



# Artificial Intelligence in Higher Education - Problems and Solutions in Intellectual Property Rights

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## Abstract

*The purpose of the present work is to present artificial intelligence /AI/ as a tool for academic research, teaching and training used by students, researchers and lecturers regarding the benefits and focused on intellectual property rights: copyright and patent exclusive rights.*

*Artificial intelligence /AI/ as technology-based models presents many abilities to students, researchers and lecturers to achieve their academic goals rapidly and efficiently. AI researchers have a wide range of techniques, including search and software optimization and methods based on statistics, operations research, and economics. Very used models like LLMs, ChatGPT, open AI and more realise deep research in databases in chosen by students and researchers scientific and educational field.*

*As deep research models and systematised databases in specific the results made by AI may infringe on the copyright holder's exclusive right and patent rights holders. Additionally, using a model's creation in text, visual expressions and others creative results might violate copyright and patent rights and face a responsible for copyright infringement and patent violation. There are more than 440 patents in AI based educational models and more than 10000 patents in AI as a whole.*

*Many questions are raised in this research paper:*

- overall assessment of AI use in education: advantages and disadvantages;
- copyright in AI and AI infringement in copyright.
- patent exclusive rights in AI and infringement in patent right in AI

*More than 50% of the surveyed students and academic researchers use AI in their academic work and publications of their results with incomplete information for plagiarism, copyright, patent right and potential violation of these IP rights.*

*The complex approach and methods are used by the author to present and to prove the author's thesis.*

**Keywords:** artificial intelligence, higher education, intellectual property, copyright, and patent violation

## Introduction

This paper comprises the author's personal experience in use AI in different areas and results of student's and academic researcher's survey in the period of October – December, 2024 and January – March, 2025.

Students in Economics specialties 2- nd year of their Bachelor educational level, are very dedicated with very good knowledge in English, in basic economic theory: macroeconomics and microeconomics, philosophy management theory, informatics, math and statistics.

I am their IP lecturer in general copyrights and patent, design and TM legal aspects and IP management as a company tool for strategic purposes.

This survey is completely brief consisting 4 questions close and both closed and open types to summarize advantages/ disadvantages and IP rights facing AI use in academic works.

This survey consists of the following questions:

1. Do you know AI as a tool for information search?
2. Do you use generative AI as a tool for creating text on training task?
3. Do you know the legal consequences in IP rights of text created by generative AI?

Based on the methods of complex research of IP rights added to student's survey the author presents the following data results and conclusions.



The table below presents summarized received results by Economics students:

Number of students answered at the questions	yes	no	sometimes, in specific cases, partly	without answer
1. Do you know AI as a tool for information search?	162	2	4	2
2. Do you use generative AI as a tool for creating text on training task?	122	22	24	2
3. Do you know the legal consequences in IP rights of text created by generative AI?	58	86	16	8

Table 1: Summarized results of students survey regarding AI use in teaching /training process

We present results and conclusions for each of the survey questions below.

Infographic for results regarding question 1. Do you know AI as a tool for information search?

