The Role of AI in Teaching Different Academic Courses

University of Bihać

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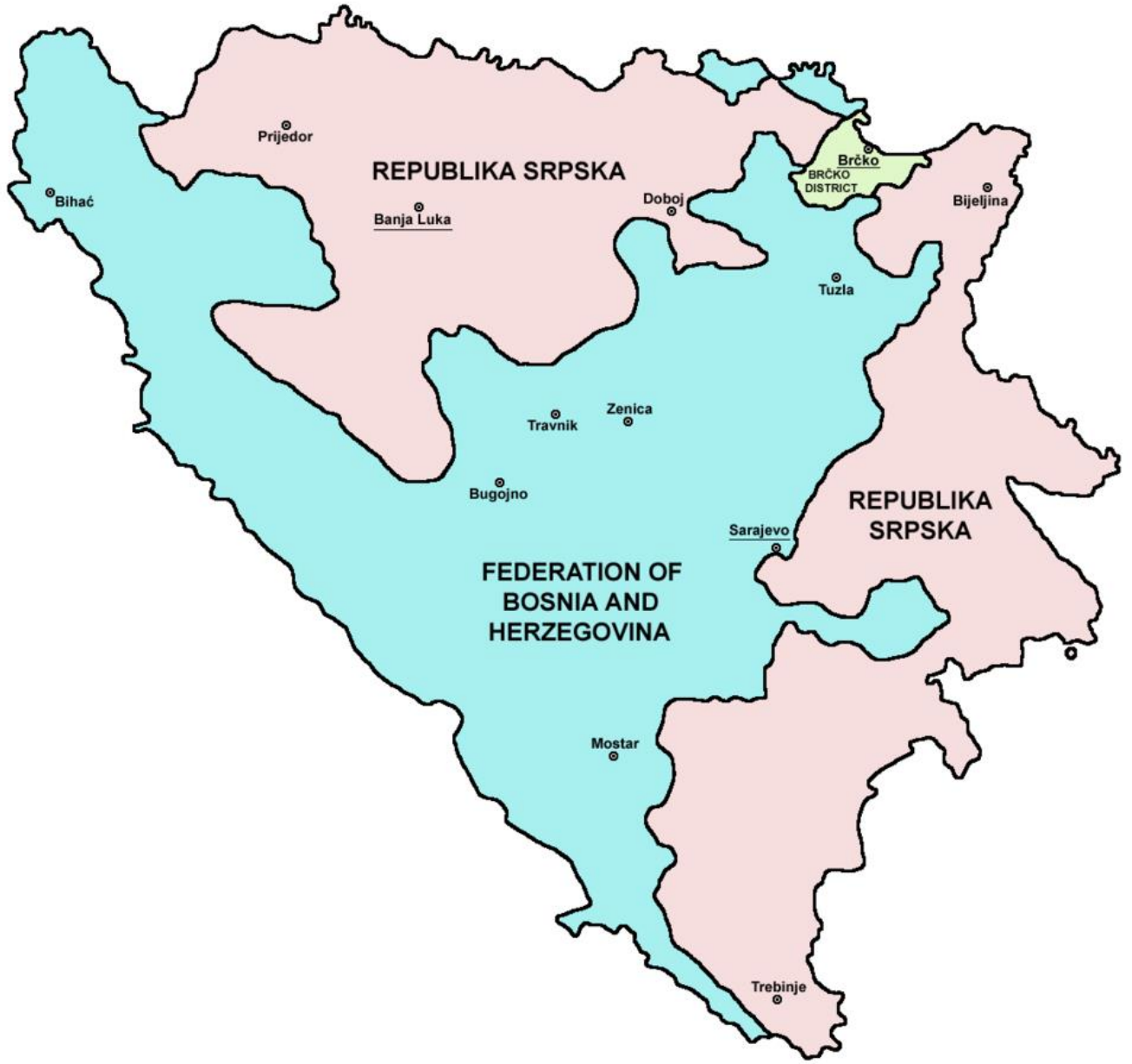
September 23, 2025

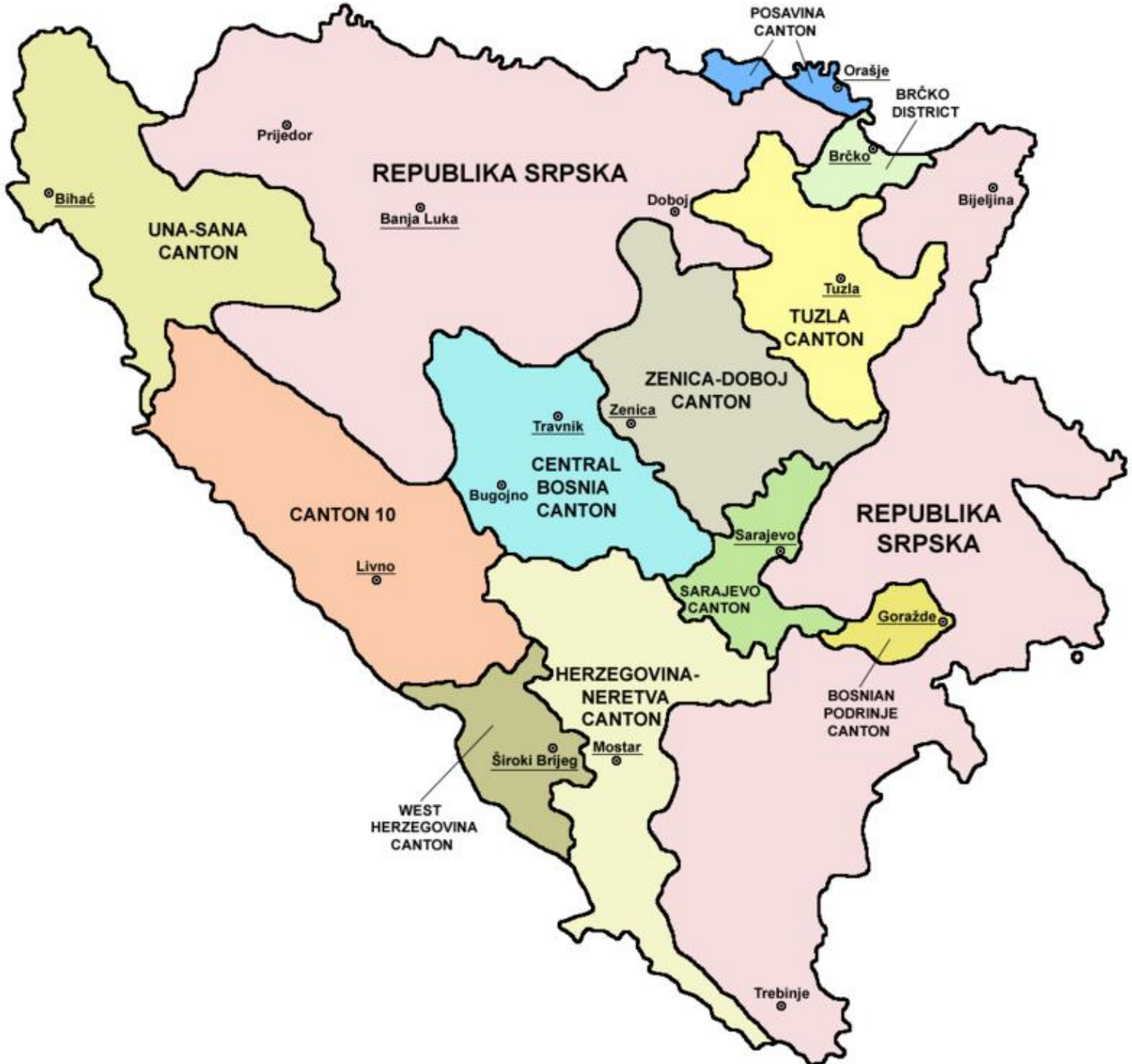
Bosnia and Herzegovina

- a country in Southeast Europe
- situated on the Balkan Peninsula
- population: 3 200 000 (2024 data)

- a complex formal education system divided between the two main entities, and the Brčko District.
- Each entity maintains its own Ministry of Education and is responsible for the formulation of educational policies and curricula development.

