

AI in Lexicography for Low-Resource Languages: The Case of the Georgian Language

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Abstract

The emergence of AI has accelerated the integration of chatbots into various fields, reducing the need for human involvement in many areas. Lexicography has been no exception, and since 2022 numerous studies have explored the role of AI in dictionary compilation. However, the role of AI in lexicography for low-resource languages such as Georgian has remained largely outside this discussion, as most existing research focuses on English – a high-resource lingua franca that may be regarded as the “mother tongue” of chatbots. Consequently, the performance of chatbots in low-resource languages remains underexplored, particularly with regard to whether AI can outperform human lexicographers on a broader scale.

The aim of this research is to examine the performance of ChatGPT in the context of a low-resource language such as Georgian and to analyse its lexicographic capabilities. This qualitative study investigates the extent to which ChatGPT can generate dictionary entries for a Georgian explanatory dictionary, including headwords, definitions, illustrative examples, grammatical information, usage labels, and etymological data.

Keywords: Georgian Language; lexicography; ChatGPT; artificial intelligence; dictionary-making

1 Introduction

Artificial intelligence has become an integral part of many aspects of modern life. ChatGPT, Claude, Gemini, and other chatbots continue to evolve in response to users’ growing expectations and demands. As users increasingly seek to employ AI across a wide range of fields to complete tasks more quickly and efficiently or simply to test its ability to replace human labour, interest in its potential applications continues to expand. It is therefore unsurprising that lexicography, a field traditionally associated with labour-intensive and time-consuming work, has also turned its attention to chatbots and begun to explore their effectiveness. As with many new technological developments, lexicographers initially approached artificial intelligence with scepticism and questioned its relevance to the field. On the other hand, some scholars speculate that chatbots may eventually transform or significantly reshape

lexicographic practice. However, it is important to emphasise that most studies on AI performance have been conducted in English, and their findings cannot be straightforwardly generalised to other languages. It is often overlooked that, although ChatGPT and similar systems are accessible worldwide, their performance varies significantly across languages. This raises the question of whether AI systems such as ChatGPT can perform equally well in both high-resource and low-resource languages in lexicographic tasks. The case of Georgian, a South Caucasian language spoken primarily in Georgia, has so far received little attention in this debate, making it particularly relevant to examine whether AI can meaningfully support or even replace human lexicographers in the production of Georgian dictionaries.

2 Literature Review

Lexicography is not new to the use of technology in the dictionary-making process. The emergence of corpora, corpus query tools (e.g. Sketch Engine and AntConc), annotating and parsing tools, dictionary writing and management systems, as well as terminological and lexical databases, has made lexicographers' work more efficient, faster, and easier. Against this background, the emergence of chatbots – particularly ChatGPT – has attracted considerable interest among researchers. As ChatGPT is still too recent to be fully understood in terms of its potential and reliability, lexicographers differ in their assessments.

Artificial intelligence appears to be key to reducing what Johnson (1755) famously described as “protracted drudgery” for lexicographers. Fuertes-Olivera (2024) notes that lexicographers must welcome technologies and move on from language-centred traditions to increase the productivity of lexicography. Chatbots like ChatGPT have the potential to quicken the lexicographic process, reduce costs, and boost efficiency. AI can readily replicate lexicon styles and generate well-crafted dictionary entries, challenging the idea that definition-writing is “a rare elite skill” (Lew 2023). In addition, ChatGPT also seems to generate good dictionary examples (Merx *et al.* 2024) and deals fairly well with IPA pronunciation (de Schryver 2023; Lars 2024).

On the other hand, there is also evidence of conflicting views in the literature. According to other research, ChatGPT significantly lacks proficiency in most aspects of lexicography and is, therefore, disappointing. McKean & Fitzgerald (2023) emphasise that ChatGPT is inconsistent with IPA. While it may create quite well-written definitions, it sometimes deduces “false polysemy” and creates additional senses (Jakubíček & Rundell 2023). Lew (2023) and Jakubíček & Rundell (2023) add that generated examples cannot be considered good and usable. ChatGPT also makes errors in grammatical information and usage labels, although some researchers consider its performance superior to that of other systems (Lars 2024). Most importantly, Jakubíček & Rundell (2023) note that Kilgariff's (2007) opinion about the disadvantages of using data found on Google for linguistic purposes still stands; ChatGPT uses unknown sources to produce prompts, and it cannot be considered fully credible. ChatGPT has access to the open web, which underrepresents minorities and can introduce bias (McKean & Fitzgerald 2023).

Most of the above-mentioned researchers note in their articles that their findings cannot be generalised, as they may vary depending on the language in which the prompts or questions are formulated. Merx *et al.* (2024) emphasise that ChatGPT's efficiency vividly degrades for low-resource languages. Additionally, Jakubíček & Rundell (2023) explain that as ChatGPT is mostly trained in English, it tries to answer questions through English data and transfers English word senses to other languages. This brings us to the central question of how ChatGPT performs in languages other than English, particularly in low-resource languages.

