ხელოვნური ინტელექტის გამოყენება მეცნიერებაში: აკადემიური ეთიკა და ინტელექტუალური საკუთრების უფლებების ცნობიერება საქართველოში

ნინო ქიტოშვილი

ფსიქოლოგიის გამოყენებითი მეცნიერებების დოქტორი, სამართლის მაგისტრი
საქართველოს უნივერსიტეტის სოციალურ მეცნიერებათა სკოლა
საქართველო, თბილისი
ელ.ფოსტა: N.kitoshvili@ug.edu.ge

ქეთევან კუხიანიძე

სამართლის დოქტორი
აკაკი წერეთლის სახელობის სახელმწიფო უნივერსიტეტის
ასოცირებული პროფესორი
საქართველო, ქუთაისი
ელ.ფოსტა: Ketevan.kukhianidze@atsu.edu.ge

ქარის ს. ციგოუ

საავტორო უფლებების სამართლის დოქტორი, მედია სამართლის ექსპერტი
საბერძნეთი, ათენი
ელ.ფოსტა: chtsigou@tmk-law.gr

აბსტრაქტი

ხელოვნური ინტელექტის (AI) ინტეგრაცია უმაღლეს განათლებაში ცვლის აკა-დემიურ პრაქტიკას მსოფლიო მასშტაბით, სთავაზობს ახალ ინსტრუმენტებს კვლე-ვისა და სწავლის პროცესში. თუმცა, ამავე დროს წარმოშობს მნიშვნელოვან ეთიკურ, სამართლებრივ და პედაგოგიურ გამოწვევებს. მოცემული კვლევა იკვლევს AI-ის გამოყენებას საქართველოს აკადემიურ სივრცეში და აქცენტს აკეთებს მის გავლენაზე აკადემიურ კეთილსინდისიერებაზე, ინტელექტუალური საკუთრების (IP) დაცვისა და დამოუკიდებელი აზროვნების განვითარებაზე. კვლევა ეფუძნება გლობალურ AI-ის მმართველობის მოდელებსა და თეორიულ ჩარჩოებს, მათ შორის ტექნოლოგიის მიღების მოდელს (TAM), სოციალური სწავლის თეორიას (SLT) და ოპერანტული პირობითობის თეორიას. მეთოდოლოგია აერთიანებს შედარებით სამართლებრივ ანალიზსა და თვისებრივ ინტერვიუებს, რომლებიც ჩატარდა 34 სტუდენტსა და 13

აკადემიურ პერსონალთან საქართველოს სხვადასხვა უნივერსიტეტში. შედეგები აჩვენებს როგორც დადებით ეფექტებს – როგორიცაა ლიტერატურის მიმოხილვისა და მონაცემთა დამუშავების ეფექტიანობის ზრდა – ასევე კრიტიკულ გამოწვევებს, როგორიცაა AI-ზე ზედმეტი დამოკიდებულება, პლაგიატის პრობლემების აღქმის ნაკლებობა AI-ის მიერ გენერირებულ კონტენტში და კრიტიკული აზროვნების უნარების დაქვეითება. კვლევა ასკვნის, რომ საქართველოს საგანმანათლებლო სისტემამ უნდა უპასუხოს აღნიშნულ გამოწვევებს განახლებული სამართლებრივი ჩარჩოებით, ინსტიტუციური რეფორმებითა და ეთიკური სახელმძღვანელოების დანერგვით, რომლებიც საერთაშორისო საუკეთესო პრაქტიკებს შეესაბამება. ციფრული კომპეტენციების გაძლიერებით, შემოქმედებითი უფლებების დაცვით და AI-ისა და ინტელექტუალური საკუთრების სწავლების კურიკულუმში ინტეგრირებით, საქართველო შეძლებს უზრუნველყოს ხელოვნური ინტელექტის პასუხისმგებლიანი გამოყენება და ერთდროულად შეუწყოს ხელი ინოვაციასა და აკადემიური სტანდარტების დაცვას.

საკვანძო სიტყვები: აკადემიური კეთილსინდისიერება, უმაღლესი განათლება, ტექნოლოგიის ეთიკა, საგანმანათლებლო პოლიტიკა

USAGE OF ARTIFICIAL INTELLIGENCE IN SCIENCE: ACADEMIC ETHICS AND INTELLECTUAL PROPERTY RIGHTS CONSCIOUSNESS IN GEORGIA

Nino Kitoshvili

PhD in Applied Psychology, LL M
School of Social Sciences, University of Georgia (UG)
Tbilisi, Georgia
Email: N.kitoshvili@ug.edu.ge

Ketevan Kukhianidze

PhD in Law
Associate Professor at Akaki Tsereteli State University
Kutaisi, Georgia
Email: ketevan.kukhianidze@atsu.edu.ge

Charis S. Tsigou

PhD in Copyright Law
Media Law Expert at Athens University of Economics and Business
Athens, Greece
Email: chtsigou@tmk-law.gr

ABSTRACT

The integration of artificial intelligence (AI) into higher education is reshaping academic practices worldwide, offering new tools for research and learning. However, it also introduces significant ethical, legal, and pedagogical challenges. This study investigates the use of AI in Georgia's academic landscape, focusing on its implications for academic integrity, intellectual property (IP), and independent thinking. Drawing on global AI governance models and theoretical frameworks—including the Technology Acceptance Model (TAM), Social Learning Theory (SLT), and Operant Conditioning Theory—the research explores how students and lecturers perceive and apply AI in academic contexts. The methodology combines comparative legal analysis with quali-

tative interviews conducted with 34 students and 13 academic staff across Georgian universities. Results reveal both positive outcomes—such as improved efficiency in literature review and data processing—and critical concerns, including over-reliance on AI, lack of understanding of plagiarism in AI-generated content, and diminished critical thinking skills. The study concludes that Georgia's education system must respond with updated legal frameworks, institutional reforms, and ethical guidelines that align with international best practices. By promoting digital literacy, protecting creative rights, and embedding AI and IP education into curricula, Georgia can ensure that AI is used responsibly and supports innovation without compromising academic standards.