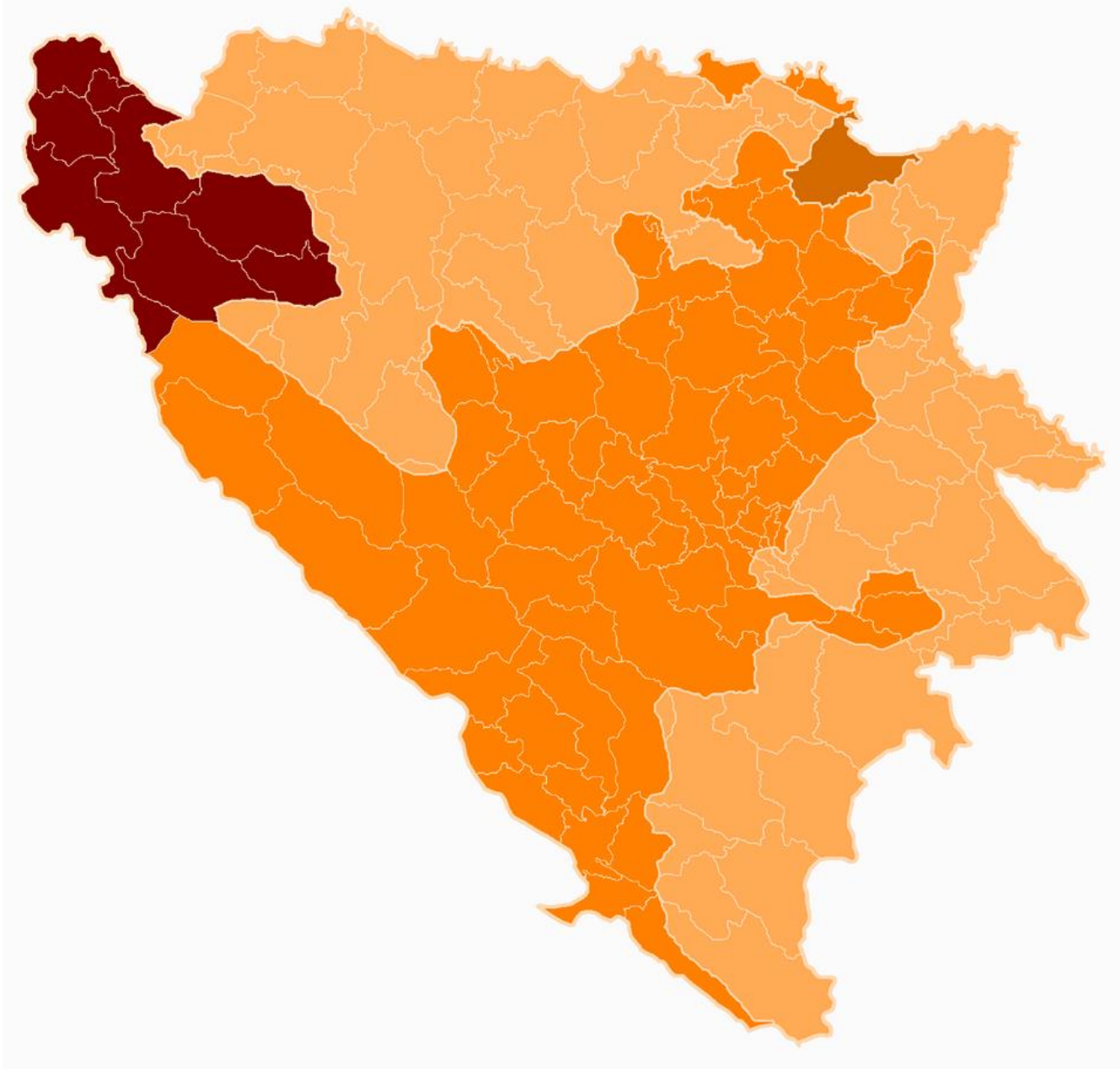


- Within FBiH, authority is further decentralized into ten cantons, each with its own Ministry of Education, reflecting ethnic divisions.



The Una-Sana Canton

- one of the 10 cantons
- north-western part of B&H
- 7 municipalities
- population of cca 250 000
- The center of the Canton: Bihać (where the UNBI is located)



UNIVERSITY PROFILE

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University organizational units

- PEDAGOGICAL FACULTY
- BIOTECHNICAL FACULTY
- TECHNICAL FACULTY
- FACULTY OF ECONOMY
- FACULTY OF LAW
- FACULTY OF HEALTH STUDIES
- ISLAMIC PEDAGOGICAL FACULTY

Model of study
4 + 1 + 3

More at http://pfb.ba/

Pedagogical Faculty

Pedagoški fakultet
UNIVERZITET U BIHAĆU

More at http://pfb.ba/

DEPARTMENT FOR PRIMARY EDUCATION	• Study program for primary education • Study program for preschool education
DEPARTMENT OF LANGUAGES AND LITERATURE	• Study program English language and literature • Study program German language and literature • Study program Bosnian language and literature
DEPARTMENT OF ART EDUCATION	• Study program for fine art • Study program for musical art
DEPARTMENT OF SUBJECT TEACHER EDUCATION	• Study program of mathematics and informatics • Study program of mathematics and physics • Study program in informatics and technics • Study program of biology and chemistry • Study program physical education and sports

1st Summer School of the EDUGAME Project

Co-funded by the European Union

UNIVERSITY OF BIHAC

The prevalence of AI in programming learning among Computer Science students

Prof. dr. Jasna Hamzabegović

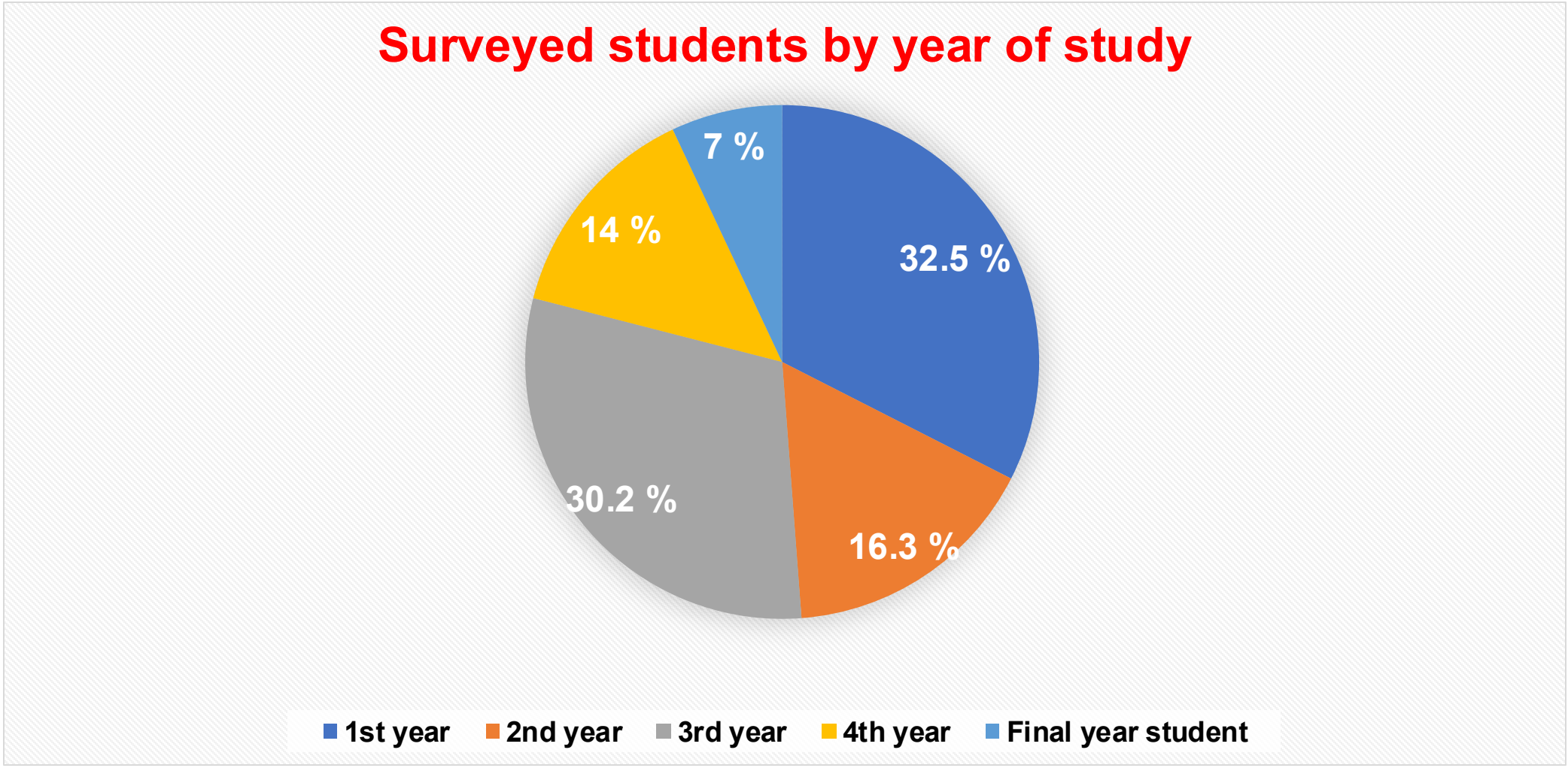
September 22nd – 26th, 2025 – University of Sousse, Tunisia