ChatGPT ("Generative Pre-trained Transformer") is a widely known artificial intelligence developed by OpenAI (Brown *et al.* 2020). It is a type of neural network which, in order to work and generate responses, is trained on large amounts of unannotated corpora from different sources online (Wikipedia, news, books, and others). It is not a human or a thinking being; therefore, it does not infer. It learns sentence patterns from the data and generates the most likely word sequences (Jakubíček & Rundell 2023). In technical terms, ChatGPT uses generative language modelling, which, given a prompt (a set of semantics), produces sentences (natural language texts) that match the context the user has asked for (Lian 2024). According to many sources, this model, and, therefore, ChatGPT, can deal with many different languages in the same manner (McGiff & Nikolov 2025).

Since ChatGPT's performance is influenced by the quantity of data it is trained on, languages are categorised according to the availability of data. Therefore, there are high-resource and low-resource languages. And while a plethora of people use ChatGPT on a daily basis and are quite pleased, concerns about linguistic inequality in natural language processing (NLP) and AI performance in other languages seem to be a problem.

The term high-resource language refers to languages that have abundant text data and corpora, a significant number of native speakers, and technological support to develop natural language processing. On the other hand, low-resource languages lack data; they are understudied and underrepresented (Ferber 2020). Nigatu *et al.* (2024) deduce that this distinction depends on socio-political aspects, resources, artefacts (technological infrastructure and data), and community agency (the involvement and interest of the speakers).

"This framing of high- versus low-resource languages resembles Zeno's Achilles paradox: 'high-resource languages' function as the tortoise, having been given a head start in the research community and continuing to receive the majority of attention, while 'low-resource languages' correspond to Achilles." (Nigatu *et al.* 2024)

Consequently, English, the "mother tongue" of AI, is a high-resource language. It has been given a head start, and ChatGPT is expected to perform far better in English than in other languages. As a matter of fact, ChatGPT-3 was trained on 93% English data (Walsh 2025). OpenAI has already launched ChatGPT-5 on August 7, 2025, and we can only predict that this percentage may have increased rather than decreased.

On the other hand, the Georgian language is the "Achilles," as Nigatu *et al.* (2024) refer to it. Georgian is a South Caucasian agglutinative language, making language processing trickier. As there is not much demand for Georgian and it lacks available data, it belongs to extremely low-resource languages, the "left-behinds" (Joshi *et al.* 2020). Thus, it is unsur-

prising that ChatGPT-3 received only 0.00060% of its training data in Georgian. Accordingly, it is important to examine how well ChatGPT performs in this language and whether its performance can approach that of English.

3 Methodology

This research uses a qualitative method to investigate how ChatGPT-5 performs in extremely low-resource languages like Georgian, with a focus on its lexicographic abilities.

ChatGPT-5 was recently launched on August 7, 2025. It can now process up to 400K tokens for input and output and has a better ability to deal with longer texts. It outperforms other versions by following instructions and integrating various tools to solve tasks. It is also thought to be better in terms of reduced hallucinations and mistakes. ChatGPT-5 is 45% less likely to produce factual errors than ChatGPT-4, and this rate is even lower in its thinking mode (Designveloper 2025).

The article will examine and evaluate the performance of ChatGPT-5 regarding generating:

- headwords (with an emphasis on identifying neologisms and new entries yet to be recorded in dictionaries);
- definitions (with a focus on the ability to detect polysemy);
- illustrative examples;
- grammatical information and labels;
- etymology – for a Georgian explanatory dictionary.

For evaluation purposes, the generated texts will be compared to the entries of the Georgian online monolingual dictionary (Tsotsanidze, Loladze and Datukishvili 2014). In addition, as ChatGPT-5 was launched during the writing of this article, some responses generated by ChatGPT-4 will also be included for comparison.

The chosen methodology partly draws on the studies of Trap-Jensen (2024) and Lew (2023) concerning the English language.

4 Results

ChatGPT-5 was assigned the role of a professional Georgian lexicographer tasked with compiling a monolingual Georgian dictionary. The *Online Georgian Dictionary* (Tsotsanidze, Loladze & Datukishvili, 2014) was used as a model, and ChatGPT-5 was provided with selected entries to analyse and internalise its style. It was then given a series of tasks designed to evaluate its lexicographic performance.

4.1 Headwords

The aim of this research was to determine whether ChatGPT-5 can identify headwords that have not yet been recorded in dictionaries. Accordingly, in order to detect new headwords and neologisms, it was first prompted in Georgian as follows:

„მომეცი იმ სიტყვების სია, რომელიც ამ ლექსიკონში არ არის შეტანილი. ეს სიტყვები უნდა იყოს საჭირო და ხშირად გამოყენებული, რომ ლექსიკონებში დაემატოს. ეს სიტყვები შეიძლება ნეოლოგიზმიც იყოს (Give me a list of words that are not recorded in this dictionary. These words must be necessary and frequently used to be added to dictionaries. These words may also be neologisms).“

