

ARTIFICIAL INTELLIGENCE: DEVELOPMENT, CHALLENGES AND PROSPECTS IN GEORGIA

DOI: <https://doi.org/10.52340/bal/2025.01.09>



NINO KETSBAIA

Associate Professor in Business Administration
at the Faculty of, Business and Social sciences,
Sokhumi State University
<https://orcid.org/0009-0001-2042-8368>
Email: ketsbaianin@gmail.com



NINA KOPIANIDI

PhD student at the Faculty of Business Administration,
Sokhumi State University
<https://orcid.org/0009-0005-9533-3784>
E-mail: nkopianidi@gmail.com

ABSTRACT

This paper „Artificial Intelligence: Development, Challenges, and Perspectives in Georgia” provides a comprehensive discussion of the history of artificial intelligence (AI), exploring its classification, functional characteristics, and various opportunities and challenges that significantly influence its development. It delves into the legal, ethical, and regulatory issues surrounding AI with a particular focus on both international and local legal frameworks. The analysis includes the legal status of artificial intelligence, various models of tort liability, and critical data-protection issues. Special attention is given to the recommendations of the European Parliament and European Commission regarding legal standards for cyber-physical systems and autonomous intelligent robots, which are essential for guiding the responsible development of AI technologies.

In the context of Georgia, this study examines the current state of AI development within the country, highlighting its achievements in the public sector while also identifying significant challenges that hinder further progress. Key obstacles include the need for enhanced technological infrastructure, improvement of the legislative framework governing AI, and necessity for a skilled workforce capable of navigating this rapidly evolving field. To address these challenges, this study presents a series of recommendations aimed at formulating a robust national AI strategy and strengthening the legal framework. These recommendations encompass the creation of specialized working groups, establishment of research and technology centers, and promotion of deeper international cooperation to foster innovation.

Ultimately, this study emphasizes that artificial intelligence has the potential to transform Georgia into a leading driver of innovation and economic growth. Achieving this vision will require coordinated efforts among government entities, academic institutions, and the private sector alongside the mobilization of targeted investments. This strategic approach is crucial to enhance a country’s competitiveness and secure a prominent position in the modern technological landscape. By fostering collaboration and innovation, Georgia can harness the transformative power of AI to drive sustainable development and economic prosperity, thus positioning itself as a key player in the global AI arena.

Keywords: Artificial Intelligence (AI), National Strategy for Artificial Intelligence, Cyber-Physical Systems, Tort Liability.

ხელოვნური ინტელექტი: განვითარება, გამოწვევები და პერსპექტივები საქართველოში

ნინო ქაცხაია

ასოცირებული პროფესორი ბიზნესის ადმინისტრირების მიმართულებით, ბიზნესისა და სოციალურ მეცნიერებათა ფაკულტეტი, სოხუმის სახელმწიფო უნივერსიტეტი
<https://orcid.org/0009-0001-2042-8368>
ელ. ფოსტა: ketsbaianin@gmail.com

ნინა კოპიანიდი

დოქტორანტი, ბიზნესის ადმინისტრირების ფაკულტეტი, სოხუმის სახელმწიფო უნივერსიტეტი
<https://orcid.org/0009-0005-9533-3784>
ელ. ფოსტა: nkopianidi@gmail.com

