**National Technical University of Ukraine
"Igor Sikorsky Kyiv Polytechnic Institute"**

Policy on the Use of Artificial Intelligence for Academic Activities at Igor Sikorsky Kyiv Polytechnic Institute

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Glossary

Artificial intelligence[1] (AI) is an organised set of information technologies that one can use to perform complex tasks by applying a system of scientific research methods and algorithms for processing information received or independently created during work, as well as to create and use own knowledge bases, decision-making models, information processing algorithms and determine ways to achieve the set tasks. Artificial intelligence capabilities include models of voice recognition, image identification, text information processing and generation, expert systems, neural networks, planning, robotics, etc.

Generative AI is a technology that creates content (text, images, video, and computer code) by identifying patterns in large amounts of training data and then creating original material with similar characteristics (for example, ChatGPT and Google Bard for text and DALL-E, Stable Diffusion, Midjourney for images).

Natural Language Processing (NLP) is a technology for processing human language by a computer program, including text translation, sentiments analysis, and speech recognition.

Large Language Models (LLM) areser tools that generate sufficiently coherent text with only short prompts and tools for converting text to video.

Bias is a type of error that can occur in a large language model if its output is distorted by the model's training data. For example, the model may associate certain traits or professions with a particular race/gender, leading to inaccurate predictions and offensive responses.

Automated content generation is the creation of text, images, or other multimedia elements.

Machine Learning Systems are computer systems that learn from labeled data, predicting output values for new input data (supervised learning) and models that learn the structure of data without clear instructions, identifying patterns and dependencies (unsupervised learning).

AI Safety and Ethics is a field of research that studies and develops principles and standards to ensure the safety and responsible use of artificial intelligence.

Prompt is a textual or verbal instruction given by a user to a model to control or determine the direction of the output of a generative process. It can be a question, task, or other formulation that provides context or guidance for generating a textual response or performing a task by artificial intelligence. Prompts are used to tune the model and refine its responses or output to meet the specific needs of the user.

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[1] The Concept of artificial intelligence development in Ukraine. Access mode:: https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text

General

The development of artificial intelligence is accelerating technological changes in the workplace and requires continuous training and professional development to support future career transitions in a rapidly changing world.

In the context of the rapid development of artificial intelligence (AI) technologies, it is important to define a clear framework for their use in the educational space, so the *Policy on the Use of Artificial Intelligence for Academic Activities at Igor Sikorsky Kyiv Polytechnic Institute* (hereinafter referred to as the *Policy*) is developed to define the principles of responsible and ethical use of AI technologies in the academic activities of participants in the educational process. The recommendations provided in the Policy are aimed at helping research and teaching staff (RTS) and higher education students to improve the process and results of their activities.

To train highly qualified specialists capable of navigating the complex future, creating modern scientific knowledge and innovative technologies, the university creates conditions for comprehensive professional, intellectual, social, and creative development of the individual. Given the wide availability of generative AI technology, the university is aware of the potential benefits and wide risks of using AI for learning, teaching, and research.

The University supports rational experimentation with generative AI tools but is subject to the important aspects of using such tools, in particular: information security, data privacy, copyright compliance, and academic integrity.

Artificial intelligence is a modern tool and is therefore seen by the university as an opportunity to improve academic activities, as AI tools can be auxiliary tools to support learning and teaching, but with the consideration of its use with good intentions, following the principles of academic integrity and with awareness of the risks it may pose.

📌 The University's position is not to declare general restrictions on the use of generative AI, but to emphasise the peculiarities of its conscious and responsible use, in particular

- ✓ completed tasks should be the result of your own original work;

- ✓ it is unacceptable to rely on generative AI as the only source of information, as it has limitations and carries certain risks/dangers;

- ✓ the subjects of the scientific and educational process should recognise and appropriately record the use of generative AI;

- ✓ each member of the research and teaching staff, within the framework of academic freedom, has the right to set certain restrictions on the use of AI in the process of mastering the relevant discipline (section " Academic Discipline Policy" in the syllabus), if it is necessary to achieve certain learning outcomes.