KEYWORDS: Academic Integrity, Higher Education, Ethics in Technology, Educational Police

INTRODUCTIONS

In today's world, artificial intelligence (AI) technologies are increasingly integrated into the research process, enhancing efficiency and broadening access to academic publications. However, this technological advancement comes with significant challenges, including concerns over plagiarism, copyright infringement, and broader implications for academic integrity surrounding the use of AI-generated content.

As technological progress accelerates to meet competitive pressures and evolving work rhythms, [1] it also raises crucial questions about the ethical use of intellectual property (IP) and AI in upholding academic integrity. [2]

Scholars acknowledge that AI, like other technological advancements, can enhance societal well-being. However, the academic community must use AI responsibly—setting a positive example for students, fostering innovation, and maintaining academic integrity and creative rights. [3] Many countries have successfully addressed AI-related risks and challenges, providing valuable models for others to follow. [4]

As a candidate for EU membership, Georgia is working to integrate AI into its academic and legal frameworks. The EU has been at the forefront of developing regulations to govern AI and intellectual property (IP), which are pertinent to Georgia's legislative efforts. [5] The European Union's Artificial Intelligence Act, adopted in June 2024, provides a unified framework for AI use and regulation across member states. The act classifies AI applications by risk level and establishes requirements to safeguard health, safety, and fundamental rights. It aims to promote trustworthy AI and has set ethical standards for AI integration, influencing neighboring countries like Georgia in shaping their own AI policies. [6]

Georgia's commitment to European standards is reflected in agreements like the validation agreement with the European Patent Organisation (EPO), signed in January 2024. This agreement allows Georgian inventors and businesses to validate their European patents, strengthening the country's integration into the European market. This marks an important step in Georgia's ongoing efforts to update its intellectual property laws, which will be essential as AI technologies become more integrated into the country's academic and business sectors. [7]

Georgia is actively engaged in global AI governance and signed the Framework Convention on Artificial Intelligence in September 2024. This legally binding treaty—signed alongside the United States, the UK, and

---

[1]   Binns, R., 2018. Algorithmic accountability and public reason. *Philosophy & Technology*, 31(4), 543–556. <https://doi.org/10.1007/s13347-017-0263-5> [Accessed 05.04.2025].

[2]   Madhusree, P., 2021. Artificial Intelligence and Ethics in Education: A Reflection on Issues of Integrity and Intellectual Property. *Journal of Educational Technology & Society*, 24 (1), pp.45–56. [Online] available at: <https://www.jstor.org/stable/10.2307/27159876> [Accessed 02.03.2025].

[3]   Drahos, P., 2016. *A Philosophy of Intellectual Property*. Routledge. [Online] available at: <https://doi.org/10.4324/9781315263786 > [Accessed 05.04.2025].

[4]   European Commission. (2019). *Ethics guidelines for trustworthy AI.* Publications Office of the European Union. <https://doi.org/10.2759/346720> [Accessed 05.05.2025].

[5]   Ibid.

[6]   European Parliament, 2023. *EU AI Act: First Regulation on Artificial Intelligence*. [Online] available at: <https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence > [Accessed 30.04.2025].

[7]   European Patent Office, 2024. *Georgia Enters into Validation Agreement with the European Patent Organisation*. [Online] available at: <https://www.epo.org/en/news-events/news/validation-agreement-georgia-enters-force> [Accessed 05.04.2025].

other international partners—ensures that AI technologies uphold human rights, democracy, and the rule of law. This global commitment highlights the importance of unified standards, particularly for countries like Georgia, where AI adoption is growing in academia and business.[8]

As Georgia continues to adopt AI technologies, it is essential for the country to carefully consider the EU's regulatory frameworks and the evolving discourse on AI and intellectual property. Understanding these global developments will enable Georgia to craft legislation that balances innovation with the protection of intellectual property rights and ensures a smooth integration into the European market.[9]

Developing effective AI adoption policies in Georgia requires an understanding of local attitudes toward AI. Studies[10] indicate that cultural values significantly shape how individuals perceive and engage with AI, underscoring the need to consider these values when designing AI policies[11]. A thorough understanding of cultural attitudes in Georgia is essential before developing tailored AI integration strategies.

This study argues that while AI serves as a beneficial tool, there is a pressing need to develop comprehensive guidelines that promote responsible AI usage and protect IP rights among students and researchers. To enhance the quality of academic research, it is crucial to cultivate a culture of awareness and knowledge regarding AI technologies within the academic community. This includes minimizing associated risks, safeguarding creative rights, and promoting ethical practices in research endeavors.

The study aims to investigate how students and researchers in Georgia utilize AI in their academic pursuits and how AI could be used to create a Georgian model based on international experiences, while accounting for unique cultural characteristics. This research addresses several key questions:

- How have different countries approached AI regulation?
- What are the best practices in AI governance?
- Which international experiences are most applicable to Georgia?
- What is the current state of AI adoption in Georgia, and which theoretical framework best explains it?
- What model should be implemented to balance AI adoption with academic integrity and IP protection?

To address these objectives, the study will follow a multi-stage mixed-methods research approach. Initially, desk research will analyze successful international experiences and countries with frameworks similar to Georgia's, as well as a review of local legislative frameworks over the decades. Afterward, qualitative research will be conducted, including in-depth interviews with students and researchers from various academic disciplines to gather insights into their experiences with AI.

Drawing on empirical research and international and local experiences in intellectual

---

[8]   The Verge, 2024. *US, EU, UK, and Others Sign Legally Enforceable AI Treaty*. [Online] available at: <https://www.theverge.com/2024/9/5/24236980/us-signs-legally-enforceable-ai-treaty> [Accessed 13.04.2025].

[9]   The Guardian, 2025. *EU Accused of Leaving 'Devastating' Copyright Loophole in AI Act*. [Online] available at: <https://www.theguardian.com/technology/2025/feb/19/eu-accused-of-leaving-devastating-copyright-loophole-in-ai-act > [Accessed 05.04.2025].

[10]   Ge, X. and others, 2024. *How culture shapes what people want from AI* [Preprint]. arXiv. <https://arxiv.org/abs/2403.05104> [Accessed 01.05.2025].