ანოტაცია

ნაშრომში, „ხელოვნური ინტელექტი: განვითარება, გამოწვევები და პერსპექტივები საქართველოში“ დეტალურადაა განხილული ხელოვნური ინტელექტის (AI) ისტორია, კლასიფიკაცია, ფუნქციური მახასიათებლები და ის შესაძლებლობები და გამოწვევები, რომლებიც მნიშვნელოვან როლს თამაშობენ ამ დარგის განვითარებაში. ასევე შესწავლილია AI-ის სამართლებრივი, ეთიკური და რეგულირების საკითხები, განსაკუთრებული ყურადღება გამახვილებულია როგორც საერთაშორისო, ისე ადგილობრივ სამართლებრივ მიდგომებსა და გამოწვევებზე. გაანალიზებულია ხელოვნური ინტელექტის სამართლებრივი სტატუსი, დელიქტური პასუხისმგებლობის სხვადასხვა მოდელები და მონაცემთა დაცვის პრობლემები. განსაკუთრებული ყურადღება მიექცა ევროპარლამენტისა და ევროკომისიის რეკომენდაციებს, რომლებიც ეხება კიბერფიზიკურ სისტემებსა და ავტონომიურ, ჭკვიან რობოტებთან დაკავშირებულ სამართლებრივ სტანდარტებს. საქართველოსთან დაკავშირებით, ნაშრომში შესწავლილია ქვეყნის მიმდინარე მდგომარეობა ხელოვნური ინტელექტის განვითარებაში, მის მიერ მიღებული წარმატებები საჯარო სექტორში და ის გამოწვევები, რომლებიც ხელს უშლის ხელოვნური ინტელექტის განვითარებას, კერძოდ, ტექნოლოგიური ინფრასტრუქტურის განვითარებასა და საკანონმდებლო ბაზის სრულყოფას. ნაშრომში წარმოდგენილია რეკომენდაციები ეროვნული AI სტრატეგიის შემუშავებისა და სამართლებრივი ჩარჩოს გაძლიერების შესახებ, რაც მოიცავს სპეციალური სამუშაო ჯგუფების შექმნას, კვლევითი და ტექნოლოგიური ცენტრების დაფუძნებას, საერთაშორისო თანამშრომლობის გაღრმავებას

და ბოლოს, ნაშრომში ხაზგასმულია, რომ ხელოვნურმა ინტელექტმა საქართველო უნდა გადააქციოს ინოვაციებისა და ეკონომიკური ზრდის ერთ-ერთ მთავარ მამოძრავებელ ძალად, რაც შესაძლებელი იქნება სამთავრობო, აკადემიურ და კერძო სექტორებს შორის კოორდინირებული თანამშრომლობითა და მიზანმიმართული ინვესტიციების მობილიზებით. აღნიშნული სტრატეგიული მიდგომა მნიშვნელოვან როლს შეასრულებს ქვეყნის კონკურენტუნარიანობის ამაღლებასა და თანამედროვე ტექნოლოგიურ გარემოში ღირსეული ადგილის დამკვიდრებაში.

საკვანძო სიტყვები: ხელოვნური ინტელექტი (AI), ხელოვნური ინტელექტის ეროვნული სტრატეგია, კიბერფიზიკური სისტემები, დელიქტური პასუხისმგებლობა.



MAIN TEXT

Artificial intelligence is still a new and developing industry, and there are different opinions among specialists regarding what capabilities it should have. Some believe that learning a computer system independently is an important prerequisite for artificial intelligence, which is considered one of its main characteristics, while for others, it is considered only a simple voice assistant - I do not understand.

Artificial intelligence (AI) was developed in the middle of the 20th century. The term „artificial intelligence“ was first introduced in 1956 at the Dartmouth Conference by John McCarthy along with Nathaniel Rochester and Claude Shannon. McCarthy was one of the first scientists to make artificial intelligence an independent science.

Artificial intelligence (English for Artificial Intelligence, AI) is a branch of computer science that aims to create intelligent systems that, like human intelligence, can solve problems and make decisions. (Russell & Nor-

wig, P. (2021). Artificial Intelligence: A Modern Approach (4th Ed.). Pearson Education.)

Determining intelligence is a difficult task because of the different views on its nature. In our opinion, intelligence is a mental capacity that includes logical reasoning, abstract thinking, understanding complex ideas, reaching a quick end, and learning from experiences. Intelligence is divided into two types: human and artificial. Human intelligence is the ability to understand, transfer verbal descriptions into actions, act according to culture and rules, adapt to new circumstances, and solve complex problems. Artificial intelligence (AI) is a special branch of computer science that aims to model human cognitive processes.

Artificial intelligence helps a person analyze a large amount of data, solve complex problems, and provide significant assistance to scientists in their work.

In general, there are 3 different forms of artificial intelligence: weak artificial intelligence; strong artificial intelligence; super artificial intelligence; (Russell, S., & Norwig,

P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson Education)

Weak artificial intelligence – This is artificial intelligence that specializes in only one specific field and cannot go beyond it. For example, modern smartphones, computers, and the Internet use weak artificial intelligence. They perform specific tasks effectively but cannot be used in other areas.