INTRODUCTION

- AI is becoming a key tool in the education of programmers.
- It enables personalized and flexible programming learning.

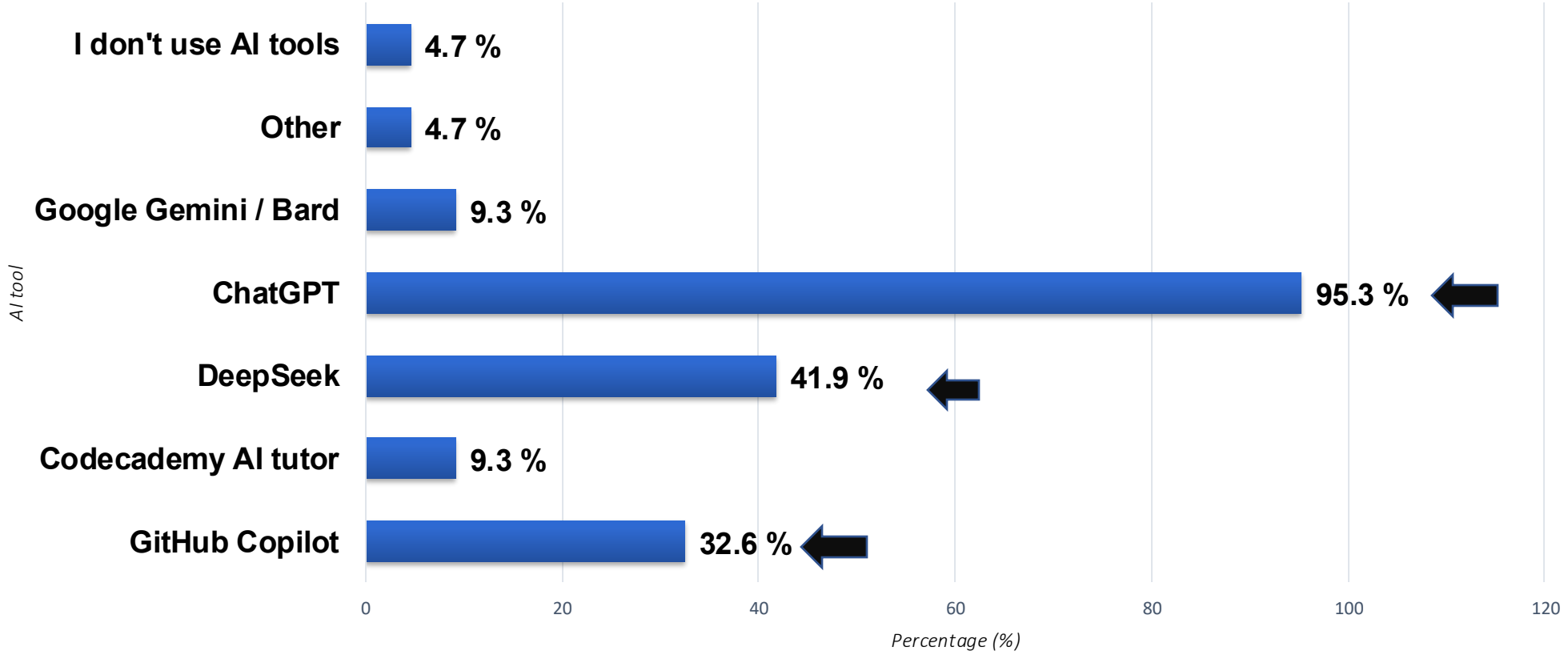
Research question:

How much do students of Computer Science at the Technical Faculty of the University of Bihać rely on AI in learning programming?



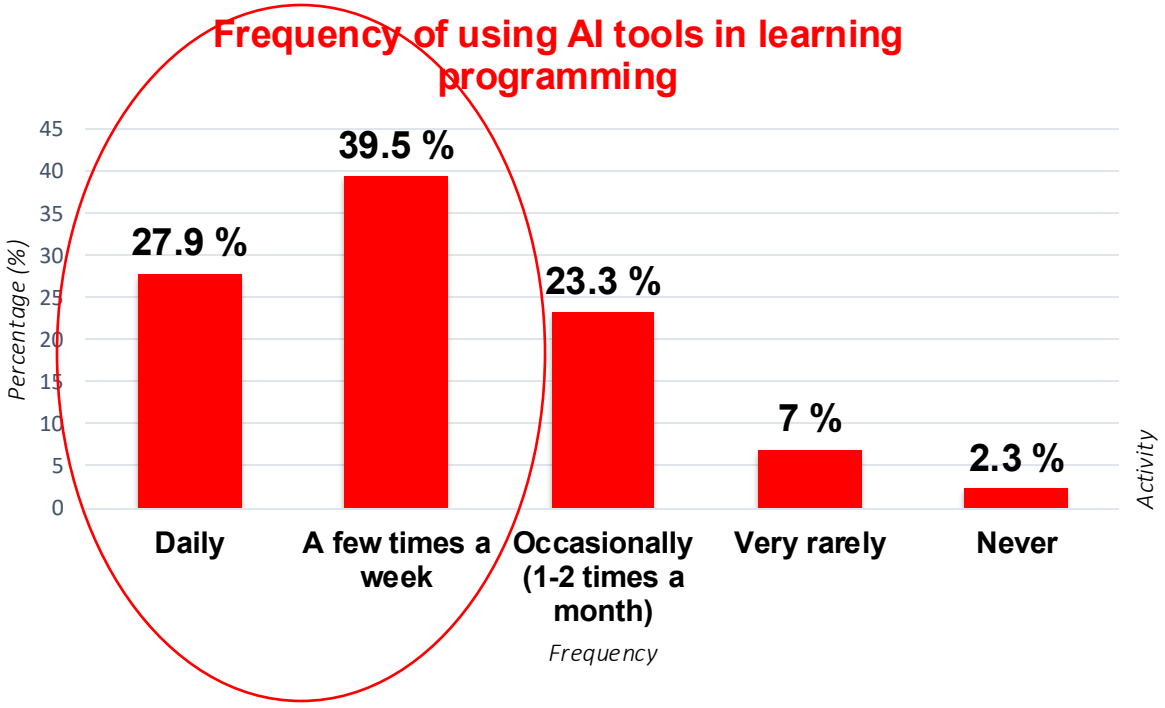
Sample: 43 computer science students of different years