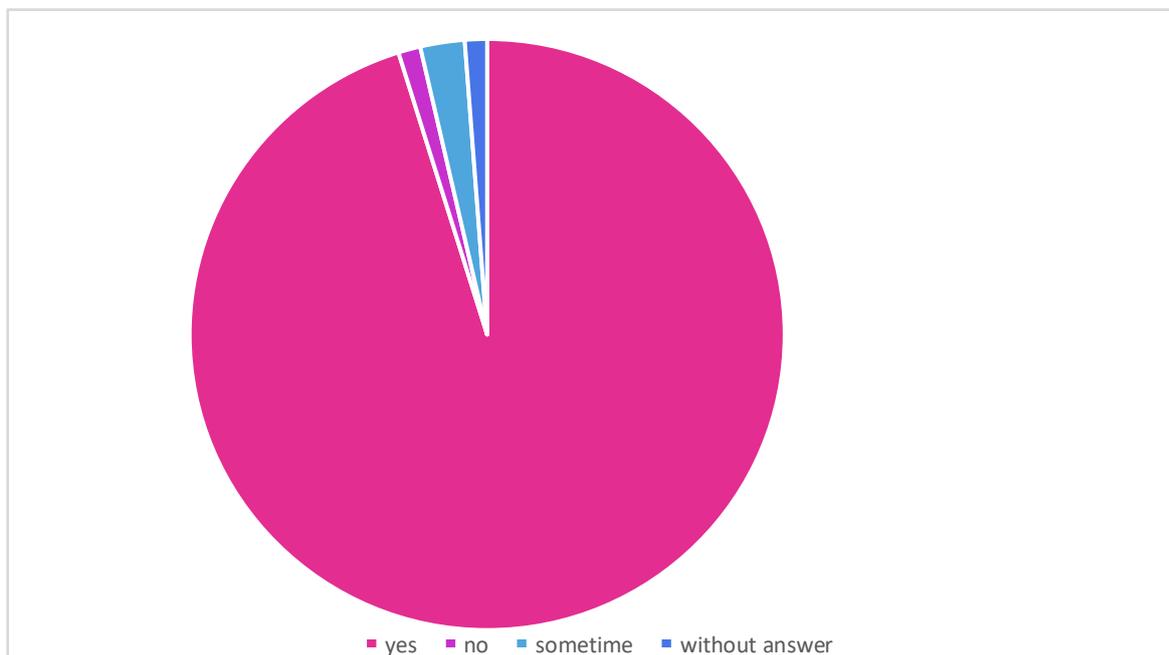


fig. 1

**Conclusion:** More than 90 % of Economics students use AI tool actively in their academic training tasks and learning process.

Follows an infographic for results regarding the question 2: Do you use generative AI as a tool for creating text on training task?

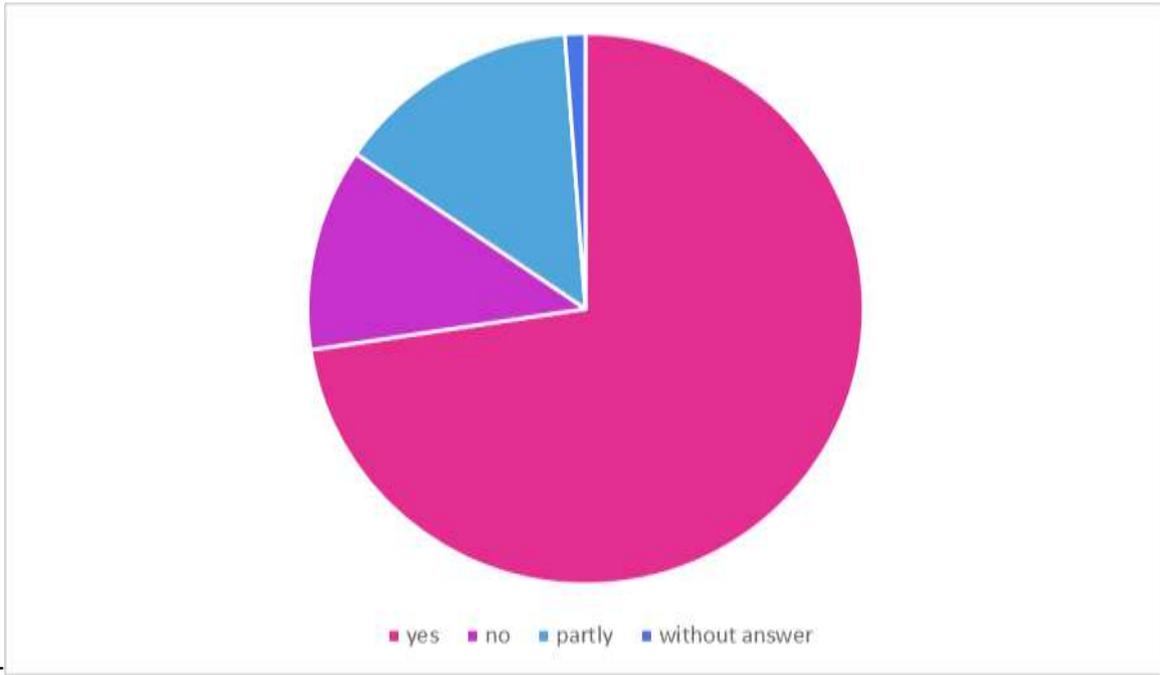


fig. 2

**Conclusion:** More than 70 % of Economics students use active generative AI in their academic training tasks and learning process.

Follows an infographic for results regarding the question 3: Do you know the legal consequences in IP rights of text created by generative AI?