Strong artificial intelligence: Strong artificial intelligence can use what it has learned not only in one field but also in other fields. It functions at approximately the same level as human intelligence. However, there is no perfect powerful artificial intelligence yet. Individual, very complex systems, such as autonomous control systems, also have weak artificial intelligence because they are only focused on performing specific tasks.

Super artificial intelligence – This intelligence will be smarter than humans and will be able to solve not only specific problems or tasks but also creative and social issues. Super artificial intelligence must be able to define its own goals and values and adapt them to any situation.

In the late 90s and the first decade of the 21st century, artificial intelligence reached its peak of development but still could not replace humans. Scientists have identified several important issues related to physical agents equipped with artificial intelligence. These issues are:

1. Planning: A physical agent with artificial intelligence must have the ability to set goals and accomplish them. Simply put, they should be able to define the future and work with other agents.

2. Learning intelligence refers to the ability to learn. Like humans, a device with artificial intelligence must be able to perceive the environment, learn it, and develop necessary skills.

3. Spoken Language – A robot with artificial intelligence must be able to communicate with humans in their language. Calculations will, of course, take place at the „1“ and „0“ levels, but the result must be presented to people to understand.

4. Moving through space navigation technologies is already highly developed today. A robot with artificial intelligence should be able to determine its location in the environment and choose the correct route.

5. Perception – To perceive the environment, the robot must have sensors, such as visual, auditory, olfactory, thermal, and other biological sensors.

6. Social integration For a – robot, in order for it to be able to communicate properly with humans, it is necessary to actively implement its content so that it can adhere to ethical standards of communication and choose the right behavior. Creativity implies that artificial intelligence must be able to create different options according to the available information and environment. (Russell, S., & Norwig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson education, B. Siciliano, and O. Khatib (Eds.). (2016). Springer Handbook of Robotics

Despite this, the concept of artificial intelligence is still vague. The scientific and technical revolution of the 21st century gave rise to new challenges in modern science. In

addition, legislation in most countries does not contain exact normative definitions of „artificial intelligence“.

The following issues can be distinguished from the legal aspects of artificial intelligence. There is no exact legal definition of artificial intelligence.

1. Is artificial intelligence an independent subject of legal relations?

2. Question on the responsibility of artificial intelligence;

3. ethics and regulation;

4. Data protection and privacy.

Several models of tort liability have been discussed in the scientific and legal literature:

- Tort liability may be imposed on the owner of an artificial intelligence device.

- Tort liability may be imposed on software developers.

- Tort liability may be imposed on operators serving artificial intelligence.

On February 16, 2017, in the resolution of the European Parliament (together with the recommendations of the European Commission) – „Civil Law Norms on Robotics“ – the need to legally define such terms as: „Cyberphysical Systems“, „Smart Autonomous Robots“ and others was voiced. The document envisages that such systems should have the following characteristics: the ability to act autonomously, the ability to exchange data, the acquisition of new knowledge based on acquired experience, the need for minimal physical support, and the ability to adapt to environmental conditions.

Against the background of these global legal and technological trends, Georgia’s role and capabilities in the development of artificial intelligence are important. In American and European countries, artificial intelligence is already widely used in industries such as healthcare, education, transport, and finance. Developed countries invest large amounts of resources in AI research, implementation, and regulation, giving them a serious advantage in global competition.

Georgia does not yet have a well-developed technological infrastructure, which is one of the main barriers to the effective implementation of AI.“ However, the analysis of the experience of advanced countries provides a reason for optimism, and Georgia should not lag behind this most important challenge of the 21st century and should find its place on the map of technological progress.

„Several important studies have already been carried out in the direction of artificial intelligence in Georgia. According to the data of October 2021, the research conducted by the University of Business and Technology (BTU) is particularly noteworthy - „The need to develop a national strategy for AI development of artificial intelligence in Georgia“. In this study, the strategic approaches of different countries are reviewed, and it is emphasized that it is necessary for Georgia to develop a national strategy. The legal basis of the strategy should be the country’s constitution and relevant legislative normative acts that ensure the regulation and ethical application of artificial intelligence (AI). It is also important to strengthen the research infrastructure, which requires the involvement of local, regional, and international scientists

to successfully solve complex scientific problems through a unified work platform.

