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## LIST AND RATIONALE FOR CREATING A PROGRAM OF NEW EDUCATIONAL AREAS WITH USING ARTIFICIAL INTELLIGENCE

### ПЕРЕЛІК ТА ОБГРУНТУВАННЯ НЕОБХІДНОСТІ СТВОРЕННЯ ПРОГРАМИ НОВИХ ОСВІТНІХ НАПРЯМІВ З ВИКОРИСТАННЯМ ШТУЧНОГО ІНТЕЛЕКТУ

The rapid development of artificial intelligence (AI) and its penetration into all spheres of life necessitates a rethinking of approaches to education and training of specialists capable of effectively utilizing and advancing these technologies. The creation of new educational programs focused on AI is becoming a necessity to ensure the country's competitiveness and its successful integration into the global innovation space. The article presents a list of promising educational directions utilizing AI, such as: development and implementation of artificial intelligence systems. This direction involves training specialists with in-depth knowledge in the field of machine learning, deep learning, computer vision, natural language processing, and other key AI technologies. Also important is data analysis and artificial intelligence, focused on training specialists capable of using AI methods to analyze large datasets, identify patterns, make predictions, and support decision-making. The development of AI is one of the priority areas of innovation development in many countries

**Keywords:** artificial intelligence, education, innovation, educational programs, innovation in education.

Стрімкий розвиток штучного інтелекту (ШІ) та його проникнення в усі сфери життя вимагає переосмислення підходів до освіти та підготовки фахівців, здатних ефективно використовувати та розвивати ці технології. Створення нових освітніх напрямів, орієнтованих на ШІ, стає необхідністю для забезпечення конкурентоспроможності країни та її успішної інтеграції в глобальний інноваційний простір. Метою статті є визначення переліку та обґрунтування необхідності створення програми нових освітніх напрямів з використанням штучного інтелекту. В статті проаналізовано сучасні тенденції розвитку ШІ, визначено ключові компетентності, необхідні фахівцям у цій галузі, та запропоновано концепцію нової освітньої програми, спрямованої на підготовку висококваліфікованих кадрів для сфери ШІ. В статті використано комплекс методів наукового дослідження, включаючи аналіз наукової літератури та практичного досвіду впровадження ШІ в освіту, експертні оцінки, моделювання та прогнозування. В статті представлено перелік перспективних освітніх напрямів з використанням ШІ, таких як: розробка та впровадження систем штучного інтелекту. Цей напрям передбачає підготовку фахівців з глибокими знаннями в галузі машинного навчання, глибинного навчання, комп'ютерного зору, обробки природної мови та інших ключових технологій ШІ. Важливим є й аналіз даних та штучний інтелект, орієнтований на підготовку фахівців, здатних використовувати методи ШІ для аналізу великих масивів даних, виявлення закономірностей, прогнозування та прийняття рішень. Розвиток ШІ є одним з пріоритетних напрямків інноваційного розвитку багатьох країн. Створення сильної освітньої бази в галузі ШІ допоможе Україні підвищити свою конкурентоспроможність на глобальному рівні. Нова освітня програма сприятиме розвитку наукових досліджень та інновацій в галузі ШІ, що матиме позитивний вплив на економіку та суспільство в цілому. Основними перевагами введення в навчальні

програми дисциплін, що вивчають III є полегшення роботи студентів та викладачів, оптимізація вільного часу, формування прогресивного мислення та виокремлення важливості інновацій в науковій та практично-дослідницькій праці усіх учасників навчального процесу. Важливим є й отримання нових професійних навичок та теоретичних знань у різних галузях.

**Ключові слова:** штучний інтелект, освіта, інновації, освітні програми, інновації в освіті.

**Statement of the problem.** The current education system is insufficiently adapted to the rapid development of artificial intelligence (AI) and its growing influence on all spheres of life. This creates a gap between the labor market's need for highly qualified AI specialists and the education system's ability to provide their training. The lack of relevant AI-oriented educational programs hinders innovation and technological progress, and also reduces the country's competitiveness at the global level. Detailed Problem Description: insufficient number of educational programs in AI. Existing educational programs often do not meet modern requirements and do not provide students with the necessary knowledge and skills in the field of AI. Lack of an interdisciplinary approach. The development of AI requires the integration of knowledge from various fields, such as computer science, mathematics, physics, economics, sociology, and others. Existing educational programs often do not provide such integration.