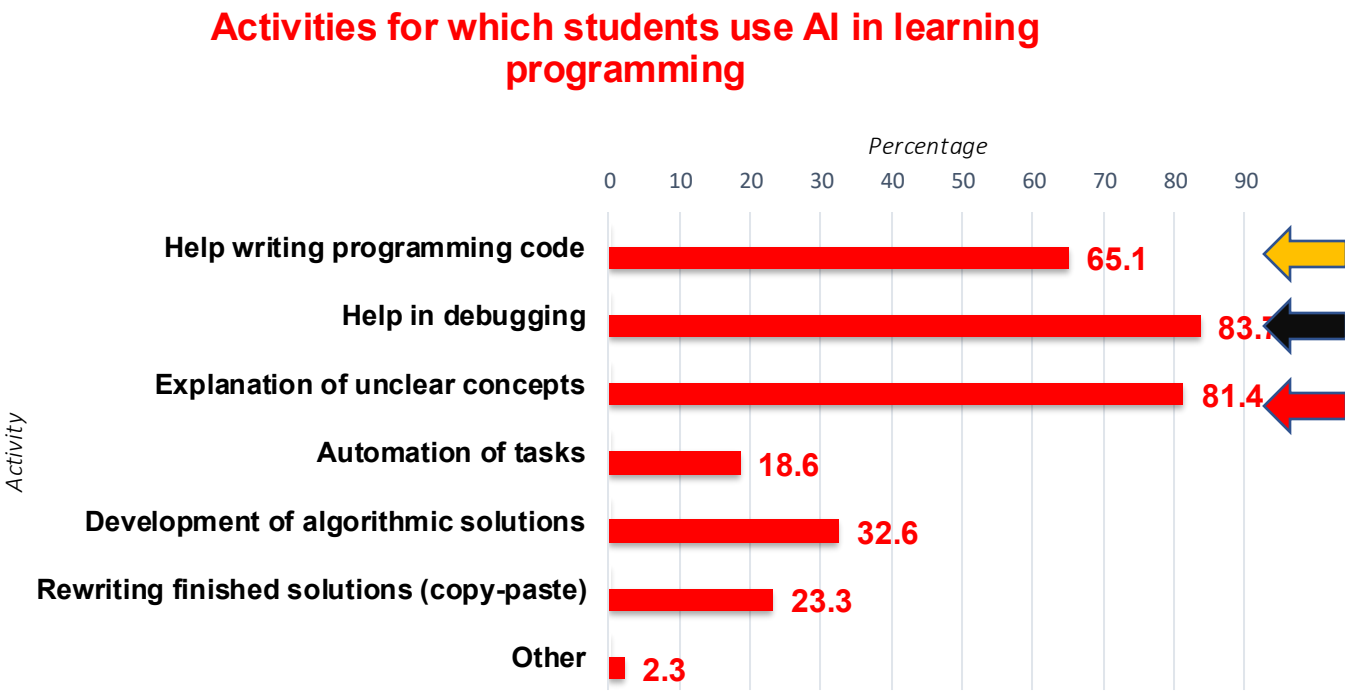
AI tools used in learning programming



- Students not using AI tools: 4,7% (2 students)

Survey results (quantitative analysis)



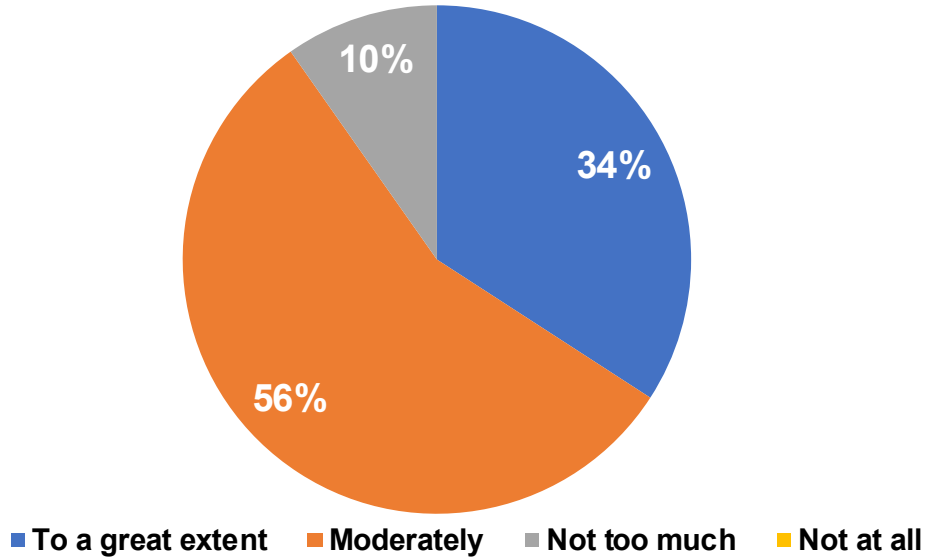


The graph shows that a significant number of students use AI tools regularly – almost 68% of them daily or several times a week, which confirms that AI is already integrated into learning routines.

The most common activities for which students use AI are debugging and explaining concepts. Code generation is less frequent, suggesting that students see AI primarily as a tool to support learning and understanding, rather than a tool for obtaining ready-made solutions.

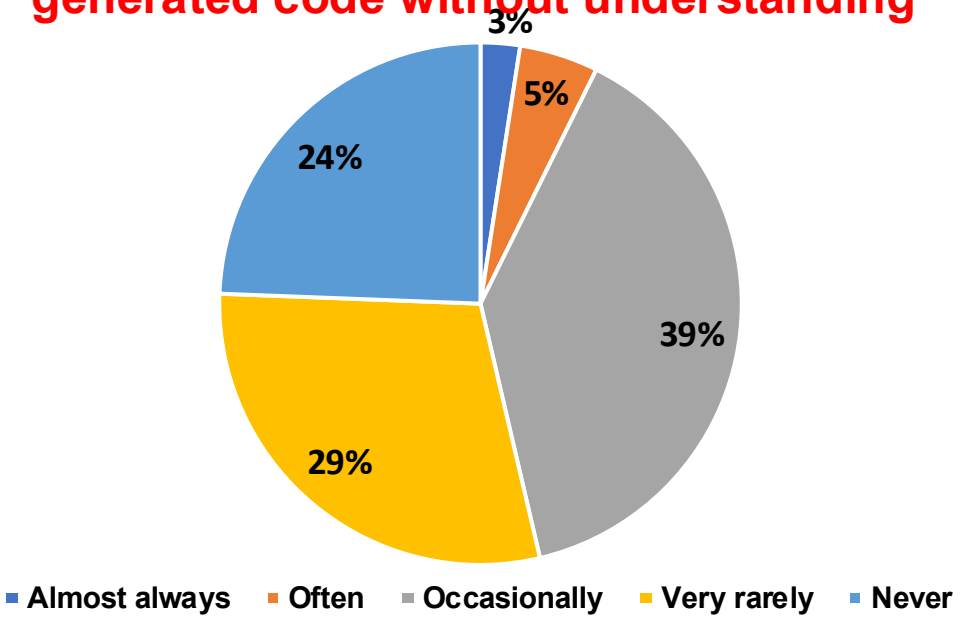
Survey results (quantitative analysis)

How AI tools can help in mastering the principles of programming



More than half of students (56%) believe that AI tools moderately support learning programming principles, and a third (34%) highlight a strong positive impact of AI.