[11]   Ibid.

property (IP), this study will help advance universities, researchers, and Georgia's educational system. By establishing robust knowledge frameworks, we can facilitate the adoption of technological innovations and ethical practices, not only within academia but across society as a whole. This research also recommends integrating a mandatory course on AI and IP into all university curricula.

THEORETICAL FRAMEWORK FOR AI ADOPTION IN ACADEMIA

To explain how individuals adopt new technologies while maintaining ethical and legal standards, and to explore how law consciousness influences responsible AI use, this research is based on the following theories:

1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) (Davis, 1989)[12] is widely used to explain how individuals accept and use new technologies. TAM posits that two main factors determine whether a person will adopt a technology:

- **Perceived Usefulness (PU):** The extent to which an individual believes that using AI will enhance their academic performance. If students and researchers see AI tools as beneficial for improving efficiency and research quality, they are more likely to adopt them.[13]
- **Perceived Ease of Use (PEU):** The degree to which an individual perceives AI as user-friendly. AI tools with intuitive interfaces and clear functionalities are more likely to be adopted by students and researchers.[14]
- **Behavioral Intention (BI):** PU and PEU influence an individual's attitude toward AI, shaping their behavioral intention (BI) to use it. However, if institutions lack strong ethical guidelines, BI may lead to both ethical and unethical AI adoption.[15]

TAM can help assess how students and researchers in Georgia perceive AI tools and what factors influence their decision to use AI responsibly or irresponsibly in academia.

2. Bandura's Social Learning Theory (SLT)

Albert Bandura's Social Learning Theory (SLT) (1977)[16] explains human behavior as a result of observational learning. Ethical behavior, including responsible AI use, is shaped by:

- **Role Models:** If professors and researchers demonstrate ethical AI use, students are more likely to follow (Bandura, 1986). Conversely, if unethical AI use is normalized, students may adopt similar unethical behaviors.[17]
- **Social Reinforcement:** Ethical norms are

---

12   Davis, F. D., 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), pp. 319–340. [Online] available at: <https://doi.org/10.2307/249008> [Accessed 12.03.2025].

13   Venkatesh, V. and Bala, H., 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences*, 39 (2), pp. 273–315. [Online] available at: <https://doi.org/10.1111/j.1540-5915.2008.00192.x> [Accessed 30.03.2025].

14   Ibid.

15   Teo, T., 2011. Factors Influencing Teachers' Intention to Use Technology. *Computers & Education*. 57(4), pp. 2432–2440. [Online] available at: <https://doi.org/10.1016/j.compedu.2011.06.008> [Accessed 01.05.2025].

16   Bandura, A., 1977. *Social Learning Theory*. Prentice Hall.

17   Brown, M. E. and Treviño, L. K., 2014. Do Role Models Matter? An Investigation of Role Modeling as an Antecedent of Perceived Ethical Leadership. *Journal of Business Ethics*, 122 (4), pp. 587–598. [Online] available at: <https://doi.org/10.1007/s10551-013-1769-0> [Accessed 30.04.2025].

reinforced or discouraged based on institutional policies.[18]

• Universities that implement clear AI policies and encourage academic integrity help shape responsible AI use.[19]

SLT can help explain why some students act ethically with AI, while others engage in plagiarism, copyright infringement, or unethical research practices.

3. Skinner's Operant Conditioning Theory

B.F. Skinner's Operant Conditioning Theory (1938)[20] explains behavior as a function of reinforcement and punishment.

• Positive Reinforcement If students receive despite, they may continue unethical behavior.[21]

• If institutions fail to , AI misuse will persist.[22]

• Universities can discourage by implementing, such as plagiarism penalties.[23]

Skinner's theory will be used to analyze how university policies, grading systems, and enforcement mechanisms influence ethical AI use in Georgia.

By integrating these theories, this study seeks to understand the psychological, social, and institutional factors influencing AI adoption and ethical behavior in academia.

GLOBAL AI BEST PRACTICES

The aim of this stage of the research was to define the legal nature of artificial intelligence in Georgia and foreign countries, and to identify the benefits and challenges it presents within the legal systems of Georgia and other nations in the context of global digitalization. Accordingly, the methodological basis was the comparative legal method, which was used to determine the differences and similarities between Georgia's and other countries' approaches to the use of artificial intelligence.

Legal Support for the Use of Artificial Intelligence in the European Union

The European Union is one of the leading regions in providing legal support for the use of artificial intelligence. On February 16, 2017, the European Parliament adopted Resolution 2015/2103 (INL) on Civil Law Rules on Robotics, based on the recommendations of the European Commission.[24]

The European Commission, through this document, presented its position on issues related to robot liability and the establishment of a registration system. Specifically, the European Parliament emphasized that robots are capable of performing certain functions,

[18] Lersch, K. M., 1999. Social Learning Theory and Academic Dishonesty. *International Journal of Comparative and Applied Criminal Justice*. 23(1), pp. 103–114. [Online] available at: <https://doi.org/10.1080/01924036.1999.9678635> [Accessed 25.04.2025].

[19] Higgins, G. E., Wolfe, S. E. and Ricketts, M. L., 2009. Digital piracy: A latent class analysis. *Social Science Computer Review*, 27(1), 24–40. <https://doi.org/10.1177/0894439308321350> [Accessed 21.03.2025].

[20] Skinner, B. F., 1938. *The Behavior of Organisms*. Appleton-Century.

[21] Ford, R. C. and Richardson, W. D., 1994. Ethical Decision Making: A Review of the Empirical Literature. *Journal of Business Ethics*, 13(3), pp. 205–221. [Online] available at: <https://doi.org/10.1007/BF02074820> [Accessed 28.03.2025].

[22] Ibid.

[23] Whitley, B. E., 1998. Factors Associated with Cheating Among College Students: A Review. *Research in Higher Education*, 39, pp. 235–274. [Online] available at: <https://doi.org/10.1023/A:1018724900565> [Accessed 05.04.2025].

