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## Tarptautinė konferencija ir EMT seminaras

International Conference and EMT Seminar

Gegužės 8–9 d. 2025, Kaunas May 8–9, 2025, Kaunas

# Language in the age of Al LTech2025 BOOK OF ABSTRACTS

Kalba dirbtinio intelekto amžiuje LTech2025 SANTRAUKŲ KNYGA



#### Kalba dirbtinio intelekto amžiuje

Tarptautinė mokslo konferencija "Kalba dirbtinio intelekto amžiuje" LTech2025

ir 5-asis EMT seminaras "Audiovizualinis vertimas dirbtinio intelekto amžiuje: pokyčiai, iššūkiai, galimybės"

#### Language in the Age of Al

International Scientific Conference "Language in the Age of Al" LTech2025

with the 5<sup>th</sup> EMT seminar "Audiovisual Translation in the Age of Al: Changes, Challenges, Possibilities"

### SANTRAUKŲ KNYGA I BOOK OF ABSTRACTS

8–9 May, 2025 Kaunas University of Technology https://ltech.ktu.edu/

#### Language in the Age of Al LTech2025 I Kalba dirbtinio intelekto amžiuje LTech2025

International Scientific Conference I Tarptautinė mokslinė konferencija May 8–9, 2025 I Gegužės 8–9 d., 2025

Kaunas University of Technology, Lithuania I Kauno technologijos universitetas, Lietuva https://ltech.ktu.edu/

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#### Dear Participants of the Conference and the 5th EMT Seminar,

This is the second edition of the conference "Language in the Age of Artificial Intelligence: LTech2025", organized at the Faculty of Social Sciences, Arts and Humanities at Kaunas University of Technology and the Lithuanian Museum of Education. The international scientific conference is aimed to discuss various aspects and issues about the rapid development of language industry and possibilities of artificial intelligence application that change the turn of scientific research, methodological approaches and, at the same time, increase the access of the society to information in native and foreign languages. The event is supported by the State Commission of the Lithuanian Language and the programme for the increase of the Lithuanian language prestige.

As part of the conference events on the 8<sup>th</sup> of May, the 5th EMT Train the Trainer Summer School, titled Audiovisual Translation in the Age of Artificial Intelligence: changes, challenges, possibilities is jointly organized by the Research Group of Language and Technologies at Kaunas University of Technology (KTU), together with the Directorate-General for Translation of the European Commission (DGT) (Vilnius Field Office), and in collaboration with the Constantine the Philosopher University in Nitra, (Slovakia), the University of Vienna (Austria), Instituto Superior de Contabilidade e Administração do Porto (Portugal) and Università degli studi Internazionali di Roma, (Italy).

We are glad to host an academic community of scientists, researchers, educators and specialists in the fields of Philology, Educational Sciences, language and technologies or other to share their experience and insights and take part in resourceful discussions about the use of artificial intelligence in the research of the languages, didactics, the impact of machine translation on language, its ethical use, postediting, translation and other. Moreover, debating about the impact of artificial intelligence and global society on the status of the state language and its prestige is planned as well as how to increase the access to language resources of the native language and contribute to the development of information and knowledge society. The 5th EMT seminar focuses on training strategies, resources, integration of Al based and other technologies and the shift the artificial intelligence has already made and will make in the future.

Enjoy the international scientific conference, the EMT seminar and the stay in Kaunas!

Organising and Scientific Committees

#### Mieli tarptautinės mokslo konferencijos ir 5-ojo EMT seminaro dalyvės ir dalyviai,

Džiaugiamės organizuodami 2-ąją tarptautinę mokslo konferenciją "Kalba dirbtinio intelekto amžiuje (LTech 2025) Kauno technologijos universiteto Socialinių, humanitarinių mokslų ir menų fakultete kartu su Lietuvos švietimo istorijos muziejumi, skirtą aptarti klausimams ir diskutuoti apie sparčiai besiplečiančios kalbos industrijos ir dirbtinio intelekto pritaikymo galimybes, keičiančias tyrimų pobūdį, metodologiją ir didinančias visuomenės prieigą prie informacijos gimtąja ir negimtąja kalba.

Šiais metais kartu su tarptautine mokslo konferencija organizuojamas 5-asis Europos vertimo magistro studijų tinklo (EMT) seminaras "Audiovizualinis vertimas dirbtinio intelekto amžiuje: pokyčiai, iššūkiai ir galimybės" kartu su Kauno technologijos universiteto mokslo grupe "Kalba ir technologijos", Europos Komisijos Vertimo raštu generalinio direktorato atstovais Lietuvoje ir Filosofo Konstantino universitetu Nitroje (Slovakija), Vienos universitetu (Austrija), Porto politechnikos universitetu (Portugalija), Romos tarptautinių studijų universitetu (Italija).

Džiaugiamės, kad susibūrusi mokslininkų ir praktikų bendruomenė, apimanti filologus, edukologus, edukatorius, kalbos technologijų ir kitus specialistus, dvi dienas dalysis patirtimi, jžvalgomis, susitelkdama diskusijai apie dirbtinio intelekto panaudojimo galimybes lietuvių ir kitų kalbų tyrimams atlikti, didaktikos pasikeitimą, mašininio vertimo įtaką kalbai, etikai, postredagavimui, vertimui, audiovizualiniam vertimui ir kt. Įvairiose sekcijose lietuvių ir anglų kalbomis taip pat numatoma aptarti dirbtinio intelekto, technologijų ir globalėjančios visuomenės įtaką valstybinės kalbos statusui ir prestižui, svarstant, kaip didinti prieinamumą prie kalbos išteklių gimtąją kalba ir kaip prisidėti prie informacinės ir žinių visuomenės kūrimo, kaip išnaudoti dirbtinio intelekto teikiamas galimybes ir prisitaikyti prie įvykusių pokyčių, keičiančių dabartį ir turėsiančių įtakos kalbos industrijai ateityje.

Linkime įdomių diskusijų ir įsimintinos viešnagės Kaune!

Organizacinis ir mokslinis komitetai

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#### PLENARINIŲ PRANEŠIMŲ SANTRAUKOS ABSTRACTS OF KEYNOTE SPEECHES

#### Aleksandra ŁUCZAK

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### Transforming Language Teaching through Innovation and Collaboration of Artificial and Human Intelligences

In 2023, language education has seen significant developments, with AI becoming a ubiquitous tool. From scepticism, through enthusiasm, and concerns about job security, it finally prompted teachers' professional development through conferences, trainings, webinars, and courses. Now many teachers cannot imagine their daily work without AI tools which are widely and often freely available. Denying its existence hampers teachers' development, putting them at a disadvantage.

My presentation will explore how AI facilitates teachers' professional development. I will focus on the shift from traditional instructors to ESP materials authors, utilising cutting-edge AI technologies. Practical examples will illustrate how ESP teachers can leverage AI to:

- design ESP certificate exam task;
- transform the tasks into interactive online exercises;
- write case studies and publish them online;
- facilitate language meditation skills (including paraphrasing and translation);
- assist students in job interview preparation;
- improve students' pronunciation;
- create listening tasks;
- create Kahoot guizzes within seconds:
- provide feedback on students' writing;
- teach students to use AI critically and ethically;
- engage students in emerging collaborations;
- create retrieval quizzes;
- create lessons in next to no time.

This presentation will emphasize the crucial role of AI in reshaping language education, enabling educators to go beyond traditional limits in crafting ESP teaching materials. Embracing these technological advancements is not just beneficial; it is essential for ongoing professional growth in the ever-changing field of language education.

**Keywords**: language education, ESP, teaching material, artificial intelligence, professional development.

#### Emília PEREZ

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### Excited About Efficiency or Concerned About Bias? (Re)thinking Technology, Automation and Media Accessibility

In recent years, the intersection of technology, automation, and media accessibility has dramatically reshaped the field of audiovisual translation. Automated tools such as Algenerated captions, machine translation, and synthetic dubbing promise greater efficiency, but they also raise critical questions about quality, inclusivity, and the potential for bias that could reinforce existing stereotypes. Although audiovisual translation and media accessibility have long been influenced by technological developments, recent advances — particularly in Generative AI — have intensified debates about whether, how, and to what extent access to information, communication, and content can or should be automated. As GenAI systems become increasingly capable of producing complex media outputs, concerns grow around issues of accuracy, representational fairness, and the erosion of professional expertise.

This talk places these questions at the center of the discussion. Drawing on insights from both professional perspectives — including translators, accessibility experts, and media producers — and user perspectives from audiences who rely on accessible media, it examines the diverse and sometimes conflicting views shaping the potential future of inclusive communication and access. It argues that while most recent technology offers unprecedented opportunities, it also demands a renewed commitment to responsible innovation, as well as critical education. Future professionals must not only learn how to deploy these technologies but also understand how to evaluate, adapt, and challenge them to ensure that accessibility remains a central, not peripheral, concern. Therefore, it emphasizes the need for a collaborative, user-centred approach to accessible media design and advocates for educational strategies that prepare future professionals to tackle the challenges of technology and media accessibility responsibly.

**Keywords**: audiovisual translation, media accessibility, technology, automation, professional perspectives, user perspectives, education

#### Renata ŠPUKIENĖ

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#### Kalbos technologijų lūžio taškas: ar vertimo industrija pasirengusi išgyventi?

