

Introduction

At this point, technological changes have taken place at the fastest pace in history, with some having a crucial impact on countries, societies, and individuals. Among these changes, artificial intelligence (AI) is a growing technological field, which has had a revolutionary impact on almost all aspects of life. AI is a concept that generally refers to hardware or software or integration, which can present a behavior that appears intelligent.

This field of technology—initially a branch of computer science—has increasingly assumed a place of honor in the international arena and now is a focal point for competition between companies and countries. The development of AI has occurred along with breakthroughs in other technological and scientific fields, such as cloud computing, big data, advanced robotics, and autonomous cars, and it seems that these developments will alter our world in the near future.

The use of advanced systems, applications, and services has increased, and many countries, companies, and security officials use them according to their needs. Civilian uses of AI include navigation applications, algorithms that offer custom goods or services, applications in banking and financial commerce, and systems in the fields of maintenance and logistics. AI-based systems are also common in the security arena, such as in military intelligence; logistics; command, control, and communications systems; autonomous military systems including weapon systems; and cyber warfare.

AI is no longer a futuristic technology; rather it provides a fundamental need at the present time. Many leaders of organizations or countries have internalized this notion and have adopted policies to encourage development and investment in AI. However, in addition to the advantages of AI, it also includes many challenges in its development, use, and its accompanying effects. Leaders in diverse fields and in the world in which we live should be concerned about these challenges.

This memorandum has two essential goals:

First, it is intended to serve as a general guide for commanders, managers, and decision makers to familiarize them with core issues and terms related to AI and national security. For this purpose, in several chapters, an attempt was made to render complex issues, including technical ones, understandable.

Second, the purpose of this memorandum is to recommend an AI policy in the field of national security, assuming that AI is a fundamental capability that Israel needs and that Israel must maintain and strengthen its capabilities and status vis-à-vis the global race in AI and the regional and other challenges.

Part I of the memorandum presents AI technology and its security applications by discussing the historical background, the technological areas involving AI, and its security applications, as well as the issue of general AI.

Part II addresses issues related to AI and the international arena. It includes an overview of the state of development and the use of AI in leading countries, the possible effects of technology on the international arena, as well as a case study of the use of lethal autonomous weapon systems (LAWS) and the lessons learned about AI and the international arena.

Part III relates to AI in the context of Israel's national security and includes a status review, a review of the concept of Israel's national security, and the connection between AI and national security and the IDF strategy. This section also addresses in detail the many challenges in developing, implementing, and using AI in Israel, as well as security, political, and indirect challenges to Israel's national security.

The memorandum's conclusion gives policy recommendations for strengthening and maintaining Israel's national security, based on AI.

This study relied upon a variety of primary and secondary sources, including policy documents, academic research, interviews with experts and professionals, and conclusions formulated at meetings of the professional expert committee for this study. The committee held discussions on the various subjects that comprise this memorandum. The contents of the discussions contributed to a more thorough understanding of many aspects of AI in regards to the various security organizations, industries, and civilian companies, as well as a profound understanding of the technology and its capabilities. The committee's discussions helped characterize the conceptualization of this memorandum, compose the list of challenges, and plot the policy recommendations.

The policy recommendations indicate a number of key areas in which Israel must act to maintain and improve its national security through AI: the organizational realm; budgeting, financing and national infrastructure; safety, law and ethics; legislation and standardization; knowledge sharing; international, diplomatic, military intelligence, and cooperative aspects; and human resources, including education and training.

Some of these recommendations will require substantial budgets and significant organizational changes, while others will not and can be implemented in a short period of time. Nonetheless, in a field of great importance that is characterized by rapid development and diverse influence, it is necessary to have an overarching body that will coordinate, budget, and guide the activity at the national level, just as Israel does, for example, in the cyber field. This will enable Israel to maintain and improve its status as a global technological leader, while using its relative advantage to positively influence its own national security.