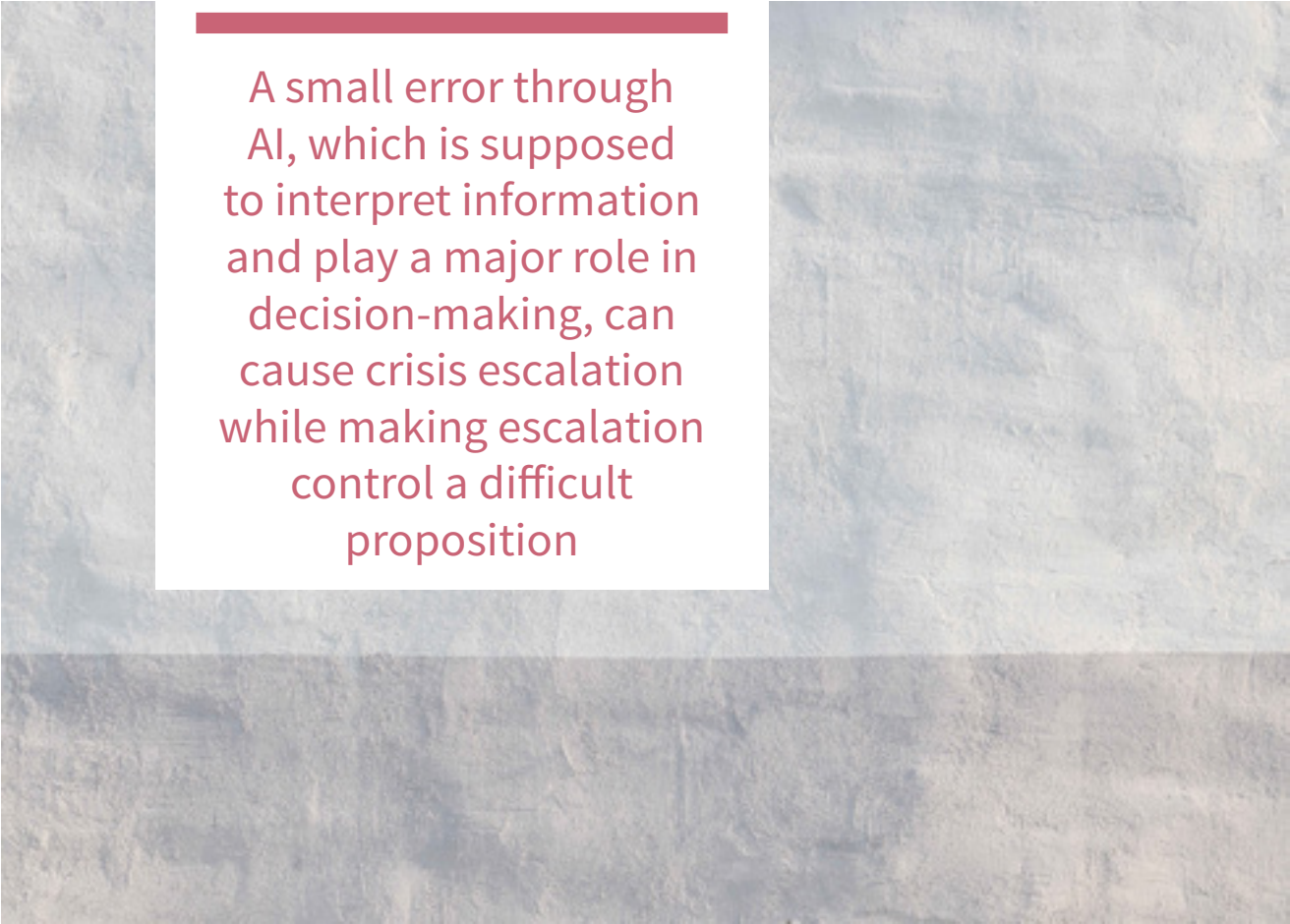
As compared to Pakistan, India has aggressively pursued the development of AI, by initiating and investing in Research and Development (R&D) projects for AI-based military modernization. In 2018, “the AI Task Force” of India’s Defense Ministry submitted a report

in which it recommended that India should become a “significant power of Artificial Intelligence by incorporating in the domains of nuclear, cyber, air force and land based forces and systems”. For this purpose, India has taken the following initiatives: empowering the Defense Research and Development Organization (DRDO) which structured the Center for Artificial Intelligence and Robotics (CAIR) (CAIR has taken up projects and proposals regarding AI-based enhanced ISR capabilities and also AI-based support systems in military decision-making). For reconnaissance, border security, and sea-patrolling, India has also developed Unmanned Aerial Vehicles UAVs for navigation. Comparatively, Pakistan has been developing AI for the purpose of Intelligence, Surveillance and Reconnaissance in order to be aware of situations and conditions during peacetime and crises. For this purpose, Pakistan has taken initiatives such as the establishment of the National Command Center (NCC). NCC comprises a Strategic Command and Control Support System (SCCSS), an automated system which provides situational awareness of nuclear arsenals to authorized personnel all the time.