Dirbtinis intelektas žadėjo revoliuciją, bet daugelio pirmoji reakcija buvo panika. Staigus LLM, MT ir kitų DI technologijų proveržis ne tik atvėrė naujas galimybes, bet ir sukėlė fundamentinius klausimus: kaip vertimo ir kalbos industrija turi keistis, kad liktų aktuali, reikalinga ir tvari? Šis pranešimas kviečia pažvelgti į realią situaciją be iliuzijų – atvirai aptariant, kodėl dalis institucijų, įmonių ar paslaugų teikėjų vis dar abejoja, ką reiškia "kalba kaip paslauga" ir kaip DI keičia vertimo vertės grandinę: nuo kalbos specialisto prie sprendimų architekto. Pakalbėsime apie pavyzdžius, kaip dirbtinio intelekto sprendimai – mašininis vertimas, didieji kalbos modeliai, NLP – jau šiandien keičia ne tik darbo įrankius, bet ir pačią vertimo paslaugos sampratą. Taip pat bus keliami klausimai apie mažųjų kalbų ateitį: kodėl kokybiški kalbos duomenys tampa geopolitine vertybe, ir kaip Baltijos šalys gali ne tik neatsilikti, bet ir lyderiauti. Tai pranešimas visiems – sprendimų priėmėjams, vertimo profesionalams, dėstytojams ir studentams – kurie nori ne tik reaguoti į pokyčius, bet ir aktyviai juos formuoti.

**Reikšminiai žodžiai:** vertimo industrija, kalbos industrija, mašininis vertimas, didieji kalbų modeliai, DI sprendimai

#### Language Tech at a Breaking Point: Is the Translation Industry Ready to Survive?

Artificial intelligence promised a revolution — but for many, the first reaction was panic. The rapid rise of LLMs, machine translation and other AI technologies has not only opened up new possibilities, but also raised fundamental questions: how must the translation and language industry evolve to remain relevant, needed, and sustainable?

This talk invites you to look at the current landscape without illusions – openly addressing why some institutions, companies, or service providers are still hesitant, what it truly means to treat language as a service, and how AI is transforming the translation value chain: from language specialist to solution architect.

We will explore real-life examples of how AI solutions – machine translation, large language models, and NLP – are already changing not just the tools we use, but the very concept of what a translation service is.

We will also raise essential questions about the future of small languages: why high-quality language data is becoming a geopolitical asset, and how the Baltic countries have the potential not only to keep up, but to lead.

This is a talk for everyone – decision-makers, language professionals, academics, and students – who want not just to react to the change, but to actively shape it.

Keywords: translation industry, language industry, machine translation, LLM, AI solutions

#### **Marco ZAPPATORE**

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### From Statistical Models to Generative AI: Exploring the Paradigm Shift in Machine Translation

Over the last decade, machine translation (MT) has evolved profoundly, moving from rigid statistical systems to the breakthrough of neural machine translation and, more recently, to highly adaptive, generative AI solutions powered by large language models (LLMs), where technical evolution is even faster. This represents a significant shift in the way human translators are supported by the technology and promises not only to redefine translation practices and quality but also to disclose new opportunities for language and translation education.

The capability of generative AI to provide outputs that are more context-aware, nuanced, and creative than the previous generation of MT tools offers today more options to translators, students, and educators. Nevertheless, a variegated range of novel challenges has emerged, including hallucinations, biases, fluency-vs-accuracy trade-offs, and the redefinition of the role of human experts in AI-assisted translation.

During this talk, we will explore several technological enablers that can be employed in the translation landscape, such as interactive platforms for MT post-editing, Al-powered writing assistants, automatic tools for subtitling and dubbing, ad-hoc services for specialised translation (e.g., healthcare or legal), by considering their features and their suitability to specific application domains.

Finally, we will deal with the potential introduction of these aspects in translation teaching and training, with the aim of encouraging critical engagement of students with machine-generated outputs, as well as for providing learners with adequate skills for Al-augmented professional environments, where human expertise is still relevant and generative Al tools should be perceived as a powerful ally and an amplifier of analytical skills, rather than a menacing replacement.

**Keywords:** machine translation, generative AI solutions, hallucinations, AI-assisted translation, translation teaching.

#### Eglė ŽILINSKAITĖ

Europos Komisijos Vertimo raštu generalinio direktorato atstovė Lietuvoje Egle.ZILINSKAITE@ec.europa.eu

### Europos Komisijos Vertimo raštu generalinio direktorato iniciatyvos ir kuriami jrankiai

Europos Komisijos Vertimo raštu generalinis direktoratas (VRGD) — viena didžiausių vertimo tarnybų pasaulyje. DGT kasmet išverčia daugiau kaip 2 mln. puslapių įvairių tekstų, daugumą jų sudaro teisės aktai. Kadangi vertimo poreikis nuolat auga, o darbuotojų skaičius mažėja, o dėl tekstų pobūdžio naudoti privačių bendrovių sukurtus produktus ne visada yra saugu, DGT jau seniai pradėjo plėtoti mašininio vertimo technologiją. VRGD sukurta "eTranslation" dabar prieinama ne tik VRGD vertėjams, bet ir kitiems, išorės vartotojams. Tačiau VRGD neapsiribojo vien tik mašininiu vertimu. Pastaraisiais metais sparčiai plėtojamos ir tobulinamos DI pagrįstos priemonės, kuriomis gali naudotis ne tik Europos Komisijos ir kitų ES institucijų darbuotojai, bet ir išorės naudotojai. Tarp jų galima paminėti "eBriefing", skirtą parengti oficialių dokumentų rinkinių ataskaitas, "eReply", skirtą padėti parengti atsakymus į užklausas, prašymus, klausimus, "WebText", skirtą su DI pagalba patobulinti tekstus anglų, prancūzų ar vokiečių kalbomis, kad jie geriau tiktų skelbimui interneto svetainėse, "Accessible Text", skirtą patobulinti tekstą anglų kalba, kad jis būtų suprantamesnis platesniam visuomenės ratui, "eSummary", skirtą parengti dokumento svarbiausios informacijos santrauką, "Speech-to-Text", skirtą kalbos keitimui į tekstą ir pan.

Svarbu paminėti, kad dauguma šių DI pagrįstų kalbos priemonių yra pritaikytos ne tik plačiai vartojamoms kalboms, bet ir visoms ES kalboms, kurios ne visada patenka į kalbos technologijų plėtotojų akiratį. Šių priemonių plėtra padeda ne tik atlikti pagrindines VRGD funkcijas, bet ir prisidėti prie šių priemonių prieinamumo įvairių kalbų ir įgūdžių vartotojams.

**Reikšminiai žodžiai**: Europos Komisijos Vertimo raštu generalinis direktoratas, DI grindžiamos kalbos priemonės, mašininis vertimas.

#### Initiatives and Tools Developed and Used at the EC DGT

The European Commission's Directorate-General for Translation (DGT) is one of the largest translation services in the world. DGT translates more than 2 million pages of texts every year. most of which are legal texts. As the demand for translation is constantly growing, staff numbers are shrinking and the nature of texts means that it is not always safe to use products developed by private companies, DGT has long been developing machine translation technology. The eTranslation developed by DGT is now available not only to DGT translators but also to external users. However, DGT has not limited itself to machine translation. In recent years, Al-based tools have been rapidly developed and improved and are now available not only to staff of the European Commission and other EU institutions but also to external users. These include eBriefing for the production of reports on official dossiers, eReply for the preparation of replies to gueries, requests and guestions. WebText for the enhancement of texts in English, French or German with the help of AI, eSummary to produce a summary of the most important information in a document, Speech-to-Text to convert speech into text, etc. It is important to note that most of these Al-based language tools concern not only widely spoken languages, but also all EU languages, which are not always on the radar of language technology developers. The development of these tools not only contributes to the core functions of the DGT, but also to the accessibility of these tools for users of different languages and skills.

**Keywords:** European Commission's Directorate-General for Translation (DGT), Al-based language tools, machine translation.

#### SEKCIJŲ PRANEŠIMŲ SANTRAUKOS ABSTRACTS OF PARALLEL SESSIONS

#### Lina ABRAITIENĖ

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#### **Enhancing Opera Accessibility: The Role of AI in Surtitling**

The incorporation of artificial intelligence (AI) into opera surtitling is driving a transformative shift in how audiences experience and access opera. This presentation explores recent developments in AI-enhanced surtitling, emphasising its potential to make performances more inclusive for non-native speakers, individuals with hearing impairments, and those with reading difficulties. Technologies such as audio subtitling services, which vocalise surtitles, have been shown to significantly improve comprehension and engagement (Iturregui-Gallardo & Solás, 2019).

In addition to improving surtitling processes, AI and multimedia tools – including virtual reality and big data analytics – are redefining audience interaction with opera. These innovations support more immersive and personalised experiences, particularly appealing to younger and more digitally literate viewers (Li, 2022; Wei, 2023). Research indicates that real-time AI-generated translations and contextual cues enhance audience understanding and enjoyment (Matamala & Orero, 2022; Li, 2025).

Yet, technological advancements alone are not enough. To truly broaden access, opera institutions must also address longstanding cultural and economic barriers. Strategies such as reduced ticket prices, public broadcasts, and interactive exhibitions have proven effective in attracting more diverse audiences (Guachalla, 2017; Nyman, 2022). When combined with Aldriven tools, these efforts can help reposition opera as an accessible and engaging cultural experience.

Finally, the role of AI in opera education is gaining importance. By supporting interactive, adaptive learning, AI can help cultivate future audiences with a deeper understanding and appreciation of opera (Li, 2025). This session highlights how AI-driven surtitling, when paired with inclusive institutional strategies, offers a powerful pathway toward democratising opera and enhancing its cultural reach in the digital age.