Of the 20 headwords suggested by ChatGPT-5, only 8 appear to be potentially useful for our purpose. These words are *სელფი* / *selpi* ‘selfie’, *მიკროინფლაცია* / *mik’roinplatsia* ‘microinflation’, *ვირტუალური რეალობა* / *virt’ualuri realoba* ‘virtual reality’, *სტრიმინგი* / *st’rimingi* ‘streaming’, *ბლოკჩეინი* / *blok’cheini* ‘blockchain’, *ვებინარი* / *vebinari* ‘webinar’, *გეოლოკაცია* / *geolok’atsia* ‘geolocation’ and *დრონი* / *droni* ‘drone’. Most of the other generated headwords are already attested in dictionaries (*გლობალიზაცია* / *globalizatsia* ‘globalisation’, *ინტერაქტიული* *int’erakt’iuli* ‘interactive’, *ოსტატობა* / *ost’at’oba* ‘craftsmanship/mastery’ and *მოზაიკა* / *mozaik’a* ‘mosaic’). Some of them are hallucinations influenced by English., such as *ეკოლოგიური ნაკერი* / *ek’ologiuri nak’eri* ‘eco-stitch’ and *არაგამომდინარე პროდუქცია* / *aragamomdinaro p’roduktsia* ‘sustainable product’.

To test ChatGPT-5’s abilities further, ChatGPT’s thinking mode was used, and it was given specific examples. The second attempt produced better results. Many suggested words can be considered neologisms, as they are commonly used by Georgians and appear frequently in search engines. However, only time will tell whether they will remain relevant and eventually be included in dictionaries. Interestingly, it is evident that most of the suggested headwords are direct borrowings from English (e.g. *სტრიმინგი* / *st’rimingi* ‘streaming’, *ლაიკი* / *laiki* ‘like’, *ლაივი*, *ლაივსტრიმი* / *laivi*, *laivst’rimi* ‘live’, *ინფლუენსერი* / *inpluenser-i* ‘influencer’, *სკროლვა* / *skrolva* ‘scrolling’, *კრაუდფანდინგი* / *k’raudpandingi* ‘crowdfunding’ and others). Some other interesting neologisms are *გამომწერი* / *gamomts’eri* ‘subscriber’, *გამოწერა* / *gamots’era* ‘subscription’, *ვებგვერდი* / *vebgverdi* ‘website’ and *ელექტრონული საფულე* / *elekt’ronuli sapule* ‘e-wallet’.

Furthermore, it was interesting to examine whether ChatGPT can identify neologisms which are not borrowed from English and detect headwords that may have been omitted from dictionaries. It struggled more than in the second attempt and hallucinated non-existent words such as *წვდომადობა* / *ts’vdomadoba* ‘the quality of being accessible’, *გარემოცვიანობა* / *garemotsvianoba* ‘the quality of being surrounded’, and *დასარგადობა* / *dasargadoba* ‘planting-ness’. One of the useful headwords included *ჩამოტვირთვა* / *chamot’virtva* ‘download’ and *თანამოსაუბრე* / *tanamosaubre* ‘fellow speaker’, which were not mentioned before.

During the research process, a similar query was conducted using ChatGPT-4 before the release of ChatGPT-5. Interestingly, ChatGPT-4 produced a higher number of hallucinations and generated more implausible examples such as *თეთრხალათიანობა* / *tetrkhalatiano-ba* ‘wearing of white gown’, *ზაფხულწათვისობა* / *zaphkults’atvisoba* ‘summer-ness’, and

ვაშლიანობა / *vashlianoba* 'appleness'. ChatGPT-5 hallucinated less and generated only a small number of questionable words. However, ChatGPT-4 was more creative and less repetitive; it rarely repeated already given answers, unlike ChatGPT-5.

4.2 Definitions

Five of the suggested headwords above (*გამომწერი* / *gamomt'seri* 'subscriber', *გამოწერა* / *gamot'sera* 'subscribe', *ვებგვერდი* / *vebgverdi* 'website', *ინფლუენსერი* / *inpluenseri* 'influencer', and *აპლიკაცია* / *ap'lik'atsia* 'application') were used to evaluate AI-generated definitions and examples (which will be discussed below). Initially, ChatGPT was provided with examples of word entries from the *Online Georgian Dictionary* (Tsotsanidze, Loladze, Datukishvili 2014). It was instructed to analyse the structure of its entries and generate similar definitions and examples for the new headwords.

According to the results, ChatGPT-5 is generally capable of producing descriptive and clear definitions. Most of the time, the definitions are semantically well-formed, but they may contain minor grammatical errors and awkward wordings. Furthermore, ChatGPT-5 exhibited inconsistent handling of polysemy. It generated additional senses for words with a single concrete meaning or failed to identify all senses.

გამოწერა

- რაიმე გამოცემის (გაზეთის, ჟურნალის და სხვ.) ან მომსახურების რეგულარული მიღებისათვის დარეგისტრირება და გადახდა.
მან გაზეთი გამოიწერა. სტუდენტებმა ჟურნალი გამოიწერეს.
- რაიმეს დაწერა, ჩამოწერა, ჩანიშვნა (ხშირად ოფიციალურ-ადმინისტრაციული დოკუმენტის სახით).
ექიმმა რეცეპტი გამოიწერა. ბუღალტერმა ქვითარი გამოიწერა.
- იურიდიული ან ადმინისტრაციული დოკუმენტის გაფორმება, ხელმოწერა.
დირექტორმა ბრძანება გამოიწერა. ხელშეკრულება გამოიწერა ორ მხარეს შორის.

gamots'era

- To subscribe to a publication (newspaper, magazine, etc.) or service by registering and paying to receive it regularly.
He subscribed to a newspaper. The students subscribed to a journal.
- To write out, prescribe, or record something (often as an official or administrative document).
The doctor wrote a prescription. The accountant issued a receipt.
- To draft, formalize, or sign an official or legal document.
The director issued an order. A contract was signed between the two parties.