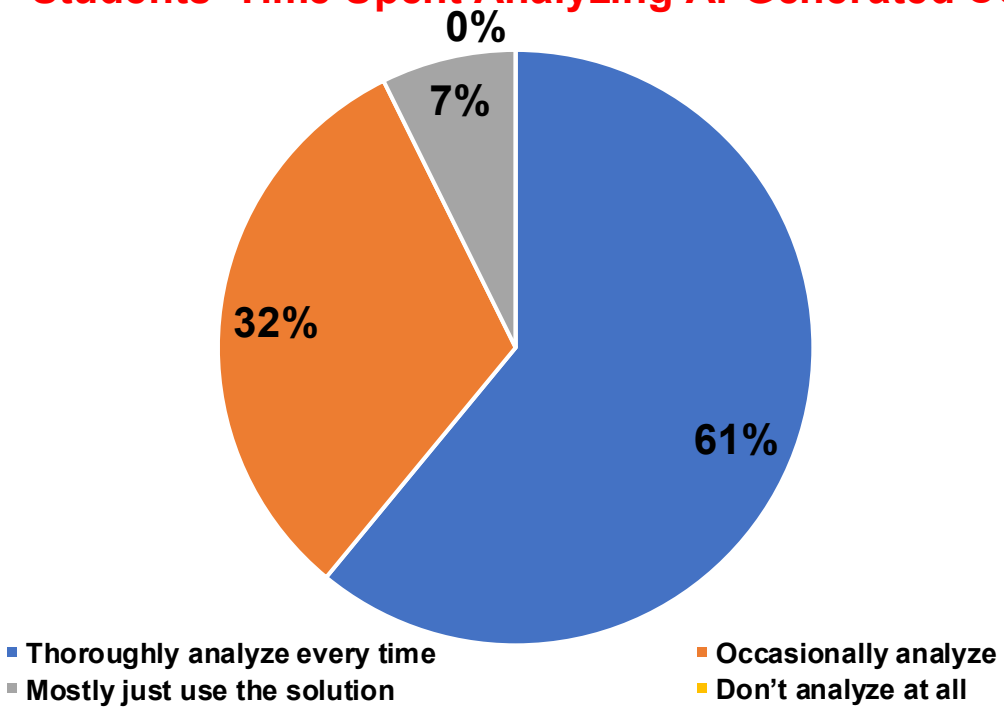
Students relying on copy-paste of AI-generated code without understanding



More than half (68%) never or very rarely use copying without first reviewing and understanding the programming code generated by AI.

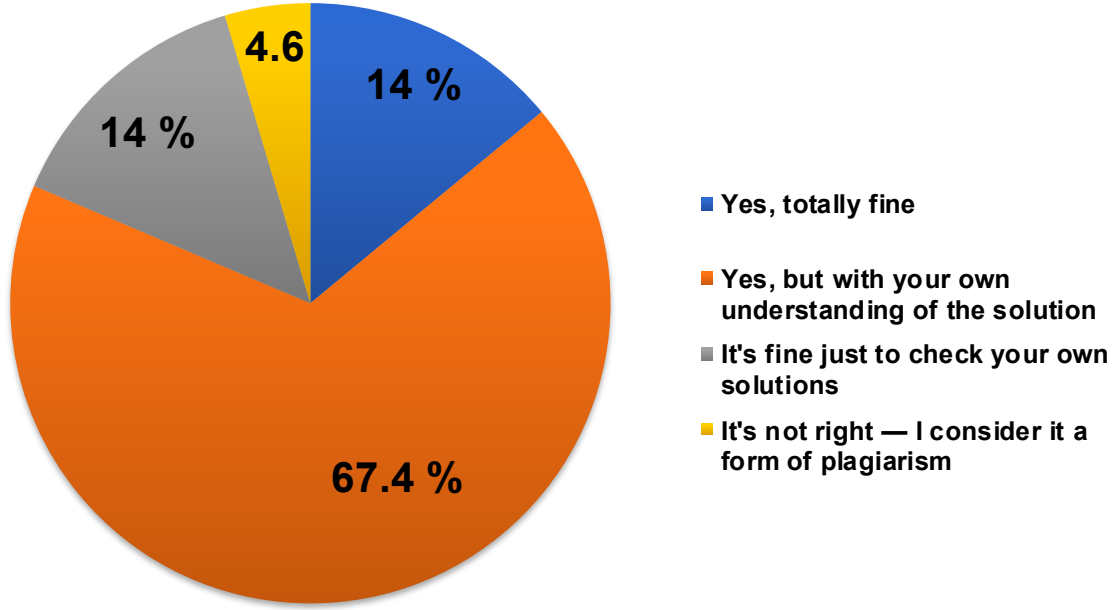
SURVEY RESULTS (quantitative analysis)

Students' Time Spent Analyzing AI-Generated Code



61% of students stated that they thoroughly analyzed the generated code before using it to understand it.

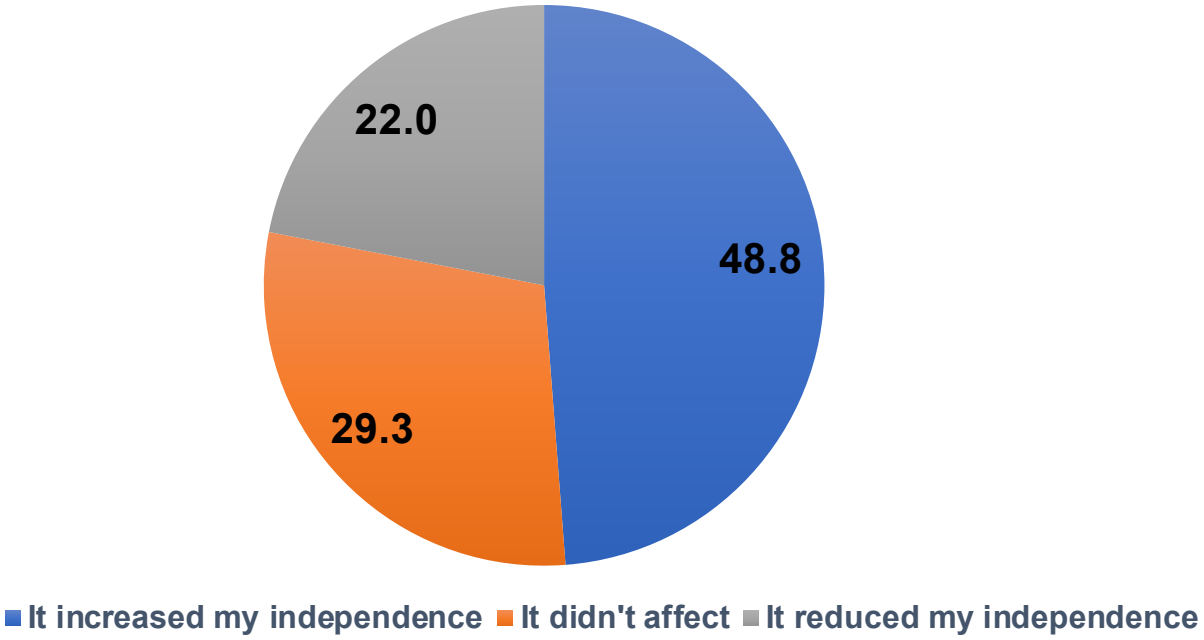
Student Attitudes Toward the Use of AI Tools for Solving Course Assignments



67.4% of the students surveyed agree that AI should be used to solve programming problems, but with an understanding of the solution.

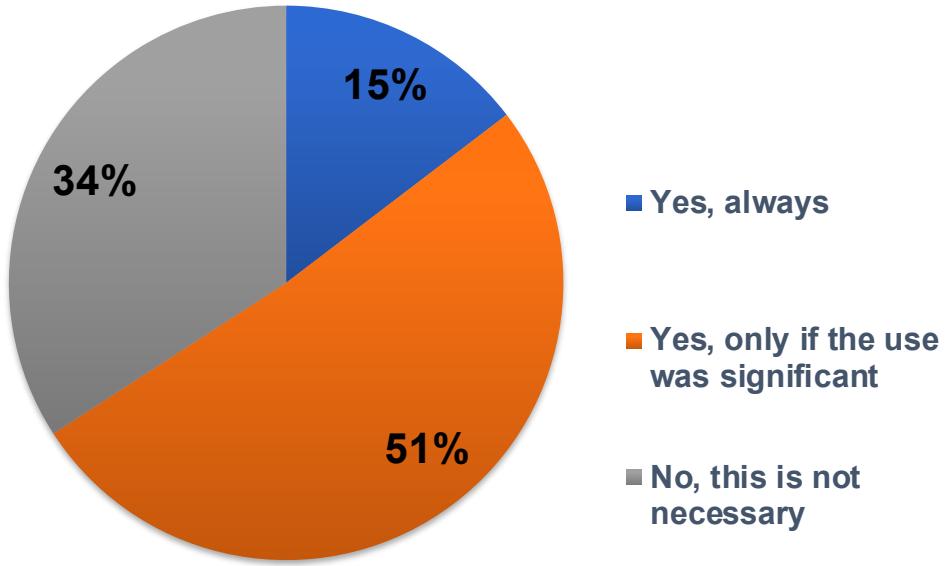
SURVEY RESULTS (quantitative analysis)

How much has the use of AI tools affected your independence in writing code?