Iturregui-Gallardo, G., & Solás, I. (2019). A template for the audio introduction of operas: A proposal. Hikma, 18(2), 217–235. https://doi.org/10.21071/hikma.v18i2.11529

Matamala, A., & Orero, P. (2022). Opera co-creation: From collaborative translation to artistic co-creation in audiovisual translation and accessibility. *Hikma*, 21(2), 41–63. https://doi.org/10.21071/hikma.v21i2.13836

Nyman, I. (2022). Democratizing opera: Accessibility to opera in the digital age among Swedish-speaking Finns. *International Journal of Cultural Policy*, 29(6), 786–800. https://doi.org/10.1080/10286632.2022.2114469

**Keywords:** accessibility, artificial Intelligence, audience engagement, opera, surtitling.

#### Jūratė BAURAITĖ

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#### Al and Multiple Intelligences in Language Learning

This paper explores the intersection of Howard Gardner's Theory of Multiple Intelligences (MI) and emerging artificial Intelligence (AI) technologies in education. Gardner's theory, introduced in the late 1970s, challenged the traditional view of intelligence as a single, fixed trait. Instead, he proposed that individuals possess a variety of relatively individual intelligences – such as linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic – each contributing uniquely to how we learn and interact with the world.

The paper contrasts MI with learning styles, emphasising how MI provides a broader, more scientifically grounded framework for understanding students' diverse cognitive abilities. Criteria for defining an intelligence include neurological evidence, developmental patterns, cross-species relevance, symbolic representation, and differentiation through experimental tasks and psychometrics. In parallel, the presentation examines how AI-powered educational technologies — like intelligent tutoring systems, personalised learning platforms, and data analytics are reshaping the learning environment. While AI can adapt to individual learning paths and optimise content delivery, it lacks the human capacity for emotional perception and empathy, raising questions about its ability to truly replicate human-centered teaching approaches. To explore how these intelligences manifest in contemporary learners, a student survey was conducted to assess individual MI profiles and perceptions of AI in education. The findings offer insight into how students view the role of AI in supporting their learning, and how their dominant intelligences may influence those perceptions.

**Keywords:** multiple intelligences, artificial Intelligence, languages, learning, participation, engagement.

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#### **Artificial Wit: How Well Does Machine Translation Handle Wordplay?**

Wordplay presents a significant challenge in translation, especially when it is a part of multimodal text, such as film. In such cases, meaning is conveyed both through verbal text and visuals. Additionally, when it comes to dubbing, synchronization becomes a crucial factor. Often, it is difficult to meet all these requirements simultaneously: maintaining the meaning, ensuring synchronization, and capturing both interpretations of the play. Translators are increasingly utilizing AI tools to improve their work processes. In this presentation, the question of whether AI is capable of translating both verbal and verbal-visual wordplay effectively will be explored.

In this research, the translation of verbal and verbal-visual play from the film "Soul" (directed by P. Docter and K. Powers, 2020) and its Lithuanian-dubbed version "Siela" will be explored. The aim is to compare professional dubbing with suggestions generated by AI, focusing on the ability to retain multiple meanings and maintain dubbing synchrony.

The study indicates that, currently, the translation quality of verbal and verbal-visual play by professional translators in the English-Lithuanian language pair surpasses that of Algenerated suggestions. Consequently, there remains significant potential for advancements in Al technologies concerning the translation of verbal and verbal-visual play.

**Keywords:** wordplay, translation, dubbing, AI, animation.

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#### Al in Higher Education: Disruptive Force or Critical Ally?

The rapid proliferation of artificial intelligence (AI) tools has had a profound impact on education, particularly within higher education. The recent appearance of DeepSeek has caused a stir among North American universities, with the faculty expressing concerns about its indiscriminate use in various fields of study. Media outlets characterised this situation as awake up call (BBC, 2025; Forbes, 2025). While AI presents both challenges and opportunities for faculty and students alike, its application requires a critical approach that ensures ethical considerations are upheld and academic integrity preserved. These tools have had a significant impact in the world of translation (Pym & Hao, 2024), changing market expectations and leading to a growing reliance on post-editing tasks for translators. Given these developments, it is imperative to address the AI's role in translator training to bridge the gap between academic instruction and industry requirements.

Therefore, this paper aims to evaluate this impact through the assessment of students' perceptions. Specifically, it explores how students integrate AI into their learning processes and translation practice, assessing whether they engage with these tools critically or rely on them as substitutes for their own cognitive efforts. The research is based on a survey conducted among master's students in Translation in northern Portugal. The findings provide insights into the role of AI in this academic context, contributing to the broader discourse on AI's implications for translator training and professional practice.

Ng, K. (2025 February 4). DeepSeek: The Chinese Al app that has the world talking. *BBC*. https://www.bbc.com/news/articles/c5yv5976z9po

Penprase, B. (2025 March 12). DeepSeek – A Wake-Up Call For US Higher Education. *Forbes*. https://www.forbes.com/sites/bryanpenprase/2025/03/12/deepseeka-wake-up-call-for-us-higher-education/

Pym, A. & Hao, Y. (2024). How to Augment Language Skills: Generative AI and Machine Translation in Language Learning and Translator Training. London. https://doi.org/10.4324/9781032648033

**Keywords:** Al, higher education, translation practice, translator training, critical thinking.

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### Alfabetinio rašto medija, ekranas ir individo autonomijos klausimas dirbtinio intelekto amžiuje

Pranešime, remiantis M. McLuhano, V. Flusserio ir S. Freudo teorijomis, medijų raida bus atskleidžiama kaip narcizinė žmogaus strategija apsisaugoti nuo smurto ir skausmo, transformuojant biosferą į mediasferą. M. McLuhanas medijas laiko ne tik "prostetiniais", bet ir "anestetiniais" žmogaus tęsiniais, tai yra apsaugine "membrana", mažinančia išorinį dirginimą per saviamputaciją, o V. Flusseris kultūros istoriją interpretuoja kaip abstrahuojantį atsitraukimą nuo trimatės biosferos į dvimatę, vienmatę ir nulinę dimensijas: nuo įrankių iki rašto, atvaizdų ir skaitmeninių ženklų. Šiuolaikinis algoritminis dirbtinis intelektas, valdantis automatinius aparatus, kelia grėsmę individo autonomijai, paversdamas jį funkcionaliu "žaidėju" technonarkozės būsenoje. Pranešime bus pasiūlyta išeitis – žaidimas su aparatu, lanksčiai judant tarp rašto (racionalumo) ir ekrano (technovaizduotės) medijų. Raštas padeda kritiškai perprasti algoritmų logiką, išlaikant distanciją nuo ideologijų, slypinčių techniniuose atvaizduose.

Tarpdisciplininiai naujieji humanitariniai mokslai, jungiantys humanitarinius, socialinius ir informatikos mokslus, tampa būtina priemonė algoritmų kultūros analizei ir individo emancipacijai. Pranešimas be kita ko parodys, kaip sąmoningas medijų dimensijų derinimas skatina kultūrinę ekologiją ir nesmurtinį pasipriešinimą automatizuotai elgsenai, išvengiant eskapizmo ir nihilizmo.

Reikšminiai žodžiai: narcisizmas, rašto medija, ekranas, aparatas, dirbtinis intelektas.

#### Greta DANILAVIČIENĖ

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#### **Application of Al Tools in Education: Supporting Students with Special Needs**

Integrating students with specific needs into university classes, particularly during oral presentations, is essential for fostering an inclusive educational environment. This study analyzes how Al-generated summaries can help overcome these obstacles and improve comprehension of presented material.

Al can tailor educational content to meet the needs of each student, providing personalized interventions that reflect their strengths, weaknesses, and interests (Mitra et al., 2023; Askarova et al., 2024). In this case study, students faced difficulties interviewing peers' presentations due to speech clarity issues and transcription limitations. Pronunciation challenges due to unclear articulation complicated the process. Traditional transcription methods failed to produce fully accurate and structured notes. Students with pronunciation challenges faced additional difficulties in ensuring their spoken content was accurately transcribed and understood. Al-powered summarization proved particularly useful in mitigating these issues by extracting major points and structuring them into clear, concise summaries.

The findings suggest that AI-powered summarization is a practical and effective tool for supporting students. By refining raw transcripts into meaningful summaries, AI can overcome gaps in comprehension, ensuring access to course content for students with special needs. This study highlights the potential of AI tools in education and recommends further exploration of their applications in academic settings.

Askarova, S., Madiyeva, G., Mirqosimova, M., Boqiyeva, R., Nazarov, A., & Baratova, D. (2024, May). A well-designed personalized and optimized model system implementation for specific education system. In 2024 4th International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE) (pp. 607–611). IEEE. 10.1109/ICACITE60783.2024.10617032

Mitra, S., Lakshmi, D., & Govindaraj, V. (2023). Data analysis and machine learning in Al-assisted special education for students with exceptional needs. In Al-assisted special education for students with exceptional needs (pp. 67–109). IGI Global. 10.4018/979-8-3693-0378-8.ch004

**Keywords:** All in education, special needs support, inclusive learning, speech transcription.

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#### Post-Editing in Audiovisual Translation: Where is it Taking Us?

The rapid advancements in machine translation (MT) and artificial intelligence (AI) have significantly impacted the field of Audiovisual Translation (AVT), particularly in subtitling, dubbing, and speech recognition. Consequently, post-editing has evolved into a vital skill for AVT specialists. While MT can enhance efficiency, it often struggles with linguistic accuracy, cultural nuances, and the technical constraints of AVT, necessitating human intervention to ensure quality.