The University must teach future graduates the benefits of reasonable use of AI technologies, as well as ensure that they understand the risks and ethical aspects of such tools.

The University guarantees to support the participants of the educational process to increase their AI literacy (formation of competencies that will allow critical assessment of AI technologies, development of new effective methods of learning, teaching, and research) and formation of a culture of responsible use of AI in academic activities, in particular

➢ provide information support on AI literacy (holding educational events, thematic roundtables on the use of artificial intelligence in various fields of knowledge, etc;)

➢ offer academic staff relevant topics for professional development programmes to improve the practice of implementing AI innovations;

➢ fill educational programmes with new disciplines on AI technologies;

➢ introduce AI technologies to develop and support inclusive, adaptive and personalised learning.

Thus, the main purpose of using artificial intelligence in the educational environment is to provide enhanced opportunities for participants in the educational process to achieve their goals.

This Policy may be updated following the changes in legislation and/or the development of AI technologies.

Artificial intelligence technologies for academic activities

Artificial intelligence has significant potential and can be used in various areas of academic activities of teachers, students, postgraduates, and researchers to facilitate learning, teaching, and research, for example,

- personalised learning, when machine learning algorithms are used to create individualised learning programmes that meet the needs and knowledge level of each student or provide them with additional support;

- automation of the assessment process (assignments, tests, and other forms of knowledge control), reporting and analysis of learning achievements;

- development of virtual learning assistants (chatbots) that can answer questions, provide support, and help with solving problem;

- creating immersive learning environments that facilitate understanding of complex concepts – interactive virtual environments to deepen the study of

certain courses, simulate and demonstrate experiments (virtual experiments and laboratory work), or even conduct virtual excursions;

- gamification of the educational process – the introduction of gaming technologies, in particular, to develop communication skills, creativity, and teamwork or provide an alternative point of view;

- automation of research processes, when AI tools help analyse large amounts of information, helping to identify new trends that may go unnoticed using traditional methods, which greatly facilitates research;

- developing new hypotheses – intelligent algorithms can analyse existing research, identify patterns, and formulate new hypotheses for further experiments and research;

- presentation of research results – text generation algorithms can help researchers organise and annotate scientific articles and reports.

The use of AI to support the creation of scientific texts should contribute to the development of scientific thinking and the ability to define and defend authorial identity.

The overall contribution of AI to the educational process is to create more efficient, interactive, and accessible learning and teaching tools, which contribute to the quality of education and the development of the academic community.

Applied aspects of use

Participants in the educational process should learn about generative AI modeling tools and pay attention to their continuous development, as these technologies are part of the future.

Research and teaching staff can use AI model tools for:

- ✓ automatically answering students' questions via a website, chatbot, or email;

- ✓ create individual elements of lecture materials, publications or research (as a basis for further editing);

- ✓ transition from routine manual and cognitive tasks to non-standard analytical and interactive tasks for effective student surveys in the discipline;

- ✓ creating a more personalised, effective, and inclusive learning environment.

Teachers should assess how well learners can identify flaws in the generated content in terms of logic, consistency, accuracy, and bias. If students are not ready to "criticise" such content, then such tools should not be used as learning aids.

The availability of generative AI tools for students requires the teacher to replace traditional types of control and validation of student learning activities with more effective ones aimed not at reproducing specific knowledge, but at testing critical thinking and analysis skills (the ability to formulate answers that are difficult or impossible for AI to generate). Teachers should demonstrate the shortcomings of AI to emphasise students' creative writing and critical thinking abilities.

In certain cases, teachers should use tools for detecting the involvement of AI in students' work (AI detectors).

Higher education students can use the tools of generative AI models to:

- ✓ conducting discussions, discussing ideas, developing their thoughts, and analysing the ideas of the "interlocutor"
- ✓ revising their ideas, reformulating them to improve the structure and make them clearer and more specific;
- ✓ organising self-study, developing writing skills, improving the style of expression and expanding vocabulary; automated checking of grammar, structure, and style of their written work;
- ✓ creating multimedia content (animation, video, or interactive presentations);
- ✓ develop game scenarios that help to understand different situations and develop strategic thinking;
- ✓ analysing large amounts of data in their research.