[24] Księżak, P. and Wojtczak S., 2020. AI Versus Robot: In Search of a Domain for the New European Civil Law. *Law, Innovation and Technology*. p.2. [Online] available at: <https://www.researchgate.net/publication/345096551_AI_versus_robot_in_search_of_a_domain_for_the_new_European_civil_law> [Accessed 30.04.2025].

tasks, operations, and objectives, and of making complex decisions in real-time, which creates the need for legal regulation.

On February 12, 2019 the European Parliament adopted Resolution (2018/2088(INI)) on artificial intelligence and robotics[25] where the main areas that could be affected by a malicious use of artificial intelligence are listed, among which the protection of intellectual property rights.

In this field, the artificial intelligence has been used since 2016 for the creation of several types of works, such as paintings, songs, digital photographs, poems and short news reports, raising legal debates as per the quality of the author, the nature of the final output and its ownership.

At the end of 2021, UNESCO member states adopted an ethical guideline on artificial intelligence, which defines a set of principles for the proper use of AI.

A complete definition of artificial intelligence is provided in Article 3(1) of the Regulation (EU) 2024/1689 (AI Act). According to this Article, an AI System means "a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments"[26].

AI Act introduces a legal framework based on a graded risk-based approach system, which applies to both public and private entities within and outside the EU, as long as the AI system is placed on the Union market or its use affects individuals located in the EU.

Given that artificial intelligence presents increasing challenges in our daily reality, important questions arise: in what ways is AI being introduced in Georgia and European countries? What approaches exist regarding national AI strategies?

As of today, nearly 62 countries worldwide have adopted national strategies for artificial intelligence and have already begun implementing them. An additional 14 countries — including Azerbaijan and Armenia — are in the process of developing their strategies.

On April 10, 2018, twenty-four EU member states and Norway signed a declaration on cooperation regarding a European approach to artificial intelligence. Romania, Greece, and Cyprus joined this initiative in May 2018, followed by Croatia in July 2018.[27] Among them noteworthy is:

• Germany – Germany stands out for its comprehensive legal framework governing the use of artificial intelligence, particularly in relation to autonomous vehicles. This framework addresses responsibilities, rights, and accountability. For example, discrimination against citizens in incidents involving AI systems is strictly prohibited. Germany has established an Ethics Commission for Autonomous Vehicles, which issues guiding principles, as well as a National Commission focused on researching the social consequences of decisions made

---

25   European Parliament, 2019. *Resolution of 28 March 2019 on the Rights of Persons with Disabilities. (2018/2685(RSP))* [P8_TA (2019)0081]. EUR-Lex. [Online] available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019IP0081> [Accessed 15.04.2025].

26   Compare: European Commission, 2018. *Artificial intelligence for Europe* COM 2018 237 final. EUR-Lex.: [Online] available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237> [Accessed 15.04.2025].

27   Abbasov, R., 2023. *Legal Aspects of Artificial Intelligence: The Issue of Personhood and Legal Liability in the Context of the European Union.* (Master's thesis), p. 48. [Online] available at: <https://phaidra.univie.ac.at/detail/o:1391590 > [Accessed 30.04.2025].

by algorithms.[28]

- Norway – For Norway, the ethical implementation of artificial intelligence is essential. The country's national strategy emphasizes that AI creates a competitive advantage and highlights the importance of translating ethical AI from theory into practice by considering sector-specific standards and requirements. According to the strategy, the Norwegian Data Protection Authority is tasked with auditing and inspecting algorithms. Additionally, the education system is responsible for equipping new talent with the skills necessary for working with AI.[29]

- France – France's artificial intelligence strategy emphasizes the importance of public acceptance of AI as one of its core principles. To achieve this, the strategy outlines the need for transparency and audit policies, including the training of engineers and AI researchers. It also underscores the importance of applying the principle of human accountability in AI-related decisions. Additionally, the French government is conducting experiments on the use of AI in certain aspects of governance. Notably, in 2017, the appellate courts of Rennes and Douai tested predictive justice software in various appeal cases.[30]

- Sweden – Sweden's AI strategy provides general guidelines concerning education,

research, innovation, and AI infrastructure. The recommendations include building a strong research base, fostering cooperation between sectors and with other countries, and taking efforts to prevent and manage risks. The strategy also calls for the development of standards for the ethical use of AI. Moreover, Sweden has established the Swedish AI Council, composed of experts from academia and industry, to develop the so-called "Swedish Model" of AI, which is intended to be sustainable, beneficial to society, and supportive of long-term economic growth.[31]

- Estonia – Among European countries, Estonia is particularly noteworthy not only for its advancement in AI but also for its broader digital transformation. Despite being a former Soviet republic like Georgia, Estonia's current reality is entirely different. As a member of both NATO and the European Union, Estonia is smaller than Georgia in both size and population, yet it has managed to secure a prominent position on the global digital map. Estonia developed its AI strategy in 2019 and named it Kratt. The strategy is comprehensive and includes the integration of AI into the public and private sectors, education and research, and the legal system.[32]

Based on the experience of other countries, successful AI development requires

---

[28]   Compare. Goderdzishvili, N., 2020. *Artificial Intelligence: Essence, International Standards, Ethical Norms, and Recommendations*. Institute for Development of Freedom of Information (IDFI). [Online] available at: <https://idfi.ge/public/upload/Article/1111Artificial-Intelligence-GEO_Web%20Version.pdf> [Accessed 15.04.2025].

[29]   Ibid.

[30]   Compare. Abbasov, R., 2023. *Legal Aspects of Artificial Intelligence: The Issue of Personhood and Legal Liability in the Context of the European Union.* (Master's thesis) available at: [Online] available at: <https://phaidra.univie.ac.at/detail/o:1391590 > [Accessed 30.04.2025].

[31]   Compare. European Parliamentary Research Service (EPRS), 2020. *The Ethics of Artificial Intelligence: Issues and Initiatives*. Study No. 634452. [Online] available at: <https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf > [Accessed 15.04.2025].

[32]   Compare. Gabrichidze, N., 2024. *How Countries Are Responding to the AI Revolution: An Interview with Lado Nafetvaridze*. [Online] available at: <https://civil.ge/ka/archives/581006> [Accessed 27.08.2024].

not only legal regulation but also investment in digital education and public awareness. Governments have supported this by updating curricula, offering online courses, and promoting digital skills across all age groups. These efforts ensure ethical AI use, public engagement, and readiness for technological change. Georgia can benefit by adopting similar strategies to foster responsible AI integration and strengthen its digital capacity.