Figure 1: Generated entry for *გამოწერა* 'subscribe'.

As shown in Figure 1, the generated definitions of *გამოწერა* / *gamot'sera* 'subscribe' are not fully accurate. According to the *Online Georgian Dictionary* (Tsotsanidze, Loladze, Datukishvili, 2014), the first generated meaning, "to subscribe to a publication," is correct but narrow. In the dictionary, it is combined with ChatGPT-5's second sense, "to prescribe or record an official document". The third sense, "to draft, formalise, or sign an official or legal document," is also incorrect. Additionally, ChatGPT-5 missed another meaning of *გამოწერა*, which is "to discharge from a hospital."

ვებგვერდი

1. ციფრული გვერდი, რომელიც ინტერნეტში არსებობს და მომხმარებელს უჩვენებს ტექსტს, სურათს, ვიდეოს ან სხვა ინფორმაციას.
საინფორმაციო ვებგვერდი. კომპანიის ვებგვერდი.
2. ინტერნეტ-ბრაუზერის საშუალებით მისაწვდომი მონაცემთა ერთეული, რომელიც კონკრეტულ მისამართზეა განთავსებული.
ვებგვერდის ბმული. ვებგვერდზე შესვლა.

Web Page / Website

1. A digital page existing on the Internet, displaying text, images, video, or other information to the user.
News website. Company website.
2. A unit of data accessible through a web browser, located at a specific address.
Website link. Entering a website.

Figure 2: Generated entry for *ვებგვერდი* 'website'.

ChatGPT-5 hallucinated polysemy in words that have only a single sense, such as *ვებგვერდი* / *vebgverdi* 'website' and *ინფლუენსერი* / *inpluenseri* 'influencer'. The Figure 2 shows that both of the generated definitions: 1. A digital page on the internet and 2. A unit of data accessible on a web browser, are the same with different formulations.

აპლიკაცია

1. კომპიუტერული პროგრამა ან პროგრამული პროდუქტი, რომელიც განკუთვნილია კონკრეტული ამოცანის შესასრულებლად კომპიუტერზე ან მობილურ მოწყობილობაზე. *მობილური აპლიკაცია. საბანკო აპლიკაცია. სასწავლო აპლიკაცია.*
2. განცხადი, წერილობითი ფორმა ან ოფიციალური მიმართვა რაიმე მომსახურების, სამსახურის, სასწავლო ადგილის და სხვ. მიღების მიზნით. *აპლიკაციის შევსება. აპლიკაციის შეტანა უნივერსიტეტში.*
3. ხელოვნებაში, ხელსაქმესა და დეკორატიულ ხელოვნებაში — ორნამენტის ან გამოსახულების დამაგრება სხვა ზედაპირზე (ქსოვილზე, ქაღალდზე და სხვ.). *ტანსაცმლის აპლიკაცია. დეკორატიული აპლიკაცია.*

Application

1. A computer program or software product designed to perform a specific task on a computer or mobile device. *Mobile application. Banking application. Educational application.*
2. An application form, written request, or official submission made to receive a service, a job, a place at an educational institution, etc. *Filling in an application. Submitting an application to a university.*
3. In arts, crafts, and decorative work – an ornament or image attached to another surface (fabric, paper, etc.). *Clothing applique. Decorative applique.*

Figure 3: Generated entry for აპლიკაცია ‘application’

ChatGPT-5 generated the best entry for აპლიკაცია / *ap'lik'atsia* ‘application’. It correctly distinguished three separate meanings: (1) an app, (2) a formal request, and (3) art. Formulation of definitions was clear, precise and natural.

Additionally, two Georgian words were tested, *მგრძნობიარე* / *mgrdznobiare* ‘sensitive’ and *ამღვრევა* / *amghvrevva* ‘to cloud/blur’, which are of native Georgian origin and not borrowed from English. The aim was to determine whether ChatGPT-5 would perform similarly in this case. Interestingly, the results were consistent, and its performance did not deteriorate. The word senses were identified correctly, and ChatGPT-5 successfully recognised the polysemy of *ამღვრევა* / *amghvrevva*, even highlighting its figurative meaning. However, the generated Georgian sentences were somewhat awkward and occasionally incoherent.