The use of generative AI technologies can encourage students to think creatively, helping them to identify new approaches to problem solving and develop innovative ideas. However, students mast use these tools as a supportive resource and remember the importance of their own creativity and critical thinking in the process of learning and creative activity.

Students should be aware that over-reliance on generative AI models may deprive them of the opportunity to develop the basic skills necessary for solving professional problems and communication abilities.

Higher education students should remember that, depending on the learning objectives and policies of the discipline, certain assignments may require working with AI tools (analysing and critiquing the content it creates), while others may indicate that AI tools should not be used or used only in a certain way.

Risks and limitations of implementation

Generative AI tools are language machines, not knowledge databases – they work by predicting the next plausible word or section of code based on patterns that have been "learned" from large datasets, so AI tools do not understand what they are generating.

The datasets from which such tools are trained are flawed and contain inaccuracies, biases, and limitations, so they can produce text that is not always true. In addition, generative AI can generate content with falsifications if it receives an incorrect question from the user (prompt).

The main **problems** associated with AI text generation are:

1. The possibility of linguistic and grammatical errors – this can be caused by limitations in the model's linguistic understanding, shortcomings in the training data, or simply the complexity of the language. For example, AI may misplace punctuation, use made-up words, or create phrases that have syntactic flaws.

2. Deceptive plausibility – AI-generated code, answers to questions, or calculations may look plausible but contain critical errors, may not be factually accurate, or may create false citations and references.

3. Limitations – the data on which AI models are trained may not be up-to-date or have limited data about the world and events after a certain point in time.

4. Immorality – AI systems do not know that it is wrong to create offensive, inaccurate, or misleading content.

5. Copyright violation – AI uses the words and ideas of human authors without referring to them, which can be considered plagiarism; there are risks of copyright violation for texts, images, and other copyrighted materials.

6. Adherence to information security principles – insufficient data security can open the door to unauthorised access and information leakage. AI models can learn large volumes of sensitive data, including personal information, commercial and important corporate data, and use this information for further model training by sharing this information with others.

Over-reliance on AI tools merely to produce written content, program code, or analysis reduces one's ability to practice and develop key skills, such as writing, critical thinking, evaluation, analysis, or coding. These are all important skills that are valued and necessary for success at university and beyond. In other words, the active implementation of AI can lead to an over-reliance on the technology, which creates risks in the event of technical failures or cyberattacks, as well as psychological risks,

such as abstinence syndrome in case of getting used to the technology's help, a decrease in one's creativity, etc.

📌 Important!

When using AI tools, you need to:

✓ Understand the limitations of any AI system you use.

✓ Check the factual accuracy of AI-generated content (identify fabrications, distortions, misrepresentations, and harmful stereotypes).

✓ Do not rely on AI-generated content as a key source, but use it in combination with other sources.

✓ Be aware that using AI to create the impression that you know more than you actually do is academic malpractice.

Ethics and integrity in the use of artificial intelligence

The university recognises as academically dishonest the following ways of using AI models that violate the principles of research integrity and ethics, for example:

- Presenting text generated by AI or paraphrased by AI content from other sources as one's work. Using AI for automatical generation texts or paraphrasing existing content without proper attribution violates the principles of authorship and is considered plagiarism.

- AI reworking an author's article for re-publishing it as a new one. Using AI transform an author's already published work to make it look like a new publication violates the University's Code of Honour and self-identification in a scientific work.

- Creating false data and presenting it as evidence of own research (data fabrication). The generation of false data by AI and its use as a basis for scientific conclusions is a serious violation of academic integrity and may cause negative consequences for the quality of research and the researcher's reputation.

The University strongly opposes any manifestations of misuse of AI technologies and supports the creation of an educational and scientific environment based on transparency, integrity and high standards of scientific ethics.