This presentation explores the role of post-editing in AVT, examining its challenges, opportunities, and practical applications. Key topics will include the limitations of MT in AVT, such as contextual misunderstandings, text condensation, and synchronization with audiovisual elements. To illustrate the challenges of post-editing and assess students' reliance on machine output, an experiment was conducted with a group of master's students. They were given a short video extract with machine-generated subtitles containing several introduced errors, including mistranslations, incorrect segmentation, and unnatural phrasing. The experiment aimed to measure how often students blindly accepted machine output versus applying critical post-editing skills to correct inconsistencies. The results revealed varying degrees of dependence on MT, highlighting the need for training that enhances students' ability to critically evaluate and refine automated translations rather than passively accept them.

**Keywords**: post-editing, audiovisual translation, machine translation.

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### Development of Al Literacy Through Action-Oriented Scenarios in University Language Education

The rise of multimodal Gen Al tools is transforming university language classes by introducing opportunities for novel learning tasks (e.g., making video summaries, preparing presentations with live chatbot-assisted interventions, creating immersive educational experiences). Simultaneously, incorporating these tools into language-learning classes offers a valuable opportunity to enhance students' Al literacy and equip them for the evolving technological landscape. In this study, we aim to show the potential to enhance students' Al literacy through language-learning scenarios based on the action-oriented approach, which is an innovative and promising approach to language learning (Piccardo & North, 2019). We designed two language-learning scenarios including a number of subtasks asking students to use various Gen Al tools. Qualitative data was collected via several surveys to students as well as their reports to answer the following research question: How do they understand, evaluate, and use All systems and tools in the given language-learning scenarios? Data analysis is currently in progress utilizing a reflexive thematic analysis (Braun & Clarke, 2022) approach. This research potentially holds importance for supporting university language instructors in incorporating generative AI into their teaching practices, while simultaneously equipping students for the growing prevalence of Al-mediated multimodal communication in real-world contexts.

Braun V., & Clarke V. (2022). Thematic analysis: A practical guide. SAGE

Piccardo, E., & North, B. (2019). *The action-oriented approach: a dynamic vision of language education*. Multilingual Matters Limited.

**Keywords:** generative artificial intelligence, artificial intelligence literacy, language education, action-oriented approach, higher education.

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#### **Generative AI in Translator Training**

With the rapid rise of large language models and generative AI, there is a growing debate about how these technologies can support translators, but also how they might actually reshape the entire profession. It is becoming clear that translators today need more than just strong language skills. They also need to understand how to use AI tools wisely, ethically, and effectively, so they can navigate the risks and make the most of the opportunities. This is where academia has a big role to play. Educators and universities need to rethink how translation is taught. That means updating the curriculum to reflect the fast-changing demands of the industry, encouraging students to be creative and think critically, and promoting collaboration both within academia and with industry professionals. These kinds of partnerships can enrich training and help future professionals build teamwork and communication skills that are just as important as technical ones. On top of that, building AI literacy among translators is key. To succeed, we also need to invest in training the trainers by making sure they are up to date with new technologies and industry shifts.

**Keywords:** artificial intelligence, GenAl, translator training, translation curriculum.

#### Akvilė KATILIENĖ

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#### The Art of Subtitling: Rewards and Challenge

Over the past few decades, the rapid development of machine translation (MT) technologies and artificial intelligence (AI) has often been perceived by many professional translators as a potential threat to their livelihoods and has raised concerns about the diminishing role of human expertise in the field of translation. However, in reality, these tools, when used thoughtfully and strategically, can significantly enhance the translation process. In subtitle translation, rather than replacing human translators, they have the potential to support and streamline various aspects of the workflow, ultimately saving time and increasing efficiency when a translator feels the pressure to maintain both accuracy and creativity within tight deadlines also facing technical constraints and linguistic nuances. In this light, the integration of AI into translation practices of audiovisual content should be viewed not as a threat, but as an opportunity for innovation and professional growth.

**Keywords**: subtitle translation, audiovisual, machine translation, MT, artificial intelligence, Al.

#### Vitalija KAZLAUSKIENĖ, Anastasija BELOVODSKAJA, Kinga GEBEN, Diana ŠILEIKAITĖ-KAISHAURI, Eglė ŽURAUSKAITĖ, Virginija MASIULIONYTĖ

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### Generatyvinis dirbtinis intelektas kalbu ugdyme: tarp technologinio proveržio ir pedagogines atsakomybes

Skaitmenizacija vis labiau formuoja šiuolaikinę švietimo politiką ir praktiką. Lietuvoje skaitmeninių kompetencijų ugdymas laikomas strateginiu prioritetu ("Lietuva 2050"), o generatyvinis dirbtinis intelektas (GDI) iškyla kaip viena svarbiausių ugdymo inovacijų. GDI ne tik automatizuoja mokymosi turinio kūrimą, bet ir keičia pedagoginį procesą, pereinant prie personalizuoto, mediatizuoto mokymo(si) modelio. Naujausi tyrimai (Khosravi et al., 2022) rodo, kad GDI padeda lavinti kalbinius gebėjimus, stiprina refleksiją ir kritinį mąstymą.

Kalbų mokyme DI tampa ne tik žinių perteikimo, bet ir komunikacinių, mediacijos bei tarpkultūrinių kompetencijų, ypač svarbių globalioje visuomenėje ir integraciniame kontekste, ugdymo priemone. Tačiau technologinis proveržis reikalauja pedagoginės atsakomybės: mokytojas išlieka esminiu ugdymo proceso mediatoriumi, užtikrinančiu etišką ir tikslingą GDI taikymą.

Šio pranešimo tikslas – atskleisti GDI taikymo galimybes ir iššūkius svetimųjų kalbų mokymo(si) procese atsižvelgiant į šiuolaikinės švietimo skaitmenizacijos kontekstą. Aptariama GDI vieta kalbų ugdymo paradigmoje, analizuojamos pedagoginės ir etinės dilemos, pristatomos komunikacinių kompetencijų ugdymo strategijos. Pranešime taip pat pasidalijama nacionaliniu mastu vykdomos pedagogų kvalifikacijos tobulinimo programos patirtimi, kurioje GDI buvo taikomas kaip inovatyvus kalbų mokymo(si) įrankis. Ši patirtis rodo, kad tik atsakingai integruotas GDI gali tapti tvarios, solidarios ir daugiakalbės švietimo aplinkos dalimi.

Khosravi, H., Shum, S. B., Chen, G., Conati, C., Gasevic, D., Kay, J., Knight, S., Martinez-Maldonado, R., Sadiq, S., & Tsai, Y.-S. (2022). Explainable artificial intelligence in education. *Computers and Education: Artificial Intelligence, 3*, 100074. https://doi.org/10.1016/j.caeai.2022.100074

Lietuvos Respublikos Vyriausybė. (2023). *Valstybės ateities vizija. Lietuva 2050*. https://lrv.lt/media/viesa/saugykla/2023/12/aKnLV3W7\_4g.pdf

**Reikšminiai žodžiai:** generatyvinis dirbtinis intelektas (GDI), kalbų ugdymas, tarpkultūrinė kompetencija, svetimųjų kalbų mokymas(is).

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#### Eye-tracking Exploration of the Geography Texts Reading Strategies Used by 9thgrade Pupils

Eye-tracking research on geography reading texts shows that visual behaviour varies significantly depending on pupils' reading strategies. Eye tracking measures a pupil's visual attention and provides a lot of information about where, when, for how long, and in what sequence a pupil is looking at certain information in or about a space (Kiefer et al., 2027). This presentation analyses map-reading behaviour in geography map-reading tasks in the 9<sup>th</sup> grade. The existing literature lacks investigations that analyse task-oriented map reading, quantitative eye-tracking indicators such as fixation durations, saccade patterns, or returns.

A Geography Higher Thinking Skills Task (GHTST) was created taking into account the requirements of the general education curriculum. The test is designed to be inclusive of all domains of activity and balanced in terms of achievement and cognitive ability groups. In our study, adaptive processing of spatial data on thematic maps with 9<sup>th</sup>-grade pupils was investigated using Pupil Lab eye-tracking software and think-aloud protocols. Pupils had to solve specific problems using the map and answer the given tasks (GHTST). In this paper, we focus on the strategies used by pupils to find a particular object or meaning on the map.

In response to the question "Which region has the largest oil reserves? Which region has the largest gas reserves?", the participants read the map information needed to answer the question. It has an average time of 28 seconds (time spent) to find the correct answer, with 58 seconds to first fixation (TTFF). The pupils read the titles of the Legend area with an average of 60-61 gaze points. This task was assessed at 1 point (maximum score). High-scoring participants read the information needed to answer the task with a first gaze fixation (TTFF) 12 (5 seconds, time spent). Students who answered correctly read the map legend's diagram with 89 gaze points (35 sec). This task was assessed at 1 point (maximum score).

The data analysis mainly concentrated on visual attention patterns and the integration of text and graphics. These show that pupils move from a broad exploratory perspective to focused problem solving and that navigation patterns vary according to the requirements of the task.