GEORGIA'S AI LEGISLATIVE ADOPTION

In a country like Georgia, where oversight mechanisms for law enforcement agencies are relatively weak and concerns persist regarding judicial independence, the challenge of balancing the risks associated with artificial intelligence becomes particularly critical.[33]

As in many European countries, judicial decisions in Georgia are the product of human reasoning. While judges and parties to legal proceedings occupy different social roles, they are equal from a horizontal perspective—both are human beings. Thus, the distinction between a judge and a party exists solely within the framework of the legal process. This dynamic would fundamentally change if the function of adjudication were delegated to artificial intelligence. In such a case, legal distinctions based solely on procedural roles would collapse, and the criterion of equality would shift dramatically: AI is not a human being. This implies that a non-living, non-human-oid entity would be entrusted with decisions affecting fundamental human rights.

On one hand, this scenario is ethically troubling. Judges do not rely solely on legislation and logical reasoning; they also draw upon their life experience, moral judgment, and empathy when delivering justice.[34] However, if the issue is viewed from another perspective, it becomes evident that one of the primary challenges facing Georgia's judicial system is the excessive caseload. This challenge extends beyond the adjudication of substantive matters in ongoing cases; even before that stage, numerous technical and procedural tasks consume significant human resources and hinder the delivery of swift and effective justice.

In addition to increasing the number of judges, the integration of artificial intelligence into the justice system should be considered a strategic priority. Many of these technical tasks arise during the case preparation phase, prior to any final decision. It is precisely at this stage that modern, innovative technologies should be introduced to improve efficiency and reduce delays.[35]

The use of artificial intelligence entails a number of risks. Its implementation raises significant challenges concerning the rights to privacy, transparency, freedom of expression, and accountability. In Georgia, the absence of a centralized registry of AI-based systems further exacerbates these concerns. Consequently, the only available means of obtaining information about algorithms employed by public institutions is through formal requests for access to public information.

---

[33] Eristavi, D. and Davituri, G., 2021.*The Use of Artificial Intelligence Systems in Georgia: Legislation and Practice*. [Online] available at: <https://idfi.ge/public/upload/Article/AI%20ENG%20FULL.pdf > [Accessed 15.04.2025].

[34] Kudeikina, I. and Kaija, S., 2024. Limits of the Use of Artificial Intelligence in Law: Ethical and Legal Aspects. *Engineering for Rural Development*, vol. 2, p.190. [Online] available at: <https://journals.rta.lv/index.php/ETR/article/view/8016/6326> [Accessed 15.04.2025].

[35] Beruashvili, M,. 2023. *Needs, Opportunities, and Risks of a National Artificial Intelligence Strategy*. [Online] available at: <https://www.entrepreneur.com/ka/business-news/khelovnuri-intelektis/444147> Accessed 25.04.2025].

AI IN HIGHER EDUCATION: EVIDENCE FROM GEORGIA METHODOLOGY

In the second stage of the study, interviews were conducted. The interviews for this study were conducted between November 2024 and January 2025 at various academic institutions in Georgia. The participants included 34 students from undergraduate and graduate programs (various field of study), and 13 academic staff members (lecturers from different field) teaching at universities. The aim was to explore how students and lecturers use artificial intelligence (AI) in their academic processes, the ethical concerns associated with its use, and the impact of AI on academic skills and independence

The interviews were semi-structured and open-ended, allowing for flexibility in responses and in-depth exploration of individual perspectives. After the interviews were completed, the narratives were transcribed and analyzed using thematic analysis. This method involved identifying key themes, patterns, and categories within the responses.

RESULTS

The primary themes that emerged from the data were: AI Usage in Academic Processes; Ethical and Legal Considerations; Impact of AI on Academic Skills; Practical Benefits and Challenges:

• Both students and lecturers discussed that AI already has been well integrated into their learning and research activities.

"I use AI for research, mainly for literature searches and data analysis. However, I see that students are becoming overly dependent on it, sometimes copying text directly without reflection. This hinders their independent thinking." (Lecturer, 44, Male)

Positive aspects for lecturers were quick

access to relevant data and faster processing of texts and negatives: over-reliance on AI, leading to reduced critical thinking and increased plagiarism.

Students use mostly in summarizing information, especially for complex subjects, but don't know about the importance of verifying AI-generated text to ensure academic honesty:

"I use AI to create summaries because sometimes it's difficult for me to condense complex material. However, I try to double-check the text and avoid relying entirely on the machine." (Student, 21, Female)

• A major theme that emerged from the interviews was the ethical use of AI, specifically regarding plagiarism and intellectual property. Lecturers themselves use AI, but they noticed the lack of students' awareness regarding plagiarism in AI-generated content.

"Universities must have clear regulations on AI use, because students often don't understand that using AI-generated text without attribution is still academic dishonesty." (Lecturer, 44, Male)

Students in their part, really don't analyze that AI-produced content may constitute plagiarism, reflecting a gap in understanding academic integrity:

"I'm not sure if AI-generated text should be considered plagiarism. If it's unique and new, why shouldn't I use it?" (Student, 23, Male)

• Both students and lecturers noted AI's influence on the development of independent thinking and academic skills. Lecturers think, that AI usage can diminish independent thinking among students, with a tendency to depend on AI instead of developing their own analytical skills.

"AI is helpful, but it reduces students' ability to think critically and solve problems on their own. I notice a decline in their analytical abilities." (Lecturer, 44, Male)

Students do not agree with lectures po-

sitions and some of them shared opinion, that while AI may appear to save time, students recognize that writing independently leads to greater learning and skill development:

"I feel like if I don't use AI, I am wasting time. But when I try to write on my own, I realize I learn a lot more." (Student, 20, Female)

• The students and lecturers both highlighted the practical advantages and challenges of integrating AI into the academic sphere. Lecturers suggest, that AI facilitates faster research and data analysis, but there is also, the risk of over-reliance on AI, leading to loss of independent research skills.