📌 Recommendations for the ethical use of AI

✓ familiarise yourself with the University's policy and the policy of your discipline on the use of AI in your activities;

✓ If you are not sure what is allowed in your case, ask your instructor/supervisor/lecturer;

✓ read the user manuals for the relevant AI tools, its purpose and limitations;

✓ do not represent the content created by AI as your own, use AI to organise and develop your own ideas, not as a replacement for your work (for example, you can ask AI to provide feedback on your text or summarise the text to make your ideas clearer and to condense complex information);

✓ if you use AI in your research or writing, you should mention it and describe how you used it in some way;

✓ critically evaluate the results obtained from AI, and always verify information with reliable sources;

✓ be careful about the information you enter in the request, do not provide confidential information, for example, about yourself or others, in "conversations" with AI.

When using generative AI models, it is worth considering the possibility of certain ethical implications, in particular, that the generated material may contain inaccurate or biased information (e.g., racial and gender stereotypes) or that the user's input to the AI model may lead to a breach of privacy (e.g., the AI model can use the entered personal data about itself or another person to reproduce further query results).

Appendix 1. Examples of services that use artificial intelligence tools

This list of services that may be useful in the process of academic activity is not exhaustive and each educational and research unit of the university may recommend other AI services for use by educational process participants in their activities, as well as provide advisory support for such use.

Name of the AI service	*General characteristics and capabilities*
ChatPDF https://www.chatpdf.com	The service analyses pdf documents and articles. It allows you to ask questions about the content of the article, and there is a chat. Interactive. A limited number of pages is processed for free
ChatGPT https://chat.openai.com **Deep AI** https://deepai.org	A generative chatbot with artificial intelligence. It can simulate dialogue, answer questions, recognise mistakes, deny incorrect premise of a prompt, and reject improper requests. It can write stories, messages, program code, or act as a virtual tutor.
Google Bard https://bard.google.com	A tool based on Google's conversational artificial intelligence model. Requires registration and acceptance of Google's confidentiality policy. It is possible to ask questions and get answers in Ukrainian.
Canva https://www.canva.com	An online graphic design tool that allows you to create social media posts, presentations, posters, videos, etc.
Scribbr https://www.scribbr.com	The service has built-in tools for proofreading and editing text, checking for plagiarism, and a free bibliographic reference generator in a given format. Editing service, plagiarism checker, citation generator.
TTSMaker https://ttsmaker.com	A speech synthesis tool that provides speech synthesis services and supports different languages (English, French, German, Ukrainian, etc.) and different voice styles. The limit is 20,000 characters per week, and one text request in Ukrainian for conversion to speech – is 8,000 characters.
Grammarly https://www.grammarly.com	A service for spell checking, improving the style, grammar and consistency of the author's text. Registration is required.
DeepL Translator https://www.deepl.com	A service that uses artificial intelligence to translate text and documents. It corrects grammatical and punctuation errors, provides advice on the tone of information, rephrasing sentences, etc. The interface is in English.
AcademicGPT https://academicgpt.net	The service is developed for researchers and allows users to create annotations and receive feedback on different sections of the uploaded work. The service is available in English. Registration is required.
Craiyon https://www.craiyon.com	Generator of abstract images for a text query. English-language service. Registration is not required.
Connected Papers https://www.connectedpapers.com	A visual tool that helps researchers and applied scientists find and study articles relevant to their field of expertise. Free demo version.
WolframAlpha https://www.wolframalpha.com	Calculations and answers with the use of AI. Ability to solve mathematical equations, obtain steps for solving problems, check calculations and results, visualisation of data in graphs. It does not provide a list of links based on the results of the query, but calculates the answer based on its own knowledge base. English-language service.
Mathway https://www.mathway.com	The service provides the tools necessary to understand and resolve mathematical, chemical and physical tasks.
Perplexity AI https://www.perplexity.ai	A search engine that generates answers to questions with indication of information sources and offers search for related images and videos related to the query.
All Search AI https://topai.tools	A search engine of AI tools for solving various types of tasks.