Kiefer, P., Giannopoulos, I., Raubal, M., & Duchowski, A. (2017). Eye tracking for spatial research: Cognition, computation, challenges. *Spatial Cognition & Computation*, 17(1-2), 1–19. https://doi.org/10.1080/13875868.2016.1254634

**Keywords:** eye-tracking, geography text, reading strategy, think-aloud protocol, secondary school.

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### Artificial Intelligence and its Role in Translation of Fiction from the Viewpoint of Slovak Literary Translators – Yea or Nay

Over the last decade, artificial intelligence (AI) has become an inseparable part of translation studies. Works on the role of AI in translation process (Moorkens et al., 2018; Youdale, 2020; Shahmerdanova, 2025), the future of translation in the AI era (Zanaty, 2024; Ling, 2024), AI in education (Shengquan & Yu, 2021; Xiaoxian, 2024) and many other such topics have been published. Artificial intelligence is commonly employed in translation of various text genres. but mostly in translation of specialised texts such as legal (Al-Romany & Kadhim, 2024), or medical (Andalib et al., 2025). It is particularly interesting to see whether and how AI is used in translation of literary texts as it is a highly creative process (Hadley et al., 2022). The aim of the article is to map the use of Al by translators of fiction in Slovakia from a sociological viewpoint. In the first phase of our research, we present results of semi-structured interviews with a sample of active literary translators in Slovakia, discussing various areas reflecting the use or non-use of AI in translation of fiction from various languages and different genres, the influence of AI on the translation process, the use of AI in translation, etc. No similar research has been conducted in Slovak academic milieu; thus, our results will enrich the academic environment and paint a picture of how AI is used in literary translation including its advantages, disadvantages, and best practice recommendations.

Al-Romany, T. A. H. & Kadhim, M. J. (2024). Artificial Intelligence Impact on Human Translation: Legal Texts as a Case Study. *International Journal of Linguistics, Literature and Translation* 7(5), 89–95, DOI: 10.32996/ijllt

Andalib, S. et al. (2025). Using AI to Translate and Simplify Spanish Orthopedic Medical Text: Instrument Validation Study, *JMIR AI* 4(9). DOI:10.2196/70222

Zanaty, D. G. (2024). The Future of Human Translation in the Artificial Intelligence Era. *Delta University Scientific Journal* 7(2), 257–274.

Hadley, J. L. et al. (2022). *Using Technologies for Creative-Text Translation*, New York/London: Routledge, 206 p.

Horváth, I. (2021). Al in interpreting: Ethical considerations. In: *Across Languages and Cultures* 23 1, 1–13 DOI: 10.1556/084.2022.00108

Ling, Y. (2024). The Feasibility Study of Artificial Intelligence ChatGPT in Translation Field, *Frontiers in Computing and Intelligent Systems* 8(1), 52–57, DOI: https://doi.org/10.54097/5vp4mn42

Moorkens, J. et al. (2018). Translators' Perceptions of Literary Post-editing using Statistical and Neural Machine Translation. *Translation Spaces* 7(2), 240–262. DOI:10.1075/ts.18014.moo

Shengquan Y., & Yu, L. (2021). *An Introduction to Artificial Intelligence in Education*, Singapore: Springer, 198 p.

Shahmerdanova, R. (2025). Artificial Intelligence in Translation: Challenges and Opportunities. In: Acta Globalis Humanitatis et Linguarum 2 (1), 62–70, DOI:10.69760/aghel.02500108

Xiaoxian, Ch. (2024). Research on the Application of Artificial Intelligence in Translation Courses. *International Journal of Education and Humanities* 12(1), 41–44. DOI: https://doi.org/10.54097/3c1b8w36

Youdale, R. (2020). Using Computers in the Translation of Literary Style: Challenges and Opportunities. New York/London: Routledge, 242 p.

**Keywords:** Al in literary translation, artificial intelligence, literary translation, Slovak literary translation, Al in translation practice.

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#### **Integration of AI in Higher Education**

The presentation is intended to share knowledge, expertise and best practices in the area of Public Administration and Public Policy with a particular focus on the integration of AI in higher education. Having recently presented a paper on this topic, I aim to bring valuable insights into how AI can transform teaching, learning, and administrative processes in inclusive and ethical ways. Through interactive teaching sessions, knowledge exchange, and discussions, I hope to enhance the international dimension of the event, foster interdisciplinary collaboration, and explore innovative solutions to address the challenges and opportunities of AI in higher education.

**Keywords**: public administration, public policy, higher education, challenges, opportunities.

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### Machine-Generated Language and Democratic Governance in South Africa: Navigating Trust, Transparency, and Citizen Agency in the Al Era

As artificial intelligence (AI) systems, particularly those powered by natural language processing and large language models, gain traction in governance processes globally, African democracies are increasingly encountering both the promise and the peril of machine-generated language. From digital government chatbots and AI-driven policy drafting tools to multilingual translation engines, these technologies are shaping how citizens interact with the state, how policies are communicated, and how democratic participation is mediated. This paper critically examines the implications of machine-generated language for transparency, trust, and citizen agency within the context of African governance. It raises urgent questions: What risks arise when algorithmically generated outputs substitute for human dialogue in citizen-state engagement? And to what extent can machine-generated content uphold democratic values such as inclusivity, equity, and accountability in governance?

Drawing on literature, the paper identifies challenges including digital language bias, the exclusion of indigenous languages, and the opacity of Al-generated narratives. It also highlights opportunities for innovation in public communication, civic education, and participatory governance if local contexts, languages, and ethical frameworks are meaningfully integrated. The paper concludes by proposing a set of guiding principles for the responsible deployment of Al language tools in African democratic settings, emphasising algorithmic transparency and co-designed civic engagement mechanisms to safeguard citizen agency in the digital age.

**Keywords**: machine-generated language, transparency, trust, responsible deployment of AI, democratic governance, civic engagement.

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#### Vertėjo ir dirbtinio intelekto vertimo ringas

Vertėjas be įrankių šiandien, kaip ir tam tikra technologija be vertėjo, yra ne visada funkcionalūs. Dirbtinis intelektas (DI) ir mašininis vertimas vis dažniau testuojami ir pasitelkiami įvairioms vertimo užduotims atlikti. Daug dėmesio skiria tiek mokslininkai, tiek vertėjai praktikai, norėdami kuo plačiau išnaudoti tokių technologinių sprendimų galimybes. Teksto analizės bei vertimo praktikos užsiėmimuose verta išbandyti kartu su DI versti ne tik techninius, bet ir grožinės literatūros tekstus, įsigilinti į terminų, realijų ar kitos specifinės leksikos perteikimo niuansus ir neretai nusistebėti dėl DI galių. Tuo pačiu įdomu tirti, kaip mašininis vertimas ir dirbtinis intelektas susidoroja su terminų ir realijų vertimu, kai yra verčiama iš lietuvių į vokiečių ar anglų kalbas ir atvirkščiai, bei kokiu būdu perteikiami tam tikri terminai ar realijos. Svarbu kritiškai vertinti ir, jei reikia, redaguoti mašininio vertimo ir dirbtinio intelekto pateiktus vertimo variantus. Taip ugdomos esminės vertimo, technologinė, kritinio mąstymo ir kitos kompetencijos. Šiuo tyrimu siekiama aptarti vertėjo ir mašininio vertimo perteiktas realijas iš lietuvių į vokiečių ir lietuvių į anglų kalbas, ir palyginti vertėjo ir "Deepl." bei "GoogleTranslate" vertyklių siūlomas atitiktis.

Tyrimui pasirinktas Jurgio Kunčino romano "Tūla" penktasis leidimas, išleistas 2015 metais, ir Markus'o Roduner'io 2017 metų vertimas į vokiečių kalbą. Romano vertimo į anglų kalbą kol kas nėra, todėl į vokiečių kalbą išversti variantai buvo lyginami su vertyklių variantais anglų kalba. Lyginant vertimus nustatyti įvairūs perteikimo būdai ir pastebėta, kad kai kuriais atvejais naudojamas ne tik tiesioginis vertimas iš lietuvių į vokiečių, bet verčiama per kitas kalbas, pvz., anglų kalbą. Tyrimo rezultatai atskleidė, kad DI siūlomų vertimo variantų analizė ir naudojimas ugdo vertėjo pastabumą, kritinį mąstymą, praplečia bei pagilina žinojimą, tačiau vertėjo kompetencija išlieka svarbiausia.

**Reikšminiai žodžiai**: vertimas, terminai, realijos, dirbtinis intelektas, vertyklės, grožinis tekstas, kompetencija.

#### Lina MARČIULIONYTĖ, Lina INČIURAITĖ-NOREIKIENĖ

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#### **Artificial Intelligence in Academic Debates**

The development of AI-powered tools such as ChatGPT, Grammarly, Beautiful.ai and others has changed how students prepare for academic debates (for more on the structure of debates, see Kriaučiūnienė & Arcimavičienė 2023). These tools assist with various aspects of the process, including research, language improvement and visual design (Mills et al., 2023). Although AI offers considerable support, particularly for students learning a second language or facing tight deadlines (Crompton et al., 2023), there is growing concern about overdependence on these technologies (Mhlanga, 2023). Dependence on AI may hinder the development of essential academic skills, such as creativity, problem-solving and critical thinking.

Our presentation will focus on practical strategies for university lecturers to help students find the right balance between using AI as a support tool and maintaining academic autonomy. We will explore ways of integrating AI into the students' learning process by developing their problem-solving and critical thinking skills. Our approach helps students to use AI for structuring arguments, organising ideas and improving their language skills more effectively. We recommend structuring preparation for academic debates around three key stages: 1) initial stage using ChatGPT, 2) ongoing research of the reading sources and 3) critical reflection. Firstly, students use ChatGPT to generate and structure their arguments. Secondly, they provide research-based evidence by referencing scholarly sources, such as academic publications, statistical data, books from reputable publishers and official websites of research institutions. Lastly, they reflect on the outcomes of the first two stages to develop an informed perspective, integrating AI-generated support and scholarly research into their argument. In this way, we guide students in integrating AI responsibly and help them develop technological competencies and critical thinking.