**Analysis of recent research and publications.** Many Ukrainian and foreign theoreticians, among them Celik I. [1], Chen X. [2], Devi J. S. [3], Alam A., Mohanty A. [4]. An interesting idea is that of R. Carpenter, who says that we will remain the owners of the technologies we create for a long time and they will help us solve many world problems [5].

**Formulation of the research task.** The purpose of this article is to identify and provide a rationale for a program of new educational areas focused on artificial intelligence to meet the growing demands of the labor market and foster innovation in this rapidly evolving field.

**Summary of the main research material.** To foster future economic leaders equipped to navigate the complexities of an AI-driven world, a paradigm shift in economic education is necessary. This entails integrating AI tools and concepts into the core curriculum, moving beyond traditional pedagogical approaches and introducing innovative courses designed to cultivate AI literacy. This integration should empower students to harness AI's transformative potential.

A proposed framework for such a program includes:

- This course would delve into how AI can revolutionize business analysis by facilitating the rapid processing of extensive datasets, generating predictive models for market trends and economic indicators, and automating intricate analytical tasks. Students would gain proficiency in leveraging AI for forecasting inflation, evaluating investment opportunities, optimizing resource allocation, and developing data-driven business strategies.

- This course would critically examine and utilize large language models like ChatGPT in economic research and analysis. Students would learn to apply these tools for generating research ideas, conducting literature reviews, drafting reports, and enhancing communication skills. Ethical considerations, potential biases, and the crucial role of critical thinking when employing such tools would also be addressed.

- This course would explore the ethical implications of AI in economic contexts, emphasizing the responsible development and deployment of AI systems.

- This course would equip students with the skills to conduct rigorous economic research using AI tools. Students would learn to apply machine learning algorithms for data analysis, econometric modeling, and simulation, enabling them to uncover hidden patterns, test hypotheses, and generate novel insights from complex economic data.

- This course would provide students with the foundational programming skills necessary to develop and implement AI solutions in economic contexts. Covering languages like Python and R, students would learn to build algorithms, train models, and analyze data for applications such as financial forecasting, risk management, and economic policy analysis.

- This course would focus on the acquisition, management, and analysis of large economic datasets. Students would learn techniques for data cleaning, preprocessing, and visualization, as well as how to apply AI tools for data mining, pattern recognition, and knowledge discovery from vast economic databases.

The emergence of advanced AI language models like ChatGPT presents both opportunities and challenges for higher education. While ChatGPT can enhance learning and research, its integration requires a nuanced approach that acknowledges potential pitfalls and prioritizes the development of essential cognitive and social-emotional skills.

The integration of ChatGPT into higher education presents both opportunities and challenges. One concern is its potential to foster dependence and erode critical thinking skills. The ease with which students can access and generate information using this technology may inadvertently discourage deep analysis, problem-solving, and the development of original ideas. To mitigate this risk, educators must actively cultivate independent thought, emphasizing that ChatGPT should be used as a tool to augment, not substitute, cognitive processes. Students should be encouraged to critically evaluate information from various sources, including AI-generated content, fostering a discerning and analytical mindset.

Furthermore, the potential for bias in AI-generated content necessitates careful consideration. As AI models like ChatGPT are trained on vast datasets that may reflect and perpetuate existing societal biases, educators must prioritize critical evaluation of AI-generated information. Students should be equipped to identify potential biases and understand the ethical implications of AI, including responsible use, data privacy, and ensuring alignment with ethical principles and promoting fairness and inclusivity.

Effective integration of ChatGPT into higher education requires institutions to establish clear guidelines for its use, promote transparency and academic integrity, and equip both students and educators with the knowledge and skills to navigate this evolving technological landscape. This includes fostering critical thinking, encouraging

responsible use, and promoting the development of emotional intelligence alongside AI literacy. By thoughtfully addressing these considerations, universities can harness the power of AI to enhance the learning experience while safeguarding the development of essential human capabilities, preparing students to thrive in an increasingly complex and interconnected world.