"AI simplifies the research process by helping with literature reviews and data analysis, but we must be cautious about its overuse." (Lecturer, 44, Male)

The student's perspective is that, although AI provides assistance, students feel it rises their confidence in their own problem-solving abilities:

"AI helps me with difficult assignments, but it makes me feel less confident in my own abilities." (Student, 21, Male)

The interviews revealed a complex relationship between AI usage and its impact on academic practices, with both benefits and challenges identified by students and lecturers. The results highlighted the need for clear university policies on AI usage, along with ethical guidelines to address issues such as plagiarism and intellectual property. Furthermore, the results suggest that while AI offers significant support in academic processes, it is crucial to balance AI use with efforts to maintain and develop independent thinking and academic skills.

DISCUSSION

The empirical study revealed that both students and lecturers have integrated AI into their academic routines, primarily for tasks such as literature searches and data analysis. This is consistent with global trends in AI adoption in education, where AI is increasingly being used to support research and improve academic efficiency.[36] Students, in particular, rely on AI tools to simplify complex academic tasks, such as summarizing materials, which supports findings from other studies suggesting that AI can enhance students' learning experiences by making difficult content more accessible.[37]

However, the over-reliance on AI, especially for tasks like summarization, poses risks. As lecturers highlighted, students' dependence on AI can reduce their engagement with the material and diminish their ability to think critically. This aligns with Bandura's Social Learning Theory (1977), which emphasizes that behavior is often influenced by models of action. If students repeatedly use AI to complete assignments without engaging critically, they may internalize passive learning habits, which ultimately impair their academic independence.

The study's results strongly suggest the relevance of Bandura's Social Learning Theory (1977), Davis's Technology Acceptance Model (1989), and Skinner's Operant Conditioning Theory (1938) in explaining the behaviors observed among students and lecturers in relation to AI use.

• Social Learning Theory (SLT) emphasizes the importance of role models and social reinforcement in shaping behavior. In this study, lecturers serve as models of ethical AI use, and their behavior influences stu-

36   Compare. Mekić, A., Kovačević, S. and Hazić, A., 2024. AI in education: Enhancing learning experiences through technology. *ArXiv*. <https://doi.org/10.1002/cae.22804> Accessed 03.04.2025].

37   Holmes, W., Bialik, M. and Fadel, C., 2019. *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Center for Curriculum Redesign.

dents' approach to AI. The study suggests that the institution's policies and regulations will also serve as reinforcement for ethical or unethical AI use.

- Technology Acceptance Model (TAM) is crucial in understanding how students and lecturers perceive and adopt AI. The findings suggest that the perceived usefulness and ease of use of AI tools are driving factors behind their adoption. However, TAM also highlights that behavioral intentions can lead to unethical adoption if institutions do not integrate ethical training and clear guidelines.

- Operant Conditioning Theory offers insight into how reinforcement and punishment influence the over-reliance on AI. If students are rewarded for completing tasks quickly without engaging deeply with the content, it can result in a decrease in critical thinking. Conversely, appropriate punishment for academic dishonesty and clear consequences for unethical AI use can reduce misuse.

In addition, The Soviet educational system, based on the theories of Lev Vygotsky, placed great emphasis on socialization and collective learning.[38] Vygotsky's cultural-historical theory emphasizes that individual development is closely linked to social relationships and cultural contexts. While this approach promoted social cohesion, it may have limited divergent thinking and hindered individual innovation.[39] The primary focus of instruction was often conformity to established norms and knowledge, which restricted creativity and discouraged the pursuit of new ideas.[40]

In Georgia, the influence of this educational philosophy is still evident today, particularly in higher education. Universities often fail to provide adequate support for students to develop innovative ideas and protect their intellectual property. Unlike Western universities, which actively engage in technology transfer and patenting[41], many Georgian universities lack the necessary resources and institutional assistance in this area. This absence of institutional support significantly impedes the development and commercialization of new ideas, thereby hindering the growth of the country's innovation ecosystem.[42]

Moreover, international experience shows that strong institutional support is essential for fostering innovation in higher education. In many Western countries, universities have established dedicated offices for technology transfer and intellectual property (IP) protection, helping students and researchers commercialize their ideas and secure legal ownership of their work. In con-

---

[38]   Vygotsky, L. S., 1978. *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press. [Online] available at: < https://doi.org/10.2307/j.ctvjf9vz4 > [Accessed 10.04.2025].

[39]   Tudge, J. and Scrimsher, S., 2003. Lev Vygotsky on Education: A Cultural–Historical, Interpersonal, and Individual Approach to Development. *Educational Psychologist*, 38(1), pp.17–25. [Online] available at: <https://doi.org/10.1207/S15326985EP38013> [Accessed 15.04.2025].

[40]   Compare. Davydov, V. V, 1995. The Influence of L. S. Vygotsky on Education Theory, Research, and Practice. *Educational Researcher*, 24(3), pp.12–21. [Online] available at: <https://doi.org/10.3102/0013189X024003012 > [Accessed 15.04.2025].

[41]   Etzkowitz, H., and Leydesdorff, L. (2000). The dynamics of innovation: From national systems and 'Mode 2' to a triple helix of university–industry–government relations. *Research Policy*, 29(2), 109–123. <https://doi.org/10.1016/S0048-7333(99)00055-4> [Accessed 26.04.2025].

[42]   Romanovskyi, O. O., Romanovska, Y. Y., Romanovska, O. O. and El Makhdi, M., 2020. Higher Education Innovatics: The Role of Innovative Environment in Transformation of the Sphere of Higher Education and Science. *Business, Economics, Sustainability, Leadership and Innovations*, 5, pp. 35–53. [Online] available at: <https://doi.org/10.37659/2663-5070-2020-5-35-ს53 > [Accessed 26.04.2025].

trast, Georgia's higher education institutions often lack such structures, leaving students without the necessary guidance or resources to protect and develop their innovations. This gap can be traced back to the legacy of the Soviet educational model, which prioritized conformity and collective learning over creativity and individual initiative. While this model promoted social cohesion, it also discouraged divergent thinking and limited opportunities for innovation. Addressing this issue requires adopting international best practices—such as embedding innovation hubs within universities, offering legal support for IP rights, and including entrepreneurship and AI ethics in curricula—to build a modern academic environment that empowers students and aligns with global standards.