For this you need:

1. Creation of special working committees where both local and international scientists will participate in solving complex scientific challenges.
2. Establishment of Mathematical and Technological Research Centers
3. Establishing a strong legal and ethical framework for artificial intelligence.

The authors of this study offer specific conclusions and recommendations.

1. The creation of a working group for the development of Georgia's artificial intelligence strategy;
2. Create a full-fledged legal framework and establish an ethical framework for the use and implementation of AI;
3. If necessary, Georgia should become a member of the international coalition and cooperate with other European countries in the direction of developing ethics and strategies for the introduction of artificial intelligence (the experience of the above already exists);
4. Establishing special-purpose artificial intelligence research and study centers;
5. To ensure close cooperation between the business sector and academic research institutions (universities);
6. To assess how great a threat can be created in terms of deepening poverty, artificial intelligence was introduced;
7. Write down in detail the amount of necessary investments and activate the existing financial resources; Also allocate an appropriate budget to support the mentioned processes."

„The use of artificial intelligence (AI) in the public sector is being actively developed in Georgia. Several government agencies have used AI technologies in various directions, including:

- 1.Center for Public Safety „112“ – AI technologies are used to manage emergencies to improve response times and processes.
2. The General Prosecutor's Office of Georgia (AI) was used to analyze legal documentation and automate processes.
3. The National Administration of Georgia: Through artificial intelligence, administrative processes are simplified, and service quality is improved.
4. The Education Management Information Center (AI) was used to analyze data and improve the learning process in the field of education.
5. The National Center for Education Quality Development uses AI technologies in quality control and evaluation processes in the education system.

Considering this success, it is important that Georgia does not stop progress and promotes the wider introduction of artificial intelligence. For this, it is necessary to continue the adopted strategic steps, including strengthening the legislation and ethical framework for the development of artificial intelligence, so that the country adapts to the chal-

lenges of the future and becomes a leader in technological innovations in the region."

CONCLUSION

Artificial intelligence is one of the most dynamically developing technological directions of the 21st century and has the potential to significantly change various areas of society, including health, education, and law. ~ The process of artificial intelligence development in Georgia is still at the initial stage and requires a strategic approach from a technological, legal, and ethical point of view.

Despite the existing barriers (poverty of technological infrastructure and imperfection of legal regulations), Georgia has taken important steps in the development and implementation of artificial intelligence. We already have some successful examples of the use of AI in the public sector, which proves the effectiveness and potential of this technology.

For future development, it is necessary to create a national strategy that considers both legal and ethical standards, as well as to strengthen the research and scientific base. International cooperation, attracting investments and integrating innovative approaches into the education system will become the ways that will allow Georgia to take a worthy place on the global technological map.

Today, it is necessary to unite the relevant governmental, academic, and private sectors on a single platform so that artificial intelligence is one of the main driving forces of innovation, economic growth, and social progress in Georgia.

REFERENCES:

1. BTU (2021). The need to develop a national strategy for the development of artificial intelligence in Georgia. Tbilisi: University of Business and Technology. <https://www.btu.edu.ge/ai-strategy-report>;
2. European Parliament. (2017). Resolution of Civil Law Rules on Robotics (2015/2103(INL)). 16 February 2017. Available at: <https://surl.li/eklchq>;
3. Russell, S. and Norvig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson Education;
4. Siciliano, B., & Khatib, O. (Eds.). (2016). Springer handbook of robotics. Cham, Switzerland: Springer. <https://doi.org/10.1007/978-3-319-32552-1>;
5. Education Management Information Center of Georgia. (2022). Use of artificial intelligence in education. Retrieved June 19, 2025, from <https://www.emis.ge>;
6. PwC. (2022). Global artificial intelligence study: Exploiting the AI revolution. Retrieved June 19, 2025, from <https://surl.cc/yynnzc>;
7. Floridi, L., Cowsls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., ... & Vayena, E. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, 28(4), 689–707, <https://surl.lt/mrpwuz>;
8. Ministry of Justice of Georgia. (2023). National Strategy and Regulation of Artificial Intelligence. Tbilisi.