4.3 Examples

Concerning examples of *გამომწერი* / *gamomt'seri* 'subscriber', *გამოწერა* / *gamot'sera* 'subscribe', *ვებგვერდი* / *vebgverdi* 'website', *ინფლუენსერი* / *inpluenseri* 'influencer', *აპლიკაცია* / *ap'lik'atsia* 'application', *მგრძნობიარე* / *mgrdznobiare* 'sensitive' and *ამღვრევა* / *amghvrevi* 'to cloud/blur', ChatGPT made very few mistakes. Most of the examples were correct, frequently used in Georgian, and accurate. As noted above, ChatGPT-5 was instructed to generate examples similar to those found in the *Online Georgian Dictionary*, including both common collocations, phrases and full sentences.

Some of the good examples were *კომპანიის ვებგვერდი* / *k'omp'aniis vebgverdi* 'company webpage', *ვებგვერდზე შესვლა* / *vebgverdze shesvla* 'to access a website', *მოდის ინფლუენსერი* / *modis inpluenseri* 'fashion influencer', *მობილური აპლიკაცია* / *mobiluri ap'lik'atsia* 'mobile application' and others.

Examples such as *პოლიტიკური ინფლუენსერი* / *p'olit'ik'uri inpluenseri* 'political influencer', *ტექნოლოგიური ინფლუენსერი* / *t'eknologiuri inpluenseri* 'technology influencer', and the sentence *მან ამ წერილს ბევრი გამომწერი მოიპოვა* / *man am ts'erils bevri gamomts'eri moip'ova* 'the letter gained many subscribers' appear to be generated via English. The first two terms are not used in Georgian, and the last sentence is grammatically incorrect and barely understandable. ChatGPT meant to say "the letter gained many subscribers." But it literally said, "He made this letter, many subscribers gained". Another clear illustration of the influence of English-language data is the example of *მგრძნობიარე თემა* / *mrdzgnobiare tema* 'sensitive topic' provided for the headword *მგრძნობიარე* / *mgrdznobiare*, which would be more naturally expressed in Georgian as *დელიკატური თემა* / *delik'at'uri tema* 'delicate topic'.

ChatGPT-5 attempted full-sentence examples, mainly with verbs *გამოწერა* / *gamot'sera* and *ამღვრევა* / *amghvrevi*. They were less useful, grammatically awkward and incoherent. For example, these sentences are difficult to understand in Georgian, and the highlighted parts require thorough revision: "*ექიმმა რეცეპტი გამოიწერა*"; "*მან ამ წერილს ბევრი გამომწერი მოიპოვა*" and "*ფიქრმა გონება ამღვრია*".

4.4 Grammatical Information

Regarding grammatical information, ChatGPT was tested using the words mentioned above, along with 20 additional words covering all ten parts of speech in Georgian: noun, adjective, numeral, verb, adverb, postposition, conjunction, particle and interjection.

Overall, ChatGPT correctly assigned parts of speech to most words. Nouns such as *გამომწერი* / *gamomts'eri* 'subscriber', *ვებგვერდი* / *vebgverdi* 'website', *ინფლუენსერი* / *inpluenseri* 'influencer', and *აპლიკაცია* / *ap'lik'atsia* 'application' were correctly identified. Adjectives like *ფაქიზი* / *pakizi* 'delicate', *ღია* / *ghia* 'open', *მგრძნობიარე* / *mgrdznobiare* 'sensitive', and *ამღვრეული* / *amghvreuli* 'blurred' were also accurately labelled. Numerals were correctly distinguished as cardinal, ordinal, etc., e.g., *ხუთ-ხუთი* / *khut-khuti* 'five each', *ასი* / *asi* 'hundred' and *მეცხრე* / *metskhre* 'ninth'. Pronouns such as *შენი* / *sheni*

‘your’, ვინ / *vin* ‘who’, and რომელი / *romeli* ‘which’, as well as adverbs (გულუხვად / *gulukhvad* ‘generously’ and სასიამოვნოდ / *sasiamovnod* ‘pleasantly’), conjunctions (მაგრამ / *magram* ‘but’, როცა / *rotsa* ‘when’ and ან / *an* ‘or’), and particles (აბა / *aba* and მაშ / *mash*) were also correctly identified.

For verbs, ChatGPT-5 was provided with masdars (verbal nouns) because Georgian dictionaries typically list masdars as headwords. Initially, ChatGPT labelled them as nouns. After correcting and clarifying that they also function as verbs, all given verbs (კითხვა / *k’itkhva* ‘read’, სიარული / *siaruli* ‘walk’ and ყურება / *q’ureba* ‘watch’) were labelled as “noun, verbal noun.” However, it correctly labelled მიშველება / *mishveleba* ‘help’ and ჩადაღლება / *chadzaghleba* ‘die as a dog’) as verbs, even though they were provided in masdar forms.

Interjections were also correctly identified, but the grammatical label was inconsistent. ChatGPT labelled them as შესძახილი / *shesdzakhili* instead of the proper Georgian term შორისდებულის / *shorisdebuli* (შესძახილი / *shesdzakhili* is a misspelling of შეძახილი / *shedzakhili*, which is a literal equivalent of ‘interjection’). The tested interjections were ვაიმე / *vaime* ‘oh dear!’, აუუ / *auu* ‘oh’, and არიქა / *arika* ‘quick!’.