Almost half of the surveyed students claim that the use of AI has increased their independence in writing programming code and finding programming errors..

Should it be stated if AI help was used to solve the task?



On the issue of ethics: more than a third believe that it should not be stated that they used AI help in solving a task, and 51.3% think that only if the use was significant.

SURVEY RESULTS (qualitative analysis)

Open-ended student responses

Advantages of AI usage:

- quick access to the solution,
- improved conceptual understanding,
- time efficiency
- personalized support.

Disadvantages of AI usage:

- overreliance on AI,
- superficial learning,
- AI illiteracy.

CONCLUSION

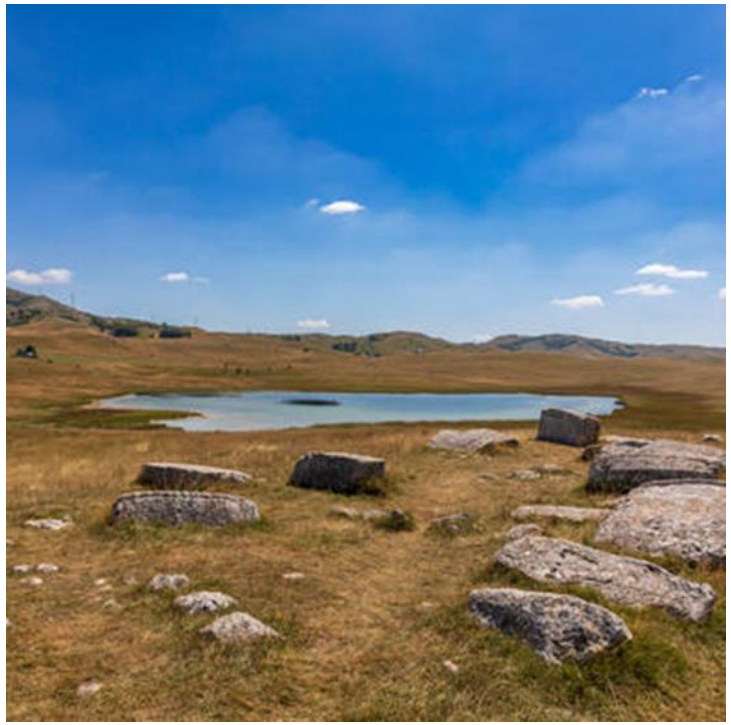
- AI is a powerful tool that can advance programming education, but only if used responsibly and critically.
- Recommendations:
    - Introduce AI literacy into curricula
    - Develop clear pedagogical guidelines for AI in the classroom
    - Balance AI support and independent learning
    - Ensure ethical and responsible use of AI assistance
    - Enable partnerships between teachers and AI in the classroom

A teacher should not be replaced, but relieved and empowered.

Course: *Bosnian and Herzegovinian Literature of the Middle Ages and the Ottoman Period*

Instructor: Prof. dr. Amira Dervišević

- Introduction to the rich literary tradition of the peoples of B&H
- special emphasis is placed on the inscriptions on **stećci** because they represent a unique blend of culture, art and literature.
- Stećci are medieval tombstones spread across B&H, Croatia, Serbia and Montenegro. Most of them are in B&H.
- created from the 12th to the 16th century and their use disappeared with the arrival of the Ottoman Turks in the aforementioned areas.
- erected by members of the peoples who lived in these areas. They are most often associated with members of the Bosnian Church.



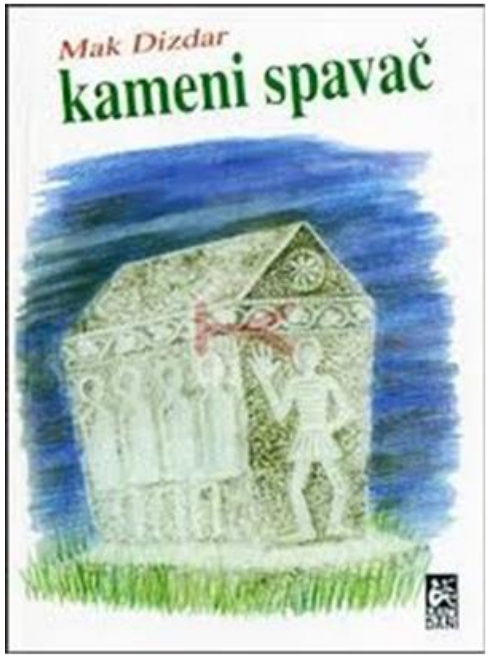
- usually decorated with figural scenes, individual figures of people, animals, fantastic creatures.
- Sometimes they depict hunting, knightly scenes, a dance danced by men and women. Their monumentality, decorations and especially the inscriptions testify to the spiritual and cultural life of that time.
- included in the UNESCO World Heritage List in 2016

- For us, the inscriptions written in the script – bosančica – are especially important. These inscriptions are reminders of life and death, but also literary texts that carry poetic value – in them we find symbolism, metaphors, messages about transience and eternity.

When Bosnia had its own alphabet

- The study of inscriptions on stećci is important because they constitute one of the oldest written forms of our literature. In doing so, we discover that literature did not live only in books, but also in stone, as a permanent record.
- The inscriptions on stećci are important for understanding the identity of B&H, and at the same time connect us with modern creativity –> Mak Dizdar, *Kameni spavač*.
- That is why through this course we learn how to read and interpret these ancient records, because they are not only a trace of the past, but also a bridge to a modern understanding of the literature and culture of B&H.

Stone Sleeper - poetry collection from 1966-1971



Here is the sentence "Lilia is a wonderful host." written in Bosančica script:

This is a direct transliteration based on the Bosančica alphabet representation of the Latin text.

If needed, the exact characters can be verified or typed using Bosančica online converters such as https://www.e-bosanski.ba/konverter-pisama/bosancica/.

Perplexity.ai

Leverage AI-Powered Historical Text Transcription Platforms

- Tools like Transkribus use AI to transcribe and decode historical documents. You can train yourself by uploading Bosančica script samples (if available) or exploring existing transcriptions to see how the AI interprets the script and learn from it. `transkribus`

- Some newer AI tools are designed to help read and decode ancient and historical scripts. While these may not specifically target Bosančica yet, staying informed on these tools might help in the near future, especially if they allow user input for training on specific scripts. `growthyfai`

Old English Translator: Free AI Historical English

https://oldenglishtranslators.com/

OE <-> ModE
Translator, sound sample, key choices explained,
dictionary, chat with tutor,

Free Old English to Modern English Translator
https://musely.ai/tools/old-english-to-modern-english-translator

Time period, dialect, preserve structure, formality level, etc.

Blippar – Augmented reality content creation

https://www.meshy.ai/


DeeVid AI

“StecakLand – Interpreting Art of Mysterious Medieval Stecak Tombstones through Virtual Reality”

- AI can be used in the teaching of literature in several ways. Among other things, work can be done on connecting subject content, AI and VR – which allows us to immerse ourselves in three-dimensional space and experience things that we otherwise could not.
- When this is combined with AI, we get a powerful tool for the preservation and presentation of literary heritage.
- The results of the project implemented by the Association for Digitization of Cultural Heritage Digi.ba and the research group Sarajevo Graphics Group from the Faculty of Electrical Engineering of the University of Sarajevo, which have been working for years on the digitization and computerization of BiH's cultural heritage, can help to provide the oldest written texts created in B&H.

- The team that worked on the project included experts from different fields: archaeology, history, social sciences, computer science, digital art.
- Expert archaeologists/historians from partner institutions sent the meanings of the ornaments from the selected stećaks and in addition collected stories related to the stećaks.
- Screenwriters prepare scenarios from this material, and visual artist designs the appearance of StećakLand.
- The goal of the project is to use the potential of modern technologies to present the meaning of ornaments from stećak, through visual reality and a theatrical performance.
- StećakLand will be available through a Virtual Reality and Augmented Reality application developed by the **Digi.ba** Association team, and it is planned that they will be installed in Mak Dizdar's House in Stolac, Dubrovnik museums, the National Museum of Montenegro in Cetinje and in the Viminacium Archaeological Park in Serbia.