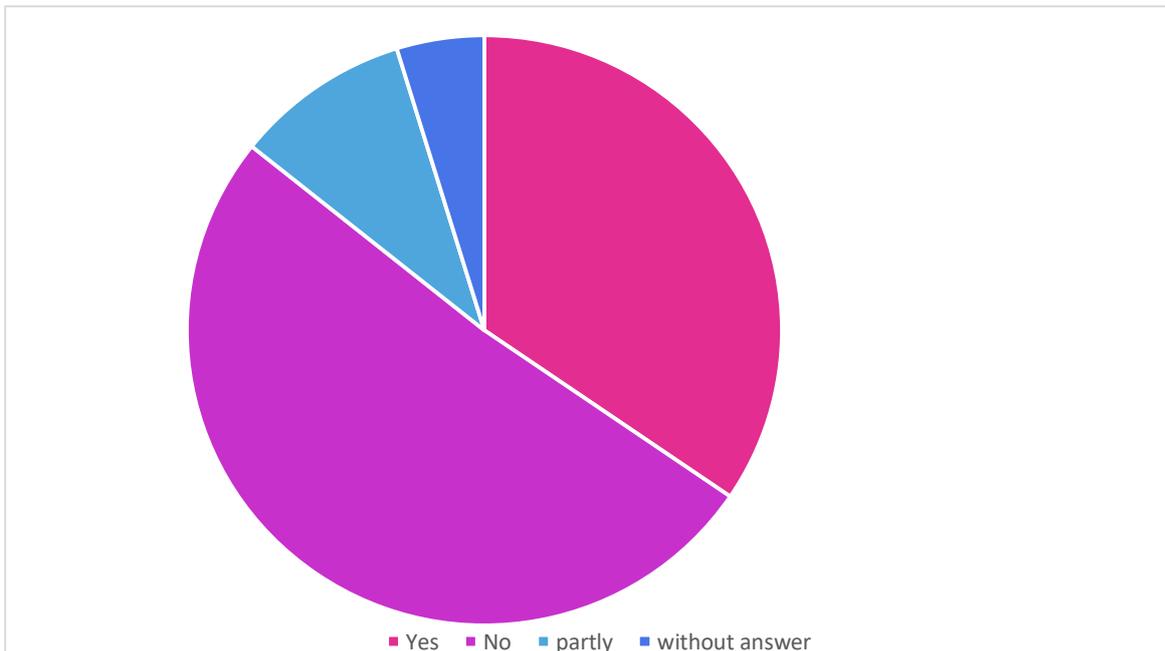


fig. 3

**Conclusion:** More than 50 % of Economics students using active in their academic training tasks and learning process AI do not know the comprehensive IP rights in this process and do not face and predict how are conflict in IP rights these results.

Around 30% of students realized that this process and results achieved with AI help are facing the counterfeiting copyright piracy.



More of students accept AI-generated text usually cannot be copyrighted because it lacks human authorship". AI can unintentionally generate text that closely resembles existing copyrighted works, leading to potential infringement".

### General Conclusions Drawn By the Survey Results

1. Students enrolled in this survey do not realize that the texts/images used by others were created by others and are within the scope of their copyrights. Do not realize that the texts created by others are a compilation of previously created author tests and images.

If and when one creates texts and images, a new work already arises, which is under copyright protection. Whose copyrights are these being a subject of discussion.

It is commonly assumed that they belong to the holder of intellectual property rights. Since intellectual property itself is not a legal entity - a holder of rights.

2. Students do not realize that no less important is the issue that when using intellectual property, other rights in the field of patents are probably violated. They do not take into account patent rights of the AI tool they use in their research and academic tasks.

As very important matter should be taken into account are comprehensive questions raised as a conclusion of this survey, summarized into the following 3 groups:

- overall assessment of AI use in education: advantages and disadvantages.
- copyright in AI and infringement of copyright.
- patent exclusive rights in AI and infringement of patent right in AI

### A. Overall Assessment of AI Use in Education: Advantages and Disadvantages

All of the surveyed students and academic researchers find AI as a useful tool in their research, preparing individual tasks, presentation materials, teaching and training work and present the following

#### Advantages:

a/ Flexible independence – learn anytime, anywhere, at your own place and in a manner and sequence individually chosen by everyone regarding his/her own model of working.

b/ Free access - unlimited without payment and technical requirement access to resources as publications. data and information as a vast range of online materials, courses, reports and expert's opinions.

c/ Personalized academic working – adaptive technologies tailor content to individual needs.

#### Disadvantages

a/ Dependence on sustainable internet access and technology used – Not all learners have equal and stable internet access to digital tools/ collections of data and information.

b/ Need of medium level for a working digital environment and requirement of practical training to use AI accessed information and data.

c/ Lack of social interaction as limited face-to-face communication, team working and social inclusion.

Suggestions made by students and lecturers to effective AI use and integration in the academic practice as a learning process:

1. Use AI as a support Tool – combine AI with traditional teaching methods for a balanced approach.
2. Train educators and learners to ensure teachers and students understand how to use AI responsibly.
3. IP education in copyright in AI to avoid AI copyrights infringement and in patent exclusive rights in AI to avoid patent infringement of AI.