An interesting case occurred with თანდებულის / *tandebuli* ‘postposition’. ChatGPT-5 did not initially recognise the Georgian term and refused to classify words like გარდა / *garda* ‘except’, -ში / *-shi* ‘in’, -ზე / *-ze* ‘on’, -გან / *-gan* ‘from’, and მიერ / *mier* ‘by’. However, after some explanation, it eventually labelled them correctly using the English term “postposition,” transliterated as პოსტპოზიცია / *p’ost’p’ozitsia*.

By contrast, ChatGPT-4 produced more inconsistent results. It created non-existent or mixed parts of speech, such as ზმნიზედა არსებითი სახელი / *zmnizeda arsebiti sakheli* ‘adverb noun’, ზმნებითი სახელი / *zmnebiti sakheli* ‘verb-noun’ and ზმნიზედა სახელი / *zmnizeda sakheli* ‘adverb name’). Interestingly, it identified verbs better than ChatGPT-5, but struggled with adjectives.

4.5 Labels

In lexicography, various labels are used to indicate style or register, temporal relevance, regional variation, terminology, formality, and other features. This study primarily focused on whether ChatGPT-5 could identify domains of terms; less attention was given to style and formality. The terms were specifically selected to be of Georgian origin and not borrowed from English, in order to minimise responses influenced by English usage (see Table 1).

Terms	Domain labels
ჭანჭიკი (bolt)	ტექნოლოგია (technology), მექანიკა (mechanics)
მოკლე ჩართვა (short circuit)	ელექტროტექნიკა (electrical engineering), ტექნოლოგია (technology)
სამარხი (tomb)	არქეოლოგია (archaeology), ისტორია (history)
მგუზავი ატომი (tracer)	ბირთვული ფიზიკა (nuclear physics), ქიმია (chemistry)
თავდასხმა (attack/assault)	სამართალი (law), სამხედრო საქმე (military science), სოციალური მეცნიერებები (social sciences)
წყლის ნიშანი (water sign)	ასტროლოგია (astrology)
ანფასი (en face, frontal view)	ხელოვნება (art), ფოტოგრაფია (photography)
პერსპექტივა (perspective)	ხელოვნება (art), არქიტექტურა (architecture)
წილადი (fraction)	მათემატიკა (mathematics)
დედაპლატა (motherboard)	ტექნოლოგია (technology), კომპიუტერული ტექნიკა (computing)
მყარი დისკი (hard disk)	ტექნოლოგია (technology), კომპიუტერული ტექნიკა (computing)
მინდვრის ბოლობეჭედა (hen harrier)	ბოტანიკა (botany)
აცენტრული (acentric)	ქიმია (chemistry), კრისტალოგრაფია (crystallography), ფიზიკა (physics)
ყორდანი (borrow)	არქეოლოგია (archaeology), ეთნოგრაფია (ethnography), ისტორია (history) ¹

Table 1: List of terms and their domain labels.

Out of 14 words, 11 were correctly labelled. Some words received additional labels corresponding to marginal fields, which were counted as partly correct. For example, *ჭანჭიკი* / *ch'anch'ik'i* 'bolt' was also labelled as technology, *სამარხი* / *samarkhi* 'tomb' was addition-

1 These terms were selected and their accuracy was verified using the following terminological dictionary: <http://multiterm.iliauni.edu.ge/>.

ally labelled as history, and *თავდასხმა* / *tavdashkma* ‘attack/assault’ was labelled as social sciences.

ChatGPT-5 made only a few mistakes. *მინდვრის ბოლობეჭედა* / *mindvris bolobech’eda* ‘hen harrier’, a zoological term, was incorrectly translated as “field speedwell.” Other hallucinations included *აცენტრული* / *atsent’ruli* ‘acentric’, which belongs to biology and genetics, and *მგეზავი ატომი* / *mgezavi atomi* ‘tracer’, a term in biotechnology, was incorrectly understood as “moderator atom.”

Words	Style/register label
შტერი (idiot, dumb)	ვულგარული, შეურაცხმყოფელი (vulgar, offensive)
გასიებული (swollen, bloated, fat)	ნეიტრალური (neutral), არაფორმალური ან შეურაცხმყოფელი (საუბარში) (informal or offensive (colloquial))
პონტი (situation)	არაფორმალური, ჟარგონი (informal, slang)
ჩაძაღლება (to die like a dog)	ვულგარული, უხეში (vulgar, harsh)
კაცი (man)	ნეიტრალური (neutral), ზოგჯერ ოფიციალური (sometimes formal)
კაცმაცუნა (tiny man, unmanly man)	არაფორმალური, ირონიულ-შემამცირებელი (informal, ironic-diminutive)
ბალღი (child, kid)	ნეიტრალური, დიალექტური, არაფორმალური (neutral, dialectal, informal)
მიჯნური (lover, beloved)	წიგნიერი, პოეტური (literary, poetic)
დაბრძანება (to take a seat)	წიგნიერი, ოფიციალურ-მაკადამური (literary, formal-honorific)
მშობელი (parent)	ნეიტრალური, ოფიციალური (neutral, formal)

Table 2: List of words and their style/register labels.