Crompton, H., Edmett, A., Ichaporia, N., & Burke, D. (2024). All and English language teaching: Affordances and challenges. *British Journal of Educational Technology*, 55(6), 2503–2529. https://doi.org/10.1111/bjet.13460

Kriaučiūnienė, R., Arcimavičienė, L. (2023). *English for Academic Purposes and Research* (C1). Vilniaus universiteto leidykla.

Mhlanga, D. (2023). Open AI in education, the responsible and ethical use of ChatGPT towards lifelong learning. In *FinTech and artificial intelligence for sustainable development: The role of smart technologies in achieving development goals* (pp. 387–409). Springer Nature Switzerland. https://link.springer.com/chapter/10.1007/978-3-031-37776-1\_17

Mills, A., Bali, M., & Eaton, L. (2023). How do we respond to generative AI in education? Open educational practices give us a framework for an ongoing process. *Journal of Applied Learning and Teaching*, 6(1), 16–30. https://doi.org/10.37074/jalt.2023.6.1.34

**Keywords:** artificial intelligence, ChatGPT, academic debates, Al-assisted argumentation, research-based evidence

#### Svitlana MATVIEIEVA

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#### **Building a Parallel Corpus from Written Texts: Methodology and Digital Tools**

The study deals with the methodology and technology of creating parallel corpora, specifically the pre-corpus preparation of texts, the alignment procedure, and uploading the prepared texts to a corpus compilation platform. The research presents a step-by-step algorithm for processing texts for upload into an alignment program followed by compiling the parallel corpus.

The first step involves creating metadata cards for every text. Next comes reformatting the texts and further cleaning: removing non-text elements, intra- and post-text references, contents, bibliography, appendices; correcting dashes, quotation marks, etc. Each text is saved in a separate file in .txt or .pdf format.

To align two texts, we use the NOVA Text Aligner program<sup>1</sup>. Prepared texts can be imported into this program as .txt or .pdf files or copied and pasted. This aligner provides all the editing functions necessary for fast sentence-level alignment. After completing the alignment, the bitext can be exported in various formats (.tmx, .epub and .mobi, .rtf, .csv, .xls, etc.).

To compile the parallel text corpus, we use the Sketch Engine platform<sup>2</sup>, which is software for managing and querying corpora. It provides robust functionality for compiling and querying parallel corpora, supporting both monolingual and multilingual formats, and ensuring a user-friendly interface for managing linguistic data.

The findings of the study and the proposed approach contribute to the development of high-quality bilingual resources, essential for linguistic research, translation studies, and the advancement of language technologies. Further study may focus on automating more stages of the corpus creation process, enhancing the applicability of the methodology in various linguistic and computational fields.

Keywords: parallel corpus, text alignment, bilingual resources, corpus compilation

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<sup>&</sup>lt;sup>1</sup> https://www.supernova-soft.com/wpsite/products/text-aligner

<sup>&</sup>lt;sup>2</sup> https://www.sketchengine.eu

#### Elisabete MENDES SILVA, Isabel CHUMBO

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### "Computatio Litterarum Limitis" Project: Exploring Al's Endless Possibilities in Preserving and Disseminating Rare Books

With around 7500 printed volumes and rare manuscripts preserved in local libraries and archives, Bragança, an inland city in Portugal next to Spain, plays a key role in the region's cultural identity, especially given its historical border significance. Studying and using AI to explore and promote Bragança's bibliographic collections represents a significant cultural initiative, strengthening its heritage value. The project CompLiTT – Computatio Litterarum limitis: Calculations of literary culture on the border, funded by the Portuguese Foundation for Science and Technology and running from November 2024 until April 2026, intends to use technology to provide greater access to these literary treasures, reducing barriers and liaising with foreign cultures.

The project aims to preserve and analyse historical texts while capitalising on AI to improve accessibility. AI software will enable intelligent reading, labelling, thematic analysis, and generating summaries of the books. It also seeks to update Bragança's multilingual catalogue and highlight rare works in seven languages, benefiting both researchers and the public. The AI-driven approach will help connect and contextualise these texts, guaranteeing broader dissemination of Bragança's literary heritage while making book knowledge more democratic and accessible. The work methodology followed is based on meta-analysis and meta-synthesis, grounded on the humanistic study, through observation, documentation and research using the library method, and, finally, through advanced computer resources, which will allow for the organisation and execution of the project.

Therefore, we aim to introduce a wider international audience to the project at this conference, showcasing its literary and technological innovations and benefits. At the same time, by disseminating CompLiTT, we seek to identify similar cases in other European border regions, enabling us to expand and adapt our work to create new contexts.

**Keywords**: archives, rare books, AI, crossborder literary culture, heritage.

#### Irena MOSZCZYNSKA-JANICKA

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### "All that Al Generates is not Gold" – The shift of Educational Focus when Teaching Writing in an ESP Class at the Academic Level

The development of AI has had a great impact on most areas of our lives and teaching foreign languages is no exception here. It is impossible to compete with AI powered tools when it comes to the speed of an information search and analysis, or the pace at which it can produce written texts on any topic. One may not forget that the point of using tools has always been about efficiency, as well as saving time and effort. However, as with any tool one needs to acquire certain skills to be able to use it with a certain precision. Therefore, the focus of teaching writing at the tertiary level of education in the ESP or EAP (English for Specific Purpose or English for Academic Purpose) class should be shifted towards developing other skills so the students "can be critical and verify, and not accept, everything they are offered" by AI. The quoted words of Jean Piaget's about the purpose of education are still valid and show the right direction. Thus, foreign language teachers should create an environment in which students could develop their critical and analytical thinking skills, as well as hone their comprehensive reading to use ChatGTP's assistance in writing their own texts. The talk will focus on practical ideas how to structure an ESP(EAP) language class so that students gain proficiency in English and beyond.

**Keywords:** higher education, academic writing, critical thinking, ESP, EAP.

#### Augustė NALIVAIKĖ

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#### Teaching Writing in the Age of Al: Challenges and Strategies

The advent of artificial intelligence (AI) has significantly transformed various professional fields, including writing. This presentation explores the challenges and opportunities associated with teaching writing at the university level in an era where AI-generated texts are increasingly prevalent. The discussion will focus on two main aspects: the implications of AI on the value of writing professions and the strategies for effectively teaching writing to students who frequently use AI tools.

Firstly, the presentation will address the diminishing value of traditional writing. This shift raises critical questions about the future of writing careers and the skills that students need to develop to remain competitive. As AI continues to evolve, it is crucial to identify which aspects of writing can be enhanced by AI and which require human creativity and critical thinking. Secondly, it will examine the educational challenges posed by students' reliance on AI for writing tasks. The key question is how educators can find a balance between leveraging AI as a tool and ensuring students acquire essential writing skills. This involves developing strategies to integrate AI into the curriculum while maintaining a focus on fostering originality, ethical considerations, and the ability to critically evaluate AI-generated content.

The presentation will propose several strategies to overcome these challenges, including integrating AI literacy into the curriculum, emphasizing the importance of critical thinking and creativity, and fostering a deeper understanding of the ethical implications of AI in writing. By addressing these issues, educators can better prepare students for the evolving landscape of writing professions and help them navigate the complexities of AI-assisted writing.

**Keywords**: Al-assisted writing, Al-generated text, Al literacy.

#### Cristina NICOLAE

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#### **Audiovisual Translation for Inclusion and Accessibility (AVTIA)**

AVTIA is a KA220 Erasmus+ project of cooperation partnerships in higher education, coordinated by George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures, project manager Associate Prof. Cristina Nicolae, PhD (Petru Maior Faculty of Sciences and Letters).

The specific objectives of the AVTIA project are: to raise awareness and generate attitude change of the disparity in inclusion services in different EU member states and the need and obligation to ensure access to information for all persons; to develop innovative educational content and provide practical training for university lecturers and students, who will become key human resources in the field of audiovisual translation for inclusion and accessibility, with a focus on Subtitles for the d/Deaf and hard of hearing (SDH) and Audio Description for the blind and partially sighted (AD).

**Keywords:** audiovisual translation, inclusion, accessibility, subtitles for the d/Deaf and hard of hearing, audio description.

#### Brigita PANTELEJEVA, Eglė VAIČIUKYNAITĖ

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#### **Applications of Generative AI in Business Education in Lithuania**

Generative AI (Gen AI) has been the hottest topic in business and academia – companies seek to understand how to leverage innovative tools while academia aims to enhance the learning experience for business managers (learners). Meanwhile, business education programs can be short or long and run in many formats – online, hybrid, or on campus. Moreover, business education is experiential, and educators can facilitate a more experiential learning environment using Gen AI tools. The existing literature focuses mainly on the most popular Gen AI tool, Chat GPT, in education, while the wide variety of diverse content generation tools such as Synthesia and Colossyan Creator have not been investigated. Additionally, a group of AI tools empowered by neuro data can test the effectiveness of generated content units.