The need to be aware of all the potential risks of AI and how easily it can cause misinformation about important, in particular, geopolitical topics is evidenced by the case when the Ukrainian media published the news that Serbia purchased 20,000 Shahed-136, which it allegedly ordered from Iran. As it turned out later, the information was fake, and it was generated by artificial intelligence. The news about the purchase of drones was spread on the X account (Twitter). All news on this page is generated by artificial intelligence. It is interesting that the news was partly true, because on August 7, Goran Aleksic, Deputy Minister of Foreign Affairs of Serbia, did visit Iran. However, the information about the purchase of drones was invented by AI [4].

Stakeholder identification is an important stage in project management and business in general. Understanding their interests, needs, and level of influence allows you to make informed decisions, effectively allocate resources, manage communications, and minimize conflicts. Usually, stakeholder management is entrusted to the project manager. Although certain skills of working with interested parties will be needed by all participants actively involved in the IT project – from the web developer-junior to the representative of top management [5].

The emergence of sophisticated AI language models like ChatGPT necessitates a proactive response from higher education institutions, particularly within economics curricula. Integrating these powerful tools into the learning process requires dedicated educational initiatives to equip students with the knowledge and skills to navigate this evolving technological landscape. Several compelling reasons underscore the importance of establishing a dedicated "ChatGPT" course within economics programs:

1. Harnessing the Transformative Potential of AI in Economics: AI is rapidly reshaping the field of economics, revolutionizing research methodologies, analytical techniques, and decision-making processes. A dedicated "ChatGPT" course can provide students with a foundational understanding of how AI tools can be leveraged for tasks such as:

- Data analysis and econometric modeling. Analyzing vast datasets, identifying trends, and developing sophisticated econometric models to understand economic phenomena.
- Research and literature review. Conducting comprehensive literature searches, synthesizing research findings, and generating innovative research ideas.
- Economic forecasting and prediction. Developing predictive models for economic indicators, financial markets, and policy outcomes, enhancing the ability to anticipate and respond to economic changes.
- Communication and report writing. Improving writing skills, generating reports, and effectively communicating economic insights to diverse audiences.

2. Cultivating Critical Evaluation and Responsible Use. While AI tools offer immense potential, it is crucial to

foster critical thinking and responsible use among students. A dedicated course can address:

- Ethical considerations. Exploring the ethical implications of AI in economics, including bias detection, data privacy, and algorithmic fairness, ensuring responsible development and deployment of AI systems.
- Misinformation and manipulation. Understanding the potential for AI-generated misinformation and developing strategies for critical evaluation, fact-checking, and media literacy in the digital age.
- Transparency and academic integrity. Establishing clear guidelines for the ethical use of AI in academic work, including proper attribution, avoiding plagiarism, and maintaining academic honesty.

3. Bridging the Skills Gap in the AI-Driven Economy. The increasing integration of AI in the workplace necessitates that economics graduates possess the skills to effectively utilize these technologies. A "ChatGPT" course can help students develop:

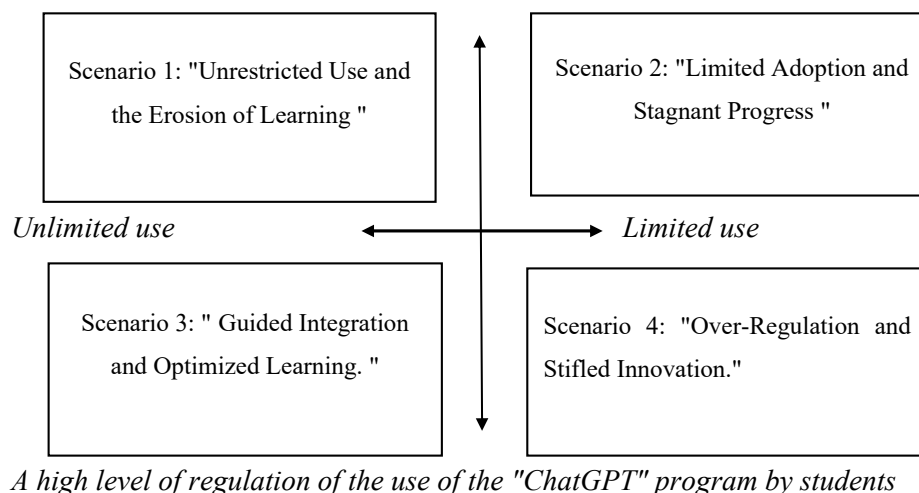
4. Fostering Adaptability and Lifelong Learning. The rapid pace of AI development requires individuals to be adaptable and embrace lifelong learning. By proactively integrating AI education into economics curricula, institutions can empower students to become responsible and effective users of AI, driving innovation and shaping a future where AI is harnessed for the benefit of society. A "ChatGPT" course can instill this mindset by:

- Encouraging continuous learning. Highlighting the importance of staying abreast of the latest advancements in AI and developing the skills to adapt to new technologies and methodologies.
- Promoting intellectual curiosity. Fostering a mindset of inquiry and exploration, encouraging students to seek out new knowledge and challenge existing assumptions.

The advent of powerful AI language models like ChatGPT necessitates a proactive and strategic response from educational institutions, particularly within economics programs. To fully prepare students for the complexities of an AI-driven world, integrating these tools into the curriculum is essential. A dedicated "ChatGPT" course can equip students with the knowledge, skills, and ethical awareness needed to navigate this evolving landscape and harness the transformative potential of AI in economics.

Examining different scenarios for AI integration in education illuminates the potential benefits, challenges, and ethical considerations associated with this technology:

- Scenario 1. Unrestricted Use and the Erosion of Learning. Unrestricted access to AI tools without clear guidelines or limitations raises concerns about the potential erosion of critical thinking, problem-solving abilities, and intrinsic motivation for learning. Over-reliance on AI may diminish cognitive engagement and hinder the development of essential skills.
- Scenario 2. Limited Adoption and Stagnant Progress. Limited AI adoption, often due to insufficient training, resources, or clear implementation guidelines, can lead to stagnation. The potential benefits of AI remain unrealized, and students are ill-equipped to navigate an increasingly AI-driven world.
- Scenario 3. Guided Integration and Optimized Learning. This scenario represents a balanced approach, where AI tools are strategically integrated into the educational process, accompanied by clear guidelines, ethical considerations, and a focus on developing critical

*Low level of regulation of the use of the "ChatGPT" program by students*

**Figure 1. Key drivers of the creation of the educational discipline "ChatGPT" for economics students**

thinking skills alongside AI literacy. This approach recognizes the value of AI in enhancing learning and research while emphasizing human guidance and the cultivation of essential cognitive and social-emotional skills.

– Scenario 4. Over-Regulation and Stifled Innovation. Excessive regulation and restrictions on AI use in education can stifle innovation and limit the potential benefits of this technology. Overly restrictive policies may discourage exploration, hinder the development of AI literacy, and create a climate of fear and mistrust around AI tools.

By carefully considering these scenarios and adopting a balanced approach to AI integration, economics programs can empower students to thrive in an AI-driven world while fostering critical thinking, ethical awareness, and a commitment to lifelong learning.

**Conclusions.** This article has highlighted the urgent need for new educational programs focused on artificial

intelligence (AI) to address the growing demands of the labor market and foster innovation in this rapidly evolving field. Based on the analysis presented, the following conclusions can be drawn: 1. AI is transforming industries and creating new opportunities. The rapid advancement and pervasive integration of AI across various sectors necessitate a proactive approach to education and workforce development. 2. There is a significant gap between the demand for AI skills and the current supply. Educational institutions need to adapt and offer specialized programs to equip students with the necessary knowledge and competencies to thrive in the AI-driven economy. 3. A comprehensive program of AI education is essential. This program should encompass a range of educational areas, including the development and implementation of AI systems, data analysis and AI, AI in business and management, and the ethical and social implications of AI.

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