On a personal level for both sides of educators and students: there is requirements for a self-discipline and motivation to stay engaged to achieve a planned task. Parallel there are technical requirement to ensure stable Internet access and device to avoid problems with disrupt internet and learning.

### B. Copyright in AI and Risk of AI Infringement of Copyright

The free use as the part of the consent of the copyright is legal and without permission and payment of remuneration:

- use of quotations from already published works;
- use of parts of published works for the purposes of analysis, commentary or otherwise for scientific or educational purposes;
- public published works in schools or other educational institutions;



- reproduction of already published works from libraries, schools, museums and archival institutions, for the research and educational purposes.

The author/ authors of printed books, such as printed lectures and textbooks presented on paper or digital media, as well as their publishers, are entitled to compensatory remuneration for transcription for personal use. Authors and publishers of printed works are also entitled to such remuneration when they are reproduced in a reprographic manner for personal use. This remuneration is due to persons who produce or import blank audio and video media and apparatus for recording and reproducing in a reprographic manner. The Ministry of Culture, Copyright Department collects the indicated compensation fees in a special fund and uses them for other scientific and cultural purposes.

### C. Patent Exclusive Rights in AI and Risk of Infringement of Patent Right in AI

At the very beginning in 2025 there are more than 4300 patents in AI in new technologies that are starting point for new product decisions for creating new instruments, equipment and technical devices for use AI in our everyday life in business and in a personal life.

3/7/25, 11:51 AM Espacenet - results view



**Result list**

Approximately 4,368 results found in the Worldwide database for artificial intelligence in the title AND B as the IPC classification  
Only the first 500 results are displayed.

1. Artificial intelligence and content delivery during charging					
<b>Inventor:</b> YANG CHRISTOPHER E [US] GAITHER GEOFFREY DAVID [US] (+3)	<b>Applicant:</b> TOYOTA MOTOR NORTH AMERICA INC [US] TOYOTA MOTOR CO LTD [JP]	<b>CPC:</b> B60W2040/0551 B60W40/08 G06F16/9535	<b>IPC:</b> B60W40/08 G06F16/9535	<b>Publication info:</b> US12216721 (B1) 2025-02-04	<b>Priority date:</b> 2024-02-02
2. Artificial intelligence system for generating action tendency considering emotion and mood according to external information recognition and method thereof					
<b>Inventor:</b> PARK SUNG KEE HWANG JUNG GYU	<b>Applicant:</b> KOREA INSTITUTE OF SCIENCE AND TECH [KR]	<b>CPC:</b> G06N5/022	<b>IPC:</b> B25J11/00 B25J13/08 B25J9/16 (+1)	<b>Publication info:</b> KR20250011435 (A) 2025-01-21	<b>Priority date:</b> 2023-07-14
3. Air purification control system of paint booth using artificial intelligence technology					
<b>Inventor:</b> JEON HYUN JOONG [KR]	<b>Applicant:</b> W SOLUTION CO LTD [KR]	<b>CPC:</b>	<b>IPC:</b> B01D47/06 B01D53/14 B01D53/34 (+1)	<b>Publication info:</b> KR20250010253 (A) 2025-01-21	<b>Priority date:</b> 2023-07-12
4. Data Collection and Utilization System for Drones Using Artificial Intelligence and Method using thereof					
<b>Inventor:</b> KIM KYEONGTAG [US]	<b>Applicant:</b> SUCCESS CODE CO LTD [KR]	<b>CPC:</b>	<b>IPC:</b> G06F16/901 G06F16/9032 G06F16/9036 (+6)	<b>Publication info:</b> KR102758440 (B1) 2025-01-21	<b>Priority date:</b> 2024-08-19

[https://worldwide.espacenet.com/search/Results?utm\\_medium=button&utm\\_campaign=EPACENET-EPCOCCAST&utm\\_source=AI+intelligence&AB=APN=AP=APR=APD=SPA=SPN=SPC=SC=BS&srch=Search](https://worldwide.espacenet.com/search/Results?utm_medium=button&utm_campaign=EPACENET-EPCOCCAST&utm_source=AI+intelligence&AB=APN=AP=APR=APD=SPA=SPN=SPC=SC=BS&srch=Search) 1/5

fig. 4

In this relation there are 2 high-tech innovations in generative AI with patent holders from USA and China. There are presented below:



Espacenet

## Result list

2 results found in the Worldwide database for:

generative artificial intelligence in the title AND B as the IPC classification

1. HUMAN-IN-LOOP ROBOT TRAINING AND TESTING SYSTEM WITH GENERATIVE ARTIFICIAL INTELLIGENCE (AI)					
<b>Inventor:</b> JARVIS PATRICK MCKINLEY [US] WANG KE [US] (+1)	<b>Applicant:</b> ACUMINO [US]	<b>CPC:</b> B25J13/00 B25J9/161 B25J9/1656 (+12)	<b>IPC:</b> B25J13/00 B25J9/16	<b>Publication info:</b> US2024408757 (A1) 2024-12-12	<b>Priority date:</b> 2023-06-09
2. Auxiliary robot based on generative artificial intelligence					
<b>Inventor:</b> XUE HUIFENG BAI SONGNAN (+3)	<b>Applicant:</b> INNER MONGOLIA YIQICHUANG ELECTRONIC TECH CO LTD INNER MONGOLIA TECHNICAL COLLEGE CONSTR	<b>CPC:</b> B25J15/0019 B25J9/042	<b>IPC:</b> B25J15/00 B25J9/04	<b>Publication info:</b> CN118636119 (A) 2024-09-13 CN118636119 (B) 2024-12-06	<b>Priority date:</b> 2024-08-12

fig. 5

This means that we should take into account that many technical /software and databased research instruments may be under patent exclusive rights of other persons or business unity. We should make in advance patent research to ensure patent purity and to avoid every kind of potential patent infringement.

In the area of generative AI there are the complicated IP rights problem/issue included patent rights of the patent holders of protected technologies and as a copyright of the created new text/ graphics, pictures, and icons.

At the very beginning of 2025 there are more than 360 patents in generative AI – these AI decisions that may establish new textual and visual creations.

The figure below presents the last 5 of those patents.

Result list

Approximately 365 results found in the Worldwide database for:  
Generative artificial intelligence in the title

1. METHOD AND SYSTEM FOR PROVIDING LEARNING SUPPORT SERVICE USING GENERATIVE ARTIFICIAL INTELLIGENCE TECHNOLOGY					
<b>Inventor:</b> 한광영, 세용식	<b>Applicant:</b> 주식회사 코드일	<b>CPC:</b>	<b>IPC:</b> G06F16/33 G06F16/332 G06F16/338 (+3)	<b>Publication info:</b> KR20250033482 (A) 2025-03-10	<b>Priority date:</b> 2023-06-30
2. METHOD AND SYSTEM FOR PROVIDING SEARCH SERVICE BASED ON GENERATIVE ARTIFICIAL INTELLIGENCE					
<b>Inventor:</b> 이근우, 김지민	<b>Applicant:</b> 태에이비 주식회사	<b>CPC:</b>	<b>IPC:</b> G06F16/332 G06F16/338 G06F16/34 (+4)	<b>Publication info:</b> KR20250029467 (A) 2025-03-05	<b>Priority date:</b> 2023-06-23
3. Document creation with guided generative artificial intelligence					
<b>Inventor:</b> IL HAYASHI AMANE [CH] BELKOWSKI THOMAS [CH]	<b>Applicant:</b> SERVICENOW INC [US]	<b>CPC:</b> G06F16/2453 G06F16/2455 G06F16/2457	<b>IPC:</b> G06F16/20 G06F16/2453 G06F16/2457	<b>Publication info:</b> US12254014 (B1) 2025-03-10	<b>Priority date:</b> 2024-02-23
4. BRAND-BASED DESIGN TEMPLATE SERVICE SYSTEM AND METHOD USING GENERATIVE ARTIFICIAL INTELLIGENCE					
<b>Inventor:</b> 김태민, 태용희	<b>Applicant:</b> 타에이비 주식회사	<b>CPC:</b>	<b>IPC:</b> G06N3/0475 G06C30/02 G06Q30/0241 (+2)	<b>Publication info:</b> KR102776196 (B1) 2025-03-06	<b>Priority date:</b> 2024-09-13
5. SYNTHETIC TEST DATA GENERATION USING GENERATIVE ARTIFICIAL INTELLIGENCE					

fig. 6



The leaders in this actual high technological field of generative AI are USA – more than 200 patents and China – more 70 than patents.

### **To Summarize**

There is a strong need to raise level of information and knowledge for all academics in the area of the complex IP rights in the field of legal use of AI as tool in the learning process. Students, trainers and teachers must be informed and trained about copyrights and patent rights of the holders of new AI technologies and products used by all in the educational purposes, of their rights created intellectual products included papers and presentations using AI tool. The academicians should follow these rights in the academic process of educational practice and research.

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