CONCLUSION

This study explores the integration of artificial intelligence (AI) into Georgia's academic system, with a particular focus on its implications for academic efficiency, ethical practices, and the protection of intellectual property. Drawing on both Georgian and international experiences, the research concludes that delegating decision-making authority to AI-as observed in global developments-raises complex legal and ethical questions. Recognizing AI as a legal subject would necessitate significant shifts in public perception, alongside substantial legislative reform.

Addressing these challenges requires a comprehensive, long-term strategy involving amendments to Georgia's legal framework, more efficient resource allocation, increased funding for education, and active engagement with international experts, the private sector, and civil society. Such a col-

laborative approach would not only support the formulation of well-informed policy recommendations but also facilitate the development of accountability mechanisms to ensure their effective implementation. It is inevitable that numerous new regulations will emerge, and even existing laws—originally unrelated to the technological sphere—will require reinterpretation and revision in light of AI's expanding role.

At the same time, empirical findings from this study indicate that, while AI holds significant potential to enhance research and learning, its adoption in Georgia is often met with caution. This hesitancy is largely due to concerns about its potential to undermine independent thinking. Both students and faculty raised critical issues related to over-reliance on AI tools, which may weaken analytical reasoning and compromise academic integrity, particularly through increased risks of plagiarism.

To address these concerns, Georgia's education system must evolve to promote critical engagement and independent thought alongside the responsible use of AI. Clear institutional guidelines, robust ethical standards, and comprehensive education on intellectual property rights are essential to balancing the benefits of AI with the imperative of academic responsibility.

Finally, the study emphasizes the need for both cultural and structural reforms within Georgia's academic institutions. Encouraging creativity, providing sustainable funding for research and innovation, and establishing university-based offices for technology transfer and intellectual property protection are crucial next steps. By adopting these international best practices, Georgian universities can play a pivotal role in the nation's intellectual advancement and economic growth.[43]

---

[43]   Compare. Mitaishvili-Rayyis, Y., 2023. *Educational Reforms in Georgia: Past Progress and Future Directions*. Georgian Foundation for Strategic and International Studies. [Online] available at: <https://gfsis.org.ge/files/library/pdf/Eng-3530.pdf.> [Accessed 26.04.2025].

BIBLIOGRAPHY:

Used Literature:

1. Abbasov, R., 2023. *Legal Aspects of Artificial Intelligence: The Issue of Personhood and Legal Liability in the Context of the European Union.* (Master's thesis). [Online] available at: <https://phaidra.univie.ac.at/detail/o:1391590> [Accessed 30.04.2025]. (in English)

2. Bandura, A., 1977. *Social Learning Theory.* Prentice Hall. (in English)

3. Beruashvili, M,. 2023. *Needs, Opportunities, and Risks of a National Artificial Intelligence Strategy.* [Online] available at: <https://www.entrepreneur.com/ka/business-news/khelovnuri-intelektis/444147> [Accessed 25.04.2025]. (in Georgian)

4. Binns, R., 2018. Algorithmic accountability and public reason. *Philosophy & Technology*, 31(4), 543–556. <https://doi.org/10.1007/s13347-017-0263-5> [Accessed 05.04.2025]. (in Engl ish)

5. Brown, M. E. and Treviño, L. K., 2014. Do Role Models Matter? An Investigation of Role Modeling as an Antecedent of Perceived Ethical Leadership. *Journal of Business Ethics*, 122(4), pp. 587–598. [Online] available at: <https://doi.org/10.1007/s10551-013-1769-0> [Accessed 30.04.2025]. (in English)

6. Davis, F. D.,1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), pp. 319–340. [Online] available at: <https://doi.org/10.2307/249008> [Accessed 12.03.2025]. (in English)

7. Davydov, V. V., 1995. The Influence of L. S. Vygotsky on Education Theory, Research, and Practice. *Educational Researcher*, 24(3), pp.12–21. [Online] available at: <https://doi.org/10.3102/0013189X024003012> [Accessed 15.04.2025]. (in English)

8. Drahos, P., 2016. *A Philosophy of Intellectual Property*. Routledge. [Online] available at: <https://doi.org/10.4324/9781315263786> [Accessed 05.04.2025]. (in English)

9. Eristavi, D. and Davituri, G., 2021.*The Use of Artificial Intelligence Systems in Georgia: Legislation and Practice*. [Online] available at: <https://idfi.ge/public/upload/Article/AI%20ENG%20FULL.pdf> [Accessed 15.04.2025]. (in Georgian)

10. Etzkowitz, H. and Leydesdorff, L., 2000. The dynamics of innovation: From national systems and 'Mode 2' to a triple helix of university–industry–government relations. *Research Policy*, 29(2), 109–123. <https://doi.org/10.1016/S0048-7333(99)00055-4> [Accessed 26.04.2025]. (in English)

11. Ford, R. C. and Richardson, W. D., 1994. Ethical Decision Making: A Review of the Empirical Literature. *Journal of Business Ethics*, 13(3), pp.205–221. [Online] available at: <https://doi.org/10.1007/BF02074820> [Accessed 28.03.2025]. (in English)

12. Gabrichidze, N., 2024. *How Countries Are Responding to the AI Revolution: An Interview with Lado Nafetvaridze*. [Online] available at: <https://civil.ge/ka/archives/581006> [Accessed 27.08.2024]. (in Georgian)

13. Ge, X. and others, 2024. *How culture shapes what people want from AI* [Preprint]. arXiv. <https://arxiv.org/abs/2403.05104> [Accessed 01.05.2025]. (in English)

14. Goderdzishvili, N., 2020. *Artificial Intelligence: Essence, International Standards, Ethical Norms, and Recommendations*. Institute for Development of Freedom of Information (IDFI). [Online] available at: <https://idfi.ge/public/upload/Article/1111Artificial-Intelligence-GEO_Web%20Version.pdf> [Accessed

15.04.2025]. (in Georgian)