This research aims twofold: (1) to reveal how business education learners learn and engage with Gen AI tools run by experiential learning-based training. (2) To provide a list of Gen AI tools that can enhance business learners' experience. Therefore, quantitative data were gathered through a survey of 168 business learners in Lithuania, and a literature review of the latest academic and practical sources from 2025 was employed. The results showed that the training was structured, informative, practical, and valuable (av. content evaluation: 4.66 from 5.0 points). Participants appreciated the practical examples and the opportunity to test tools during the session. Additionally, several comments noted the training was enjoyable and expressed satisfaction with content and delivery. The gen AI application landscape of enhanced business learners' experience covers education content generation, content effectiveness tests, research and development, warm-up activities, and new delivery formats. Future research can explore the effectiveness of business education using AI neuro tools and real-time data of continuous evaluation of learners' experience.

**Keywords:** Gen AI, business education, GenAI tools, learning experience

#### Artemii PONOMAREVSKYI

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### **Key Factors for Effective Learning through English Medium Instruction in a University Context**

The introduction of English-medium instruction (EMI) courses in higher education institutions has spread globally in recent years (Doiz et al., 2003; Lasagabaster & Doiz, 2021). As a result, both students and teachers face needs and challenges, not only related to English proficiency (Arno-Macia & Aguilar-Perez, 2020) but also to other factors that require attention and/or pedagogical intervention (Richard & Pun, 2022), especially in the AI era. Despite significant research on EMI, there has been insufficient focus on categorizing learning challenges and solutions to the problem of EMI learning effectiveness in a university context. This categorization is needed because most current studies on EMI discuss its ultimate impact on academic results rather than investigating the factors influencing EMI learning effectiveness (Park, 2018). This study aims to analyze data on the impact of various factors on EMI learning effectiveness in a university context by investigating the question: Which pedagogical solutions benefit EMI learning effectiveness and should be considered for university curriculum development? These solutions include using AI as a tool to cope with the challenges of EMI learning through data analysis, content adaptation, using more personalized learning techniques, getting access to study materials, teaching aids, etc. (Merino-Campos, 2025). The methodology is based on conducting a systematic literature review according to the PRISMA aforementioned factors quidelines identify the and pedagogical Recommendations for integration into university curricula have been synthesized based on the needs, challenges and both traditional and Al-based solutions from the literature selected using the PRISMA guidelines.

Arno-Macia, E., & Aguilar-Perez, M. (2020). Language issues in EMI: When lecturers and students can choose the language of instruction. In D. Block & S. Khan (Eds.), *The Secret Life of English-Medium Instruction in Higher Education: Examining Microphenomena in Context* (1st ed., pp. 19–42). Routledge. https://doi.org/10.4324/9781003005667

Doiz, A., Lasagabaster, D., & Sierra, J. M. (2013). *English-medium instruction at universities: Global challenges*. Multilingual Matters.

Lasagabaster, D., & Doiz, A. (Eds.). (2021). Language use in English-medium instruction at university: International perspectives on teacher practice. Routledge.

Merino-Campos, C. (2025). The Impact of Artificial Intelligence on Personalized Learning in Higher Education: A Systematic Review. *Trends in Higher Education*, 4(2), 17. https://doi.org/10.3390/higheredu4020017

Park, J.-K. (2018). English-medium instruction in the Korean higher education context: From an English as a lingua franca perspective. In *English-Medium Instruction from an English as a Lingua Franca Perspective* (pp. 64–77). DOI:10.4324/9781351184335-5

Richard, J. C., & Pun, J. K.-H. (2022). *Teaching and learning in English medium instruction*: An introduction. Routledge.

**Keywords:** English-medium instruction (EMI), EMI learning effectiveness, higher education, curriculum development, pedagogical solutions, systematic literature review, PRISMA guidelines.

#### Jūlija RASTORGUJEVA

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#### **Audio Description of Silent Film: How Cinematic Framing Guides Narrative Choices**

This presentation examines how cinematic framing in silent film shapes the narrative choices made in audio description. In the absence of spoken dialogue, silent films depend on visual storytelling – through camera angles, shot composition, editing, and movement – to communicate meaning, emotion, and character dynamics. For audio describers, these visual strategies become essential cues for deciding what information to convey to blind and visually impaired audiences. Focusing on framing techniques such as the over-the-shoulder shot, close-ups, and long shots, the talk explores how visual perspective can signal narrative importance, emotional tone, or shifts in point of view. Rather than offering a purely objective account of what is visible on screen, effective audio description interprets and prioritizes visual elements in a way that aligns with cinematic intention.

By drawing on examples from silent cinema and integrating insights from film theory, this presentation argues that a deep understanding of cinematic language enhances the descriptive process. As AI tools increasingly assist in or automate description tasks, the human interpretive role remains vital in preserving the aesthetic and narrative qualities of the original film.

**Keywords:** audio description, silent film, cinematic framing, visual storytelling, media accessibility, film narration, visual perspective.

#### Annalisa SANDRELLI

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#### Live Subtitling of Press Conferences in Film Festivals: How Easy is it?

The last few years have seen a growing demand for accessibility across language and sensory barriers. An area that has received special attention is live subtitling to make TV broadcasts and live events accessible to all. However, despite the huge progress made by speech recognition and machine translation technologies, live subtitling is not as straightforward as it may seem. Indeed, several hybrid human-machine interaction practices have developed and there is no "one size fits all" solution, as many factors (including available budget, equipment and expertise) must be taken into account. The talk will provide an overview of such hybrid practices, drawing on a recent project the author was involved in (SMART - Shaping Multilingual Access with Respeaking Technology) and will then present a practical case study focused on the challenges of subtitling the press conference announcing the films selected for the Venice Film Festival every summer. The press conference is in Italian and attracts the interest of the international press and film buffs everywhere. The event is live streamed on YouTube about a month before the beginning of the film festival and a simultaneous interpreting service (from Italian into English) is provided. By contrast, no professional subtitling is provided (in Italian or English), and the only subtitles available to viewers are the automatic ones produced via YouTube. The ARTS (Accessibility via Real Time Subtitling) project is carrying out a systematic evaluation of the accuracy that it is currently possible to achieve in this specific setting and has identified key challenges both in relation to speech recognition and machine translation. The aim of the project is to evaluate to what extent accessibility is actually ensured in this setting and draw up some best practice guidelines.

**Keywords:** live subtitling, press conferences, film festivals, accessibility, speech recognition, machine translation.

#### Alina SECARĂ, Emília PEREZ

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#### **Accessibility Training in Translation Studies' Programmes**

This hands-on workshop is aimed at translation trainers with experience integrating accessibility in their courses, as well as trainers who are just starting out in this area. Based on the evolving landscape of accessibility training within translation and interpreting curricula, we invite you to an interactive discussion on how topics such as Captioning/Subtitling for the Deaf and Hard of Hearing, Audio Description, Easy-to-Read and Plain Language, Sign Language Translation and Interpreting, Digital Accessibility or Access Coordination and Inclusive Communication Design are/could/should be integrated in translation curricula. By combining individual experiences and case studies shared by the moderators, as well as participants, we will seek to answer questions such as:

- What could an accessibility course description look like?
- How could Al be used in its delivery?
- Which supporting materials are already out there and could be used by a trainer?
- How might collaboration with colleagues, external partners and target groups look like?
- What does it take to be an accessibility trainer?

**Keywords:** accessibility, Translation Studies, translation trainers, subtitling for the deaf and hard of hearing, audio description, digital accessibility.

#### Jana SLEZAKOVA, Stanislav POPELKA, Roman CHVATAL

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#### Geometric Imagination: Eye-Tracking Analysis of Problem-Solving Strategies

The paper presents research in the field of geometry and geometric imagination (GI) of primary and secondary school pupils focused on the diagnosis of heuristic solving strategies of geometric picture problems (GPP) using eye-tracking. Geometric imagination is considered a higher form of spatial imagination. Geometric imagination in the plane as the ability of the illustrative element of thinking to generalize real plane figures together with their geometric properties and to manipulate them only in imagination to explore their interrelations and properties (Slezakova, 2023). The basis of successful geometry problem-solving also lies in solving problems creatively. Geometry problems that encourage students' creativity (finding solutions in a non-standard situation) will ensure a better understanding of geometric concepts and relationships. Our research focused on identifying selected solution strategies using eye-tracking. We were also interested in the test subject's attention and ability to combine different shapes. A non-standardized didactic test was used to detect geometric imagination in the plane.

That test promotes the development of visual memory and allows to development of the ability to determine a new representation of an object after its transformation in the plane. The highest visual attention was focused on the last task. The solving strategy and the geometry task's success rate are correlated. The third hypothesis concerned the relationship between solving strategy and solution speed. Here we took advantage of the fact that the number of fixations correlates significantly with the solution time.

Slezáková, J. (2022). *Trojúhelníkové figury: otestuj si geometrickou představivost*. Olomouc: Univerzita Palackého Olomouc.

**Keywords:** language learning, generative AI, large language models, machine translation, cognitive efforts.

#### Audronė RAŠKAUSKIENĖ, Roza ZHUSSUPOVA

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L. N. Gumilyov Eurasian National University, Astana, Kazakhstan rozazhusupova@gmail.com

### Enhancing Academic Writing Skills with Al-Powered Tools: Empowering Student Success in Higher Education

Academic writing holds a highly important role in the language development of English language learners. As research demonstrates, students learning English as their second or third language have some difficulty in following the requirements of the academic writing in English as the typology of their cultural writing pattern may differ from that of English/ North American. Therefore, the main goal of the teachers teaching academic writing still is to help students follow the requirements of the academic writing style in English.

