Copenhagen Seminar Report

The Role of Artificial Intelligence (AI) and Cyberspace in Modern Warfare

Iraqi Strategic Studies and Research Centre (SSRC) / Defense University for Military Studies (DUFMS) &Centre for Stabilisation (CFS) / Royal Danish Defence College (RDDC)

At (0900) A.M, on Thursday, (12th) Jun, 2025

Introduction

- The world is witnessing a profound transformation in the nature of warfare and armed conflicts, driven by rapid advancements in artificial intelligence (AI) and cybersecurity technologies. These technological tools play a pivotal role in enhancing the military and intelligence capabilities of states. AI, in particular, has emerged as a fundamental component in improving the efficiency of armed forces by supporting command and control systems and enabling the rapid analysis of massive amounts of intelligence data in record time.

- The development of smart weapons with advanced autonomous targeting and field decision-making capabilities has been significantly enhanced by modern applications of artificial intelligence in the military domain. This includes its utilization in unmanned aerial drones (UAVs) and autonomous combat systems, where such platforms are capable of executing surveillance or offensive missions without direct human intervention. This not only reduces risks to soldiers but also enables effective operations in complex or high-threat environments.

- Cyberspace has become an essential battlefield in contemporary conflicts, with cyberattacks being utilized to disrupt critical infrastructure, steal data, and even influence public opinion. Modern militaries increasingly rely on cyber warfare to achieve strategic superiority without engaging in direct military confrontation.

- The integration of AI and control over cyberspace plays a critical role in predicting hostile movements, analyzing hostile behavior, and supporting realistic military simulation and training. To ensure scientific, academic, and knowledge-based cooperation between the **SSRC** and international and regional research institutions affiliated with the **NATO** mission, a workshop titled "The Role of Artificial Intelligence and Cyberspace in Modern Warfare" was held between the Iraqi **SSRC** and the Danish **CFS**. This event was part of a series of joint scientific events between both sides that have been ongoing since 2021 to the present.

- **Date and Venue**
- The seminar was conducted on Thursday, 12 Jun, 2025.
- Royal Danish Defense College, Kingdom of Denmark (Copenhagen).

Objectives

- Sharing knowledge on the growing impact of artificial intelligence (AI) and cyberspace technology in shaping modern warfare, and exploring the challenges and opportunities that these technologies pose to the security and military environment. Understanding and analyzing the conceptual and technical transformations on the modern battlefield, including AI and cyberspace, will highlight current challenges and enhance strategic awareness. This will establish common ground and promote academic and scientific cooperation between the two centers to address contemporary digital challenges.

Key takeaways from the seminar

- Enhancing integration between AI and modern combat systems through the utilization of massive data analytics and automated learning technologies in the battlefield contributes to improved military decision-making and operational efficiency.
- Developing national capabilities in military artificial intelligence by establishing academic and technological partnerships with sober international institutions, and organizing specialized training programs to qualify military personnel in this domain.
- It was concluded that AI and cyberspace warfare will be central to future conflicts, with constructive presentations from both the SSRC and the RDDC providing a basis for relevant discussions. The two institutions complimented each other with SSRC specifically focusing on conceptualizing AI and cyberspace, while RDDC focused on in-depth examples from current modern wars.
- Conduct comparative Studies on how different states employ cyberspace as a means of deterrence and asymmetric power, and align these insights with the specific challenges faced by developing countries within a complex digital environment.
- Continue organizing joint workshops and seminars between Iraqi and Danish institutions to deepen mutual understanding and facilitate the exchange of practical and applied expertise in advanced technological fields.
- Develop performance assessment tools for AI technologies in military operations by conducting case studies and comparative analyses of contemporary conflicts, with the aim of applying findings to enhance command and control systems.

- Maintain follow-up on the implementation of the seminar's outcomes and periodically assess their impact through joint reports and follow-up recommendations issued by both sides.

Takeaways from sessions:

First Session: Artificial Intelligence in the military domain. The session was moderated by **David Vestenkov**, Director Centre for Stabilisation (CFS). The session included two main presentations:

First presentation, "War in the age of artificial intelligence: Lessons learned from the wars in Ukraine and Gaza" Presented by **Dr. Daniel Møller Ølgaard, Assistant** Prof, Institute for Military Technology, / Royal Danish Defence College (RDDC**)**. Dr. Ølgaard emphasized how modern technologies, when integrated with AI, have been utilized in the context of the wars in Ukraine and Gaza, he highlighted the role of massive data input into tracking systems and how this data is transformed into militarily valuable information. This process, he noted, can be significantly enhanced through the application of AI technologies, enabling faster analysis, real-time decision-making, and more accurate targeting in dynamic and high-threat operational environments. Dr. Ølgaard cited Israel's "Lavender" AI system, used to direct bombing operations in Gaza, as a specific example of AI's current impact on the battlefield. He further suggested that current and future AI systems might come to resemble a Minotaur rather than a centaur, contrasting the common perception of AI as a harmonious blend of human head and machine body with a more complex integration where machines can act as decision makers as well.