15. Higgins, G. E., Wolfe, S. E. and Ricketts, M. L., 2009. Digital piracy: A latent class analysis. *Social Science Computer Review*, 27(1), 24–40. <https://doi.org/10.1177/0894439308321350> [Accessed 21.03.2025]. (in English)

16. Holmes, W., Bialik, M. and Fadel, C., 2019. *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Center for Curriculum Redesign. (in English)

17. Kudeikina, I. and Kaija, S., 2024. Limits of the Use of Artificial Intelligence in Law: Ethical and Legal Aspects. *Engineering for Rural Development*, vol. 2, p. 190. [Online] available at: <https://journals.rta.lv/index.php/ETR/article/view/8016/6326> [Accessed 15.04.2025]. (in English)

18. Księżak, P. and Wojtczak S., 2020. AI Versus Robot: In Search of a Domain for the New European Civil Law. *Law, Innovation and Technology*. [Online] available at: <https://www.researchgate.net/publication/345096551_AI_versus_robot_in_search_of_a_domain_for_the_new_European_civil_law> [Accessed 30.04. 2025]. (in English)

19. Lersch, K. M., 1999. Social Learning Theory and Academic Dishonesty. *International Journal of Comparative and Applied Criminal Justice*. 23 (1), pp.103–114. [Online] available at: <https://doi.org/10.1080/01924036.1999.9678635> [Accessed 25.04.2025]. (in English)

20. Madhusree, P., 2021. Artificial Intelligence and Ethics in Education: A Reflection on Issues of Integrity and Intellectual Property. *Journal of Educational Technology & Society*, 24(1), pp. 45–56. [Online] available at: <https://www.jstor.org/stable/10.2307/27159876> [Accessed 02.03.2025]. (in English)

21. Mekić, A., Kovačević, S. and Hazić, A., 2024. AI in education: Enhancing learning experiences through technology. *ArXiv*. <https://doi.org/10.1002/cae.22804> Accessed 03.04.2025]. (in English)

22. Mitaishvili-Rayyis, Y., 2023. *Educational Reforms in Georgia: Past Progress and Future Directions*. Georgian Foundation for Strategic and International Studies. [Online] available at: <https://gfsis.org.ge/files/library/pdf/Eng-3530.pdf.> [Accessed 26.04.2025]. (in Georgian)

23. Romanovskyi, O. O., Romanovska, Y. Y., Romanovska, O. O. and El Makhdi, M., 2020. Higher Education Innovatics: The Role of Innovative Environment in Transformation of the Sphere of Higher Education and Science. *Business, Economics, Sustainability, Leadership and Innovations*, 5, pp. 35–53. [Online] available at: <https://doi.org/10.37659/2663-5070-2020-5-35-ს53 > [Accessed 26.04.2025]. (in English)

24. Skinner, B. F., 1938. *The Behavior of Organisms*. Appleton-Century. (in English)

25. Teo, T., 2011. Factors Influencing Teachers' Intention to Use Technology. *Computers & Education*. 57(4), pp.2432–2440. [Online] available at: < https://doi.org/10.1016/j.compedu.2011.06.008> [Accessed 01.05. 2025]. (in English)

26. Tudge, J. and Scrimsher, S., 2003. Lev Vygotsky on Education: A Cultural–Historical, Interpersonal, and Individual Approach to Development. *Educational Psychologist*, 38(1), pp.17–25. [Online] available at: <https://doi.org/10.1207/S15326985EP3801_3> [Accessed 15.04. 2025]. (in English)

27. Venkatesh, V. and Bala, H., 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences*, 39(2), 273–315. [Online] available at: <https://doi.org/10.1111/j.1540-5915.2008.00192.x> [Accessed

30.03.2025]. (in English)

28. Vygotsky, L. S., 1978. *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press. [Online] available at: <https://doi.org/10.2307/j.ctvjf9vz4> [Accessed 10.04.2025]. (in English)

29. Whitley, B. E., 1998. Factors Associated with Cheating Among College Students: A Review. *Research in Higher Education*, 39, pp.235–274. [Online] available at: <https://doi.org/10.1023/A:1018724900565> [Accessed 05.04.2025]. (in English)

Normative Materials:

1. European Commission. (2019). *Ethics guidelines for trustworthy AI*. Publications Office of the European Union. <https://doi.org/10.2759/346720> [Accessed 05. 05. 2025].

2. European Commission, 2019. *Ethics Guidelines for Trustworthy AI*. [Online] available at: <https://ec.europa.eu/digital-strategy/our-policies/ethics-guidelines-trustworthy-ai> [Accessed 05.05.2025]. (in English)

3. European Parliament, 2019. *Resolution of 28 March 2019 on the Rights of Persons with Disabilities. (2018/2685(RSP))* [P8_TA(2019)0081]. EUR-Lex. [Online] available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019IP0081> [Accessed 15.04.2025]. (in English)

4. European Parliament, 2023. *EU AI Act: First Regulation on Artificial Intelligence*. [Online] available at: <https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence> [Accessed 30.04.2025]. (in English)

5. European Patent Office, 2024. *Georgia Enters into Validation Agreement with the European Patent Organisation*. [Online] available at: <https://www.epo.org/en/news-events/news/validation-agreement-georgia-enters-force> [Accessed 05.04.2025]. (in English)

6. European Parliamentary Research Service (EPRS), 2020. *The Ethics of Artificial Intelligence: Issues and Initiatives*. Study No. 634452. [Online] available at: <https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf> [Accessed 15.04. 2025]. (in English)

Judicial practice/ Media Commentary:

1. The Verge, 2024. *US, EU, UK, and Others Sign Legally Enforceable AI Treaty*. [Online] available at: <https://www.theverge.com/2024/9/5/24236980/us-signs-legally-enforceable-ai-treaty> [Accessed 13.04.2025]. (in English)

2. The Guardian, 2025. *EU Accused of Leaving 'Devastating' Copyright Loophole in AI Act*. [Online] available at: <https://www.theguardian.com/technology/2025/feb/19/eu-accused-of-leaving-devastating-copyright-loophole-in-ai-act> [Accessed 05.04.2025]. (in English)