What VR technology enables

- VR technology gives users a sense of presence in virtual space. Imagine that you are standing in the middle of the stećak necropolis, you can visit each monument, look at the decorations up close and feel the atmosphere of that space – and all this without physically going to the site. VR is not only a visual experience but also an interactive one. Users can walk, explore and learn in a way that is much closer to the real experience than reading from a textbook or looking at photos.
- As I already said, this project includes, among other things, a VR **educational game and an AR application**.
- For now, a VR educational game will be installed in selected museums, through which users will enter an imaginary world called StećakLand in which the symbols from the stećak tombstones and stećci 'live'.
- By discovering this world, the user will learn more about the stećak tombstones themselves through several **stories** and what the symbols carved on them represent. They will learn more about the way the symbols that will adorn the stećak tombstones were chosen, as well as the stories that these symbols represent.
- The user will have the opportunity through the application to meet some more characters in that world, and ultimately to **make their own stećak tombstone**.

Application of AI in the teaching of literature

- AI plays a key role in this StećakLand project. AI algorithms analyze the shapes and symbols on the stećci and help in the reconstruction of damaged or missing parts. In this way, what has faded or been destroyed over time can come to life again in virtual space.
- In addition, AI enables personalization – the user in VR can ask questions and get explanations, as if talking to a guide. This experience makes education interactive and close to modern generations.
- It is important for the teaching of literature to adapt it to the 21st century. This means that it should also be presented through new technologies.

➡ content of the literature subject

After we present the students with content related to medieval literature and after we present the tombstones and inscriptions on the tombstones during lectures in the classrooms, the students will visit the Radimlja necropolis near Stolac, where markers will be placed for an AR application that students will be able to **install on their mobile devices** and, by looking at the tombstones through the cameras on their mobile phones, receive additional information on the mobile phone screen about the meaning of their decorations.

In addition to visiting the necropolises, they will also visit a museum where a VR educational game will be set up featuring tombstones and symbols from the tombstones.

Students will have the opportunity to meet characters from the Middle Ages through the application and finally make their own tombstone.

3d of the user generated stećak in StecakLandVR

- One of the features of the StecakLandVR application is the opportunity for users to design their own stecaks.
- After they pass all the challenges of the three StecakLand villages and see all the stories told by the stonemason Grubač and the selected symbols-characters, they enter the imaginary Temple and find themselves in the final room where all the ornaments are flying around them.
- They can select 6 ornaments and “carve” them onto an empty stecak.
- The created 3D model is saved on the VR headset and can be sent to the users for 3D printing. We have done it with our stecak creation.

3DShot.io

Meshy.ai

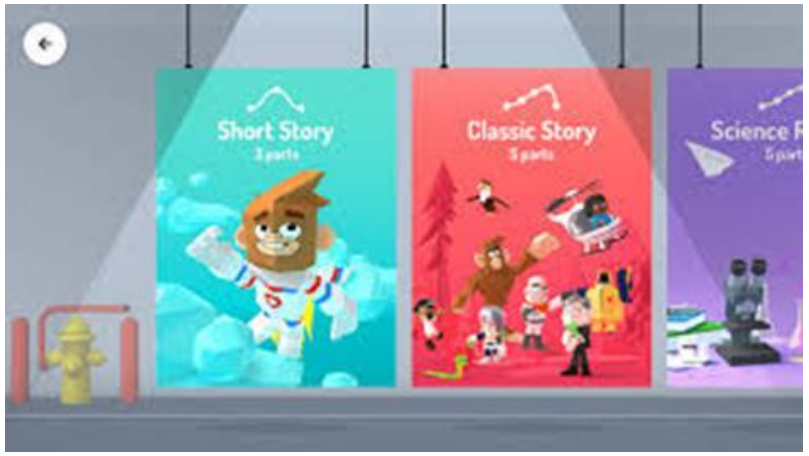
Hiper3d.ai

base.obj

For this purpose, the Pedagogical Faculty has introduced a course called *Digital Storytelling*:

- uses the methodology of digital storytelling.
- combines literary or other artistic content and presents it to the world with the help of modern technologies, which motivates users to learn information in a fun way.
- In the literature teaching at the Faculty, some of the **outstanding examples of digital stories** have been created as part of the digital storytelling project.
- Storytelling helps students apply acquired knowledge from literature and create a story in a foreign or native language that is interesting and educational.


Hana i njena bajka



Toontastic 3D is an educational mobile app developed by Google. Toontastic 3D is an interactive storytelling app where kids can draw, animate, narrate and record their own cartoons on their devices.

- This combination of science, technology and art shows how cultural tradition can be transmitted in an innovative way, and especially motivates young people to discover their heritage through new technology.
- The application of AI has multiple values, and two stand out - scientific and educational. Scientific because it contributes to research and preservation of heritage. Educational because it allows students and pupils to learn through experience, not just through books. However, when the results of the application of AI are presented to the public, then the contribution increases.

- *When we look at the past through lens of future, it becomes a bridge that connects generations*.

Course: *Translation Practice II*

Interpreting

Instructor: Prof. dr. E. Dupanović

Op.prev. - Prevoditeljski studiji Filozofskog fakulteta u Osijeku

31. jul ·

Tko tu od koga prepisuje???

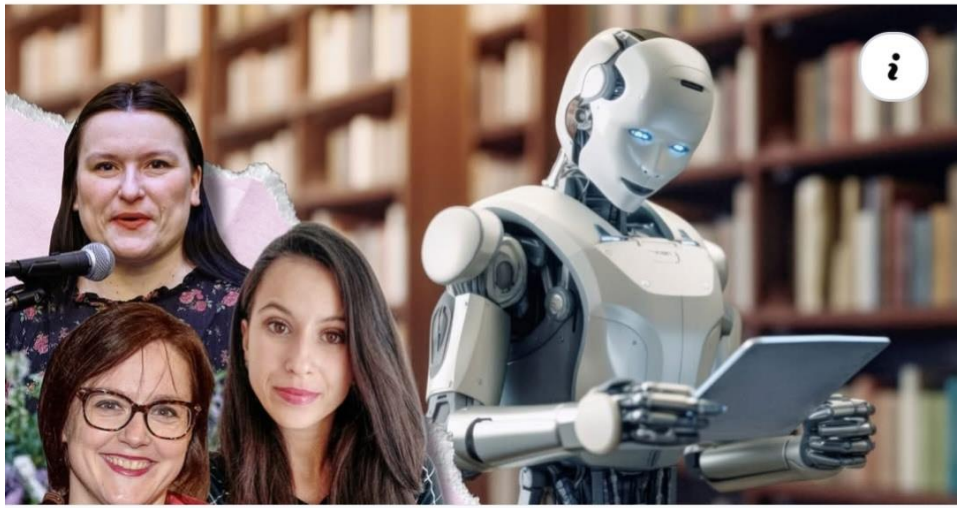
bug.hr

Što više koristimo AI, to ju više učimo kako da joj postanemo suvišni

Op.prev. - Prevoditeljski studiji Filozofskog fakulteta u Osijeku

5. aug ·

Samo bez panike 🙂



tportal.hr

AI već prevodi knjige za 85 eura komad: Je li realna panika da će pojesti prevoditelje?

- In the practical part of the class, students are exposed to increasingly longer passages of speech in consecutive interpretation situations to test the limits of their memory. The simulation is envisioned as a VR game with multiple levels of difficulty.
- In the practical part of the class, students are exposed to relatively long passages of speech in consecutive interpretation situations to allow them to sharpen their interpreting skills. The simulation will run as a VR game.
- In the practical part of the class, the students participate in a VR simulation of different simultaneous interpretation situations where the rate of speech is relatively slow.
- In the practical part of the class, students will be involved in the same type of VR simulation as during Week 11, but now they will have to cope with the normal rate of speech.

The aim of this course is for students to:

- prepare for interpretation assignments independently;
- analyze and present information effectively;
- apply listening, memory, and note-taking techniques;
- use and critically assess AI translation tools alongside human interpreting;
- and understand the principles and ethics of interpreting.