Second presentation, Artificial Intelligence in the Military Domain, Presented by **BG. Dr. Hazem Dawood Mohsin**, head of the Science and Technology Department in (SSRC)-(DUFMS). The speaker focused on the types and stages of (AI), highlighting the most important technology tools used in the development and deployment of AI technologies. He provided an overview of the electronic processors essential to AI systems, such as GPUs, TPUs, and AI-specific chipsets, emphasizing their roles in accelerating machine learning and deep learning tasks. Additionally, the addressed the generations of weapon systems that integrate AI technologies, outlining their evolution and how each generation reflects advancements in autonomy, precision, and adaptive decision-making in modern combat environments.

Interactive session: **Dr. Ølgaard** addressed the evolving role of AI in diplomacy, noting that AI models will continue to advance, gaining greater capacity to process complex data, with quantum technologies playing a decisive role. He also highlighted that AI can serve as a valuable training tool in diplomatic practice, for instance, through simulation games. When asked about lessons from current conflicts, he emphasized that AI already plays a significant role on modern battlefields, capable of changing both strategy and tactics, though this evolution is expected to be gradual.

Dr. Mohsin shed light on the role of AI in future conflicts and production, stating that AI is still in its early stages but could eventually match human functionality, though human involvement remains central to its application. He confirmed that Russia is already employing AI technologies in the Ukraine war, e.g. jamming Ukrainian communications. Regarding AI in Iraq and the SSRC, he explained that AI research is conducted at civilian universities and within a dedicated AI section at the SSRC. While Iraq does not yet have AI production capacity, the ambition is to achieve technological independence for both defense and deterrence, despite development still being at a hypothetical stage.

Second Session: The Effect of Cyberspace on Military Operations: A Focus on the Wars between Russia and Ukraine, and Israel and Gaza, a session was moderated by **s.BG. Mohsen Fadel Mohsen**, head of Military Studies and Research Department at (SSRC - DUFMS). The session included two main presentations:

First presentation, The Impact of Cyberspace on Military Operations – Models of the Russia-Ukraine and Israel-Gaza Wars, Presented by **Col. Dr. Muhannad Jabbar Abbas**, head of Political and Strategic Studies Department at (SSRC-DUFMS). The speaker covered several key topics, including a definition of cyberspace and its strategic significance in modern warfare, along with selected case studies of cyber warfare in the Russia/Ukraine and Israel/Gaza conflicts. A comparative analysis of both conflicts in terms of cyber operations was presented. Dr. Abbas also addressed emerging future challenges in the cyberspace domain. Dr. Abbas concluded that cyberspace is a new military domain that enables parties to achieve strategic and tactical objectives through three unique ways: cyberinfrastructure development, strengthening international cooperation and human resource awareness.

Second presentation, A Small State Perspective on Cyberspace as an Operational Environment, presented by **Maj. Lasse Kronborg**, Military Analyst, Institute for Military Technology, RDDC. The presentation explored several topics, focusing on cyber capabilities

and the use of cyberspace as a tool of military power, particularly from the viewpoint of small states. He emphasized that despite its virtual nature, cyberspace is indeed a tangible operational space, encompassing the global volume of entities processing, storing, and transmitting digital information. Furthermore, Maj. Kronborg highlighted that cyberspace offers both opportunities for operations, including security, offensive, and defensive activities, and presents a crucial flank for defense.

Interactive session: **Maj. Lasse Kronborg** addressed the complexities of regulating cyber warfare. He explained that cyber-attacks are generally covered by the same legal frameworks as other forms of warfare, but determining when a cyberattack constitutes an act of war remains challenging, making regulation complex. He also noted that cyber warfare has become an integral part of modern conflicts, yet the distinction between civilian and military actors in cyberspace creates further regulatory hurdles. Regarding changes observed in cyberspace due to the war in Ukraine, Maj. Kronborg highlighted that cyberspace has been a significant element of modern warfare in Ukraine, though precisely assessing where and how it has been applied remains difficult. The conflict, he added, underscores that much is still to be learned and how challenging it is to translate these cyber experiences into training practices. However, the following discussion led to the suggestion that a potential lesson learned (LL) from the War in Ukraine is the need for specialized cyber units working closely together with commercial production and development facilities to increase battlefield adaptability in the cyber domain.

Col. Dr. Muhannad Jabbar Abbas addressed the crucial aspect of strengthening cooperation in cyberspace. He stressed that cyberspace knows no borders and can be utilized by anyone, emphasizing the urgent need for a common solution. Without it, he warned, the digital realm risks becoming "the Wild West," underscoring the necessity of international collaboration to maintain order and security in this increasingly vital domain.