In case of cyber-attacks, regardless of the involvement of the governments, both states have been targeted by each other. Indian hackers have targeted research databases, finance management institutes, government websites and vice versa. In addition, India, despite being a developing country, has been expanding its space program by developing its space-based assets. The main achievements of India’s space program include space mission to the Moon and Mars, and also the development of navigational network called the Indian Regional Navigational Satellite System (IRNSS). India also established the Indian Space Research Organization (ISRO), which in 2017, successfully launched one hundred and four satellites. In 2019, India successfully launched the Anti-Satellite (ASAT) weapon. These developments make it abundantly clear that it wants to become a formidable space power going forward. This will also let India have advanced ISR capabilities. Comparatively, Pakistan’s own space program has been developing since the establishment of Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) in 1961. SUPARCO also initiated tasks such as remote sensing in collaboration with western space companies. It is intended to launch its first ever space mission around 2022, as SUPARCO has signed a Memorandum of Understand with a Chinese company.

Pakistan and India are both developing countries and face economic challenges. The development, maintenance, and up-gradation of new technologies would require substantial budget allocations. This would be very difficult to achieve and the systems developed may be unstable, resulting in the generation of errors by AI systems leading to false alarms, among other things. A practical example of this point is when a Lieutenant Colonel of the Soviet Union, Stanislav Petrov, instead of believing and acting on an alarm, used his own judgment in decision-making. Later on, it was discovered that the machine gave a false alarm. Had the officer acted upon the alarm he received from the device, it could have eventually led to a nuclear catastrophe. Considering such scenarios, a small error through AI, which is supposed to interpret information and play a major role in decision-making, can cause crisis escalation while making escalation control a difficult proposition.





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This, among other reasons, is because artificially intelligent devices lack human wisdom and input. Hence, pursuit of emerging technologies such as AI will weaken crisis stability, which is already fragile due to multiple border stand-offs and skirmishes.

Crisis instability could be another consequence of the induction of emerging technologies. South Asian nuclear states retaliating against adversaries or simply the presence of incentives to strike first would undermine nuclear deterrence. Hence, the development of advanced AI-based machine giving false alarms after being incorporated into nuclear weapon systems, or a cyber-attack on the states' important strategic assets will cause crisis escalation resulting in enfeebling crisis stability and deterrence stability. Scott Sagan, in his debate with Kenneth Waltz, also stated that, for the prevalence of deterrence stability, three factors are required: absence of incentive for preventive war; presence of incentive of conducting nuclear first strike on adversary's nascent nuclear weapon program (can be considered as crisis escalation as well), presence of second strike capability and least chances of accidental use of nuclear weapons. Amidst advanced technological developments, the likelihood of the fog of war taking center stage will increase, marring crisis stability in the process.

**Pursuit of emerging technologies such as AI will weaken crisis stability, which is already fragile due to multiple border stand-offs and skirmishes**

Considering the Stuxnet virus attack on Iran's nuclear facilities along with aforementioned dynamics of South Asia region, the chances of targeting nuclear facilities, government ministries, communication channels etc., by both states through the development of advanced cyber technologies cannot be ruled out. If employed as cyber offensive tools to spread misinformation, deep fakes, cyber espionage, or cyber-attack on nuclear Command and Control infrastructures, these technologies could catalyze accidental and inadvertent escalation.

Deterrence Stability is affected by another factor: limitations in tactical nuclear weapons TNWs which Pakistan developed to counter India's Cold Start Doctrine. The limitations in TNWs exist in terms of their actual deployment in the battlefield; TNWs have a very short range due to which they have to be deployed close to a battlefield. Too far deployment would not let them target the Integrated Battle Groups (IBGs) while too close deployment would put them at risk of being destroyed by the enemy. Moreover, too early deployment would result in crisis escalation and too late deployment would make their deterrent effect useless. In addition, the command may be delegated to the field commander which involves danger of accidental nuclear retaliation. However, Pakistan has separate commands for that purpose. All these factors may go on to affect deterrence stability.

Now coming towards the first strike stability and arms' race stability. First strike stability is basically the absence of incentives to conduct nuclear first strike on the adversary. Arms' race stability is when a state does not feel threatened by the acquirement of weapons by its adversary. The advancement in the ISR capabilities through the development of advanced satellite navigation systems, on the one hand, may give a state better situational awareness and enable it to quickly respond to a situation while, on the other hand, it will make it difficult for the adversary state to hide its nuclear assets. Moreover, one state may perceive the technological advancements of the rival state as a veritable threat. Hypothetically, if India develops a fully- autonomous weapon system and makes Pakistan insecure, temptations for the latter to draw first blood may increase. However, AI's induction in missile defense may be used by India for early warning and reconnaissance. This would, in turn, decrease the credibility of Pakistan's nuclear retaliatory capacity, something that will undermine Pakistan's nuclear deterrence. This example illustrates how the pursuit of these technologies would decrease first strike stability. In addition, under the theoretical framework of offensive realism, during the circumstances stated above, both Pakistan and India will aggressively pursue these advanced technologies in order to have an edge over each other, as it will become essential for their survival. Hence, arms' race stability will also decrease. Therefore, all of these arguments suggest that the pursuit of emerging technologies by India and Pakistan will decrease the strategic stability in South Asia.

In sum, it is reasonable to argue that emerging technologies, such as Artificial Intelligence AI, cyber and space technology, will likely weaken strategic stability in South Asia due to their potential to trigger and escalate crises. This could happen because these technologies have the capacity to puncture, or evade nuclear deterrence. The spread of misinformation through deep fakes, generation of errors in AI navigation role for nuclear weapon systems, and the usage of cyber offensive tools to damage nuclear command and control C2 structures, are some of the ways through which emerging technologies can complicate the situation. Navigating these complex security dynamics will be a challenge, especially given the ever-increasing acrimony between Pakistan and India, and that between India and China.