Previous research on the application of AI technology in education, particularly in the context of language teaching, has consistently shown positive outcomes (Song& Song, 2023; Rahmi et al., 2024; Polakova & Klimova, 2024) and has found that AI-based writing tools significantly improve students' writing skills. The present paper discusses the use of AI-powered writing tools in teaching and learning academic writing at the tertiary level, focusing on first-year English major students' attitudes towards these tools, based on a joint small-scale quantitative study conducted at two higher education institutions in Kaunas, Lithuania, and at a university in Astana, Kazakhstan.

Polakova, P. & Klimova, B. (2024). Implementation of Al-driven technology into education – a pilot study on the use of chatbots in foreign language learning. *Cogent Education*, 11(1), https://doi.org/10.1080/2331186X.2024.2355385

Rahmi, R., Amalina, Z., Andriansyah, & Rodgers, A. (2024). Does it really help? Exploring the impact of Al-Generated writing assistant on the students' English writing. *Studies in English Language and Education*, 11(2), 998–1012, https://doi.org/10.24815/siele.v11i2.35875

Song, C. & Song, Y. (2023). Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in Al-assisted language learning for EFL students. *Frontiers in Psychology*, 14, https://doi.org/10.3389/fpsyg.2023.1260843

**Keywords**: academic writing, Al-powered writing tools, Al technology, education.

#### Milda RATKEVIČIENĖ, Jolita HORBAČAUSKIENĖ

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#### Dirbtinis intelektas vertimo krypties studijose universitete. Teorija ar praktika?

Vertimas – svarbus įrankis siekiant panaikinti kalbinius barjerus įvairiose srityse ir aplinkose. Tačiau kaip ir bet kuri kita žmogaus veiklos sritis, vertimas taip pat yra veikiamas technologinės kaitos. Bene vienas sparčiausių ir pastaruoju metu aktualiausių technologinių pasiekimų mūsų visuomenėje – dirbtinis intelektas. Sparti dirbtinio intelekto raida turi ne tik neginčijamos naudos vertimui, bet ir kelia nemažai iššūkių, todėl pastaruoju metu vis daugiau dėmesio dirbtiniam intelektui (Vieira et al.,2022; Mehandru et al., 2022; Heath et al., 2023; Groves & Mundt, 2015; Buden et al., 2009; Gambier, 2016; Kanglang & Afzaal, 2021) ir, ypač, su juo susijusiems teisingo ir etiško naudojimo klausimams, skiriama ir Europos Sąjungos teisiniu lygmeniu, pvz., 2018 m. Europos Komisijos komunikatas *Dirbtinis intelektas Europai*, ar 2022 m. Europos Parlamento priimta *Skaitmeninio dešimtmečio politikos programa 2030*. Todėl vertimo studijų sritis, atsižvelgdama į dirbtinio intelekto sparčią integraciją, turi reaguoti ir rengdama ateities vertėjus.

Tyrimai rodo, kad reikia pritaikyti universitetų vertimo programas, kad būsimieji vertėjai būtų parengti dirbtinio intelekto valdomai pramonei ir visuomenei, o vertimo studijų programas perorientuoti į besikeičiančius pramonės poreikius (Bernardini, 2020; Kanglang & Afzaal, 2021). Ir nors dirbtinio intelekto technologijos atlieka transformuojantį vaidmenį mokant vertimo (Wang, 2023), vis dėlto dar stinga tyrimų apie DI taikymą vertimo studijose: kaip integruoti, kokios grėsmės, nauda ir pan. (Kanglang & Afzaal, 2021). Todėl labai svarbu tirti ir analizuoti dirbtinio intelekto įtaką vertimo studijoms. Tyrimo metu buvo siekiama apžvelgti, koks dirbtinio intelekto vaidmuo universitetinėse vertimo studijų programose, vykdomose Baltijos šalių – Lietuvos, Latvijos ir Estijos – valstybiniuose universitetuose.

Bernardini, S. (ed.) (2020). Language service provision in the 21st century: challenges, opportunities and educational perspectives for translation studies. Bologna: Bologna University Press (BUP).

Gambier, Y. (2016). Translations | Rapid and Radical Changes in Translation and Translation Studies. International Journal of Communication, 10, (2016), 887–906, https://ijoc.org/index.php/ijoc/article/view/3824.

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Reikšminiai žodžiai: vertimo krypties studijos, dirbtinis intelektas, dirbtinis intelektas vertimo studijose.

#### Marko TIKKANEN

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### Experiences of Artificial Intelligence in Teaching Academic English in Finnish University Context

In this presentation I will discuss my experiences of AI tools in the context of teaching academic English for Finnish university students. I will specifically focus on three aspects: the effect of AI applications on generic skills, academic writing and skills in spoken English. In the background section, the Finnish education system in connection to the subject of English will be briefly explained. This will contain a brief explanation of the goals defined in the national core curriculum and different paths to higher education that are available for students. I will also discuss the organization of language and communication studies in Finnish universities. The third section will contain a timeline of the development of generative AI tools and their applications in teaching. The focus is especially on text generating AI applications such as ChatGPT and more recent developments such as Microsoft Copilot, and on the effects that these applications have had for the development of students' generic skills, academic writing and spoken English. The fourth section will discuss guidelines that the University of Eastern Finland issued in response to the popularity of generative AI and how these have affected teaching. The fifth section will focus on the development of students' skills in English in recent years. Finally, the last section will draw conclusions, discuss possible future developments and present some recent developments in the use of AI tools in the context of language teaching and pedagogy.

**Keywords:** university education, generic skills, artificial intelligence, academic English, spoken English.

#### Deimantė VELIČKIENĖ

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#### Žmogus vertėjas vs mašina: ar Shakespeare'o poeziją vers mašinos?

Nors poezijos išverčiamumo klausimas lieka atviras ir iki galo neatsakytas, šiandienos poezijos vertimo tyrinėjimams kyla naujų sunkumų, technologijoms neišvengiamai skverbiantis į visas gyvenimo sritis – ne išimtis ir į poeziją ar poezijos vertimus. Technologijų siūlomi įrankiai neleidžia apsiriboti vien tik žmogaus verstais tekstais, bet tenka kalbėti ir apie technologijų atveriamas galimybes. Mašininio vertimo taikymas literatūriniam vertimui – ne naujiena, o kai kada jis netgi labai sėkmingas. Tačiau ar įmanoma, kad mašininis vertimas pakeistų žmogų vertėją literatūrinio vertimo srityje – poezijos vertime? Poezijos tekste tarpusavyje sąveikauja įvairūs lygmenys, o jų perteikimas verčiant kelia nemenkų iššūkių žmonėms vertėjams, kai tenka ieškoti įvairiausių kompromisų. Ar mašininiame vertime įmanoma suvaldyti poetinio teksto kompleksiškumą ir sėkmingai perteikti esminius originalo elementus?

Sparti ir nesustabdoma technologijų pažanga lemia pokyčius ir susiformavusioje poezijos vertimo tradicijoje, todėl kyla pagrįstas klausimas, ar žmogų vertėją (poetą) pakeis mašinos. Atsakymų į šį klausimą bandoma ieškoti per atvejo analizę: atliekant lyginamąją Williamo Shakespeare'o 18-o soneto žmogaus atlikto (Tautvydos Marcinkevičiūtės) vertimo į lietuvių kalbą ir mašininių ("Google Translate" ir "DeepL Translator") vertimų į lietuvių kalbą analizę. Siekiama nustatyti, kaip poetinio teksto ypatybės perteikiamos abiejų tipų vertimuose. Shakespeare'o 18-as sonetas pasirinktas kaip klasikinio poetinio teksto pavyzdys, ir einant per įvairius teksto lygmenis, lyginant originalą su žmogaus ir mašininiais vertimais, stebima, kaip ir kokie perkėlimai vyksta vertimo procese: kokie patiriami nuostoliai, kur pavyksta rasti atitikmenis ir galiausiai, bandoma įvertinti, ar vertimo produktą galima vadinti poezijos tekstu.

**Reikšminiai žodžiai:** poezijos vertimas, mašininis vertimas, Shakespeare'o poezijos vertimas, atitikties problema, vertėjas.

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#### Citizen Participation & Administrative Efficiency in the Era of E-Gov 3.0

While e-government (referring here to the first generation of e-government) was just the simple manner of delivering public services via electronic means, e-gov 2.0 refers to the use of social media and Web 2.0 technologies in government operations and public service delivery. However, the use of the term 'e-government 2.0' is becoming less common as the focus shifts towards broader digital transformation initiatives that may include AI technologies, among others, such as blockchain, virtual reality, and augmented reality. In this study, we present the relatively new concept of e-government 3.0, which is built upon the principles of e-government 2.0 but refers to the use of emerging technologies (e.g., artificial intelligence) to transform the delivery of public services and improve governance. The study objective is to explore the potential of e-government 3.0 to enhance citizen participation, improve public service delivery, and increase responsiveness and compliance of administrative systems in relation to citizens by integrating emerging technologies into government operations using as a background the evolution of e-government over time. The paper analyzes the challenges faced by municipalities in responding to citizen petitions, which are a core application of local democracies. The author starts by presenting an example of an e-petition system (as in use today) and analyses anonymized data of a text corpus of petitions directed to one of the Romania municipalities. He will propose an Al model able to deal faster and more accurately with the increased number of inputs, trying to promote it to municipalities who, for some reason, are still reluctant to implement AI in their operations. The conclusions will suggest that it may be more effective to focus on improving new algorithms rather than solely on 'old' technologies.

**Keywords:** citizen participation, e-government, blockchain, virtual reality, augmented reality, artificial intelligence.

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