Learning outcomes

By the end of this course, students will be able to:

- Prepare independently for interpretation engagements using both traditional and AI-supported research tools.
- Take notes during consecutive interpretation sessions.
- Translate consecutively and simultaneously from English to Bosnian, using VR and AI tools for practice and feedback.
- Critically evaluate AI-generated translations against professional human interpretations, identifying contextual misunderstandings, cultural nuances, and idiomatic expressions.
- Demonstrate teamwork, ethical understanding, and adaptability in both traditional and technology-enhanced interpreting scenarios.

Question:
What specific VR platforms and hardware will be used? Will there be technical support available for students unfamiliar with VR? How will the department ensure equitable access for all students?

Suggestion: Consider a hybrid approach that pairs AI translation tools with VR experiences. Students could analyze and compare human interpretations versus AI-generated translations in real-time within the VR environment. This would prepare students for a professional landscape where AI translation tools are becoming increasingly prevalent while developing critical skills in identifying when human translation offers superior quality or cultural nuance.

How?

- Using AI-powered real-time translation and speech-to-text tools (DeepL translate app, Google Translate, Microsoft Translator)
- Overview of VR platforms for interpreter training.
- Hybrid exercises: comparing human and AI-generated translations in real-time
- Critical analysis: identifying AI limitations in context, nuance, and idioms

Objective: students' real-time note-taking skills during consecutive interpreting sessions

Exercise Title: AI-Assisted Consecutive Interpretation and Note-Taking Challenge

Description:

1) Students listen to a recorded or live simulated conference speech segment designed to be a consecutive interpreting scenario.
2) While listening, students take notes manually as they would in an actual conference setting.
3) Simultaneously, an AI speech-to-text tool transcribes the speech live, providing an automatic, rough textual rendering.
4) After the speech ends, students produce their consecutive interpretation based on the notes they took.
5) Students then compare their notes and interpretation with:
    a) The AI-generated transcript.
    b) The official transcript (if available).
    c) AI-generated translations (using tools like DeepL or Google Translate).

6) Incorporate VR simulation for the speech playback with distractions and audience reactions to increase realism.

Tools to Use:

- AI speech-to-text transcription (e.g., Otter.ai, Microsoft Azure Speech, Google Speech-to-Text).
- AI translation systems (DeepL, Google Translate).
- Custom rubric checklist or AI note analysis app for feedback
- VR environment or standard playback system for delivery.

a) non-VR alternatives (e.g., desktop simulation, video-based exercises, or SG with AI integration can be used).

b) VR Platforms and Hardware

- cross-platform VR solutions such as Meta Quest, HTC Vive, or Oculus Rift, compatible with both PC and standalone use.
- VR headsets using online free app & softwares to simulate interactive environments – shops, airports, etc.
- interpreter-specific VR software (e.g., Interprefy VR) designed for educational settings.

Ensure all VR content is accessible via university computer labs and can be streamed for students without personal VR headsets? - Communication platform (if using desktops): Zoom, Microsoft Teams (for live sessions, screen sharing, audio streaming)

AI note analysis or note-taking apps :

1. Otter.ai
   - Offers free tier transcription services with speaker identification and basic editing.
   - Good for recording and transcribing speeches or conference talks for student note comparison.
   - Integrates with Zoom and other platforms.
2. NotesGPT (NoteGPT.io)
   - Free AI-powered notes generator that organizes and structures notes from text input.
   - Useful to generate tailored study notes and summaries for review from raw text data.
3. Blaze AI
   - AI note-taking assistant that works on any website, generating notes and summaries from a variety of formats including PDFs and articles.
   - Free for students and works as a Chrome extension.
4. TLDV (tl;dv.io)
   - Provides AI-powered transcription and summarization for meetings on Zoom, MS Teams, and Google Meet.
   - Free plan available to capture conversations and generate meeting insights, useful for interpreting practice playback.

AI Interpreting Tools

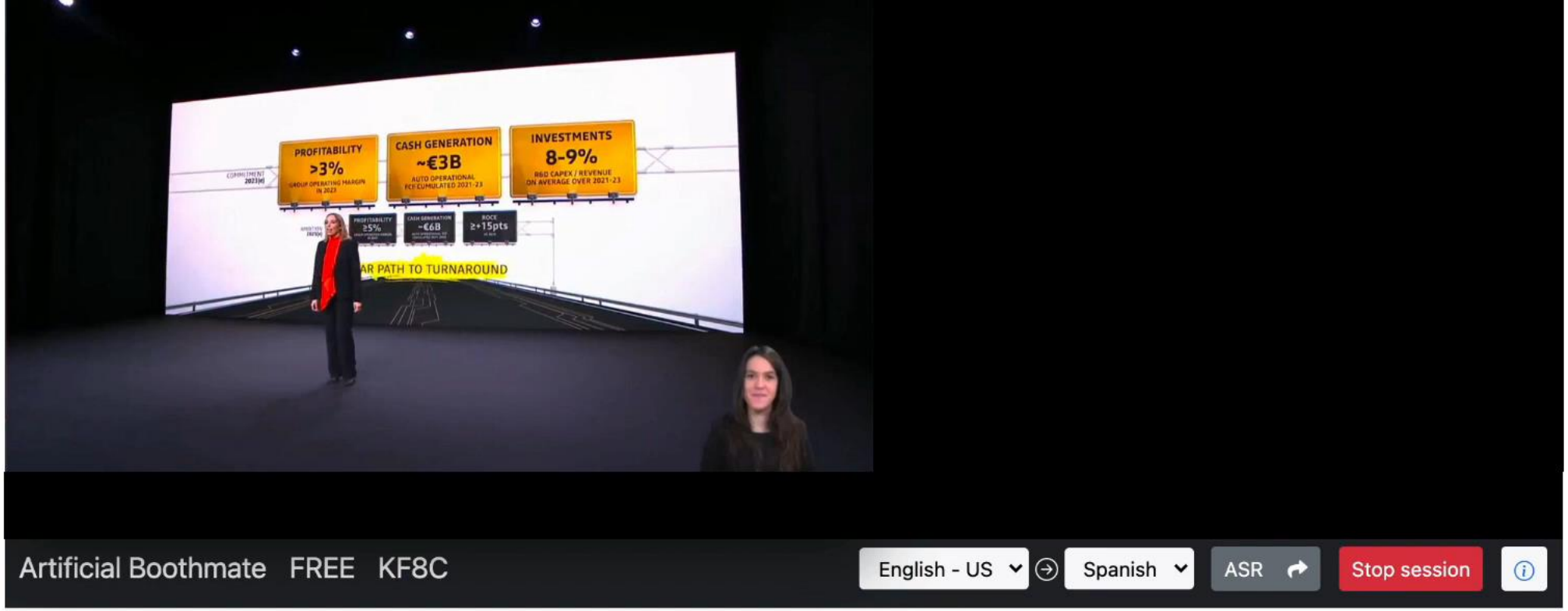
- Google Translate app or Microsoft Translator app (for live AI voice interpreting)
- Interprefy Platform providing AI interpretation or accessibility to AI simultaneous interpretation (not free of charge)
- Boostlingo - Offers trial or limited free tiers for new users or educators. Useful for organizing mock conferences with interpreter teams.
- kudo.ai - Supports remote simultaneous interpretation with multilingual support for conferences. Provides free trials or demo versions for educational institutions.

Interpret Bank‘s *Artificial Boothmate* – Software for Conference Interpreters

- https://www.youtube.com/watch?v=tcOGhe4N9LE

Wordscope – the cool CAT tool with AI integration

- https://docs.wordscope.com/en/gettingstarted/get-started-with-wordscope-in-just-3-clicks/



Terminology

Digits and Time

InterpretBank ASR

EDUGAME LAB VIDEO


thank you
danke
gracias
merci
obrigado
bedankt
dziękuje
謝謝
teşekkür ederim
go raibh maith agat
sukriya
kop khun krap
terima kasih
감사합니다
ngiyabonga
спасибо
mochchakkeram
tapadh leat
dakujem
arigatô
grazie
dank je
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Баярлалаа
хвала