Regarding style and formality, ChatGPT-5 performed well in labelling words as formal (*დაბრძანება* / *dabrdzaneba*), informal (*ბალღი* / *balghi*), vulgar (*ჩაძაღლება* / *chadzaghleba*), offensive (*გასიებული* / *gasiebuli*), neutral (*კაცი* / *k’atsi*), slang (*პონტი* / *p’ont’i*), literary and poetic (*მიჯნური* / *mijnuri*). Interestingly, *გასიებული* can be neutral when referring to something being “swollen,” but it can also be offensive in colloquial usage when

describing a person. ChatGPT-5 clearly captured this distinction and gave correct secondary labels to words.

Only a few of the given labels were ambiguous. For example, *კაცი* / *katsi* ‘man’ was also marked as “sometimes formal,” *ბაღი* / *balghi* ‘child, kid’ was labelled as both neutral and informal, and *მშობელი* / *mshobeli* ‘parent’ was categorised as both neutral and formal. Additionally, incorrectly generated label names were observed, such as *ირონიულ-მემამცირებელი* and *ოფიციალურ-მაკადამური*, in which the second component does not exist in Georgian (see Table 2).

4.6 Etymology

ChatGPT frequently generated etymological information even when it was not explicitly requested, especially for words borrowed from English. To evaluate its performance, ChatGPT-5 was instructed to provide etymologies for several types of words, such as *სპამი* / *spami* ‘spam’, *ინფლუენსერი* / *influenseri* ‘influencer’, and *აპლიკაცია* / *ap'likatsia* ‘application’, which are direct borrowings from English; *ვებგვერდი* / *vebgverdi*, a semantic calque of ‘webpage’; *წილადი* / *ts'iladi* ‘fraction’ and *მზე* / *mze* ‘sun’, which are of native Georgian origin; and *ფანჯარა* / *panjara* ‘window’, a borrowing from Persian.

სპამი

სესხება ინგლისურიდან (*spam*). თავდაპირველად აღნიშნავდა დაკონსერვებულ ხორცის პროდუქტს (მარკა SPAM), მოგვიანებით ინტერნეტ-სლენგში გადაიტანეს ზედმეტად გამეორებული, შემაწუხებელი შეტყობინებების აღსანიშნავად.

Borrowed from English (*spam*). Originally referred to a canned meat product (the SPAM brand); later, in internet slang, it came to mean excessively repeated, annoying messages.

Figure 4: Generated etymology of *სპამი* ‘spam’.

ინფლუენსერი

ქართული სიტყვა ინფლუენსერი სესხებულია ინგლისურიდან (*influencer*) — *influence* + სუფიქსი *-er*.

The Georgian word *ინფლუენსერი* is borrowed from English (*influencer*) — *influence* + the suffix *-er*.

Figure 5: Generated etymology of *ინფლუენსერი* ‘influencer’.

აპლიკაცია

სესხება ლათინურიდან (*applicatio* – მიდგმა, მიჭვრა) შუამავალი ენებით (რუს. „аппликация“, ინგლის. application). თანამედროვე ქართულში უფრო მეტად დამკვიდრებულია კომპიუტერულ-ტექნოლოგიური მნიშვნელობით.

Borrowed from Latin (*applicatio* – “attachment, fastening”) through intermediary languages (Russian “аппликация”, English application). In modern Georgian, it is more commonly established with a computer-technological meaning.

Figure 6: Generated etymology of აპლიკაცია ‘application’.

The generated etymology examples for borrowed words from English are well-written, descriptive, and accurate. Following the examples in figures 4, 5 and 6, ChatGPT-5 correctly identifies the source language from which the words are borrowed, explains the word-formation process and describes how polysemy developed (as in figure 4). It also provides the original Latin form where it is relevant (as in figure 6).

მზე

ქართული სიტყვა. წარმოშობა ანალოგიურია პროტოკავკასიურ ფუმესთან (*mze*), რაც ნიშნავს „მზეს“. არაა სესხებული; გამოყენება ენაში რეგისტრირებულია უძველესი დროიდან.

Native Georgian word. Origin traces to the Proto-Caucasian root (*mze*), meaning “sun.” Not borrowed; attested in Georgian from ancient times.

Figure 7: Generated etymology of მზე ‘sun’.

წილადი

წარმოებულია ქართული ფუძიდან „წილი“ („წაწილი, მომდევნო წაწილი“) + სუფიქსი -ადი. ტერმინოლოგიაში ნიშნავს „ფრაქციას, წილს“.

Derived from the Georgian root წილი (“part, portion”) + suffix -ადი. In terminology, it means “fraction” or “share.”

Figure 8: Generated etymology of წილადი ‘fraction’.

Regarding other Georgian words, ChatGPT-5 was inconsistent and made several errors. The etymologies of *მზე* / *mze* 'sun' (Figure 7) and *წილადი* / *ts'iladi* 'fraction' (Figure 8) were somewhat well-written and partially correct. For *mze*, the proposed proto-Caucasian form "mze" is incorrect. As for *წილადი* / *ts'iladi*, it was incorrectly stated that it means "myth". Aside from these issues, the generated etymologies were mostly accurate, though some Georgian wordings were awkward or incoherent. The only fully incorrect etymology was for *ფანჯარა* / *panjara*, which is actually borrowed from Persian (*panjareh*), not Italian, as ChatGPT suggested.

5 Analysis and Discussion

This research examined the performance of ChatGPT as a lexicographic tool for the low-resource Georgian language. After evaluating its ability to generate headwords, definitions, examples, grammatical information, labels, and etymology, it can be concluded that chatbots can serve as valuable assistants for lexicographers.

ChatGPT-5 can effectively identify headwords and detect neologisms. However, its performance is more accurate when dealing with words borrowed from English. In addition, it often hallucinates non-existent Georgian words due to the influence of English data. Therefore, lexicographers must carefully review the generated headwords.

Regarding definitions, ChatGPT is inconsistent. Although ChatGPT-5 can identify word meanings and polysemy, it often hallucinates additional senses. While some definitions are well-constructed, others lack precision, indicating inconsistency in performance. A similar pattern is observed with generating examples. ChatGPT-5 performs well with collocations and short illustrative sentences, but its performance declines when generating full-sentence examples for verbs, which are often awkward or ungrammatical.

In terms of grammatical information, ChatGPT-5 performs very well. It correctly identifies eight out of ten parts of speech in Georgian: noun, adjective, numeral, pronoun, adverb, conjunction, particle and interjection. However, it struggles with verbs when analysing masdar forms and occasionally misclassifies them as nouns. With appropriate guidance, its performance improves significantly. It also requires additional instruction for interjection and postposition, as these terms are unknown to ChatGPT-5. While it can identify interjections, it incorrectly labels them as *შესძახილი* / *shesdzakhili*, and it fails to classify postpositions under the Georgian term *თანდებული* / *tandebuli*.

ChatGPT-5 performs well in assigning domain and style/register labels, with only minor errors, typically arising from English data interference or mistranslations. Its etymological explanations are particularly strong for words borrowed from English (e.g., *სპამი* / *spami* 'spam', *ინფლუენსერი* / *influenseri* 'influencer' and *აპლიკაცია* / *aplikatsia* 'application'). However, for native Georgian words, the results are less consistent and require careful revision. In this study, it correctly identified the etymology of *წილადი* / *ts'iladi* 'fraction' and *მზე* / *mze* 'sun', while producing an incorrect etymology for *ფანჯარა* / *panjara* 'window', which is in fact an older borrowing from Persian.

Overall, this study demonstrates that ChatGPT is a useful tool for lexicographic work, even in low-resource languages. It can significantly increase efficiency and provide useful insights,

definitions, and examples. However, it cannot replace human lexicographers, as it remains prone to errors. The findings suggest that ChatGPT does not process Georgian as reliably as high-resource languages such as English. Due to limited training data, it may generate ungrammatical, incoherent, or unnatural sentences in Georgian. This is an issue which is not typically observed in high-resource languages. Therefore, no such problems have been reported in other researchers' studies on the same topic.

These findings highlight the broader issue that low-resource languages remain at a disadvantage compared to high-resource languages. The effectiveness of chatbots decreases as the availability of linguistic data declines. Furthermore, chatbots tend to be biased toward American English (Trap-Jensen 2024). As a result, English-based patterns are often transferred into Georgian contexts where they do not make sense. ChatGPT-5 exhibits a higher tendency to hallucinate in Georgian and often relies on English structures, leading to non-existent words or meanings that reflect English usage rather than authentic Georgian. Its performance improves with simpler tasks, while more complex, language-specific prompts increase the likelihood of errors. In lexicography, where precision and contextual accuracy are essential, such limitations are significant.

Nevertheless, chatbots continue to improve. Compared to earlier models such as ChatGPT-4, ChatGPT-5 demonstrates clear progress, including reduced hallucination and improved processing. Rather than dismissing chatbots as unreliable, integrating them into lexicographic work is a more productive approach. Even for low-resource languages, ChatGPT-5 can provide valuable perspectives and assist in generating content that may not be immediately apparent to human researchers.

ChatGPT can be guided and adapted to specific needs. It can learn preferred dictionary styles and follow structured instructions. Therefore, for low-resource languages, users need to provide clear guidance and incorporate relevant linguistic knowledge. With proper revision, ChatGPT can become a highly effective supporting tool in lexicographic practice.

6 Conclusion

Artificial intelligence is developing rapidly and can be readily integrated into many fields, including lexicography. Chatbots such as ChatGPT can accelerate the process of dictionary compilation by generating headwords, definitions, examples, grammatical information, labels and even etymology. However, their performance is not always consistent. They may hallucinate information and introduce biases derived from unreliable or unknown internet sources.

This study has shown that ChatGPT exhibits more limitations when working with low-resource languages, such as the Georgian language. ChatGPT-5 is inconsistent in its performance in Georgian, and its errors become particularly evident in ungrammatical sentences. However, it still remains an efficient and practical tool, as it can generate valuable lexicographic information. Although its outputs require revision and editing, the generated entries can still be meaningful and creative. Given the growing demand for such technologies, it is likely that chatbots, and ChatGPT in particular, will continue to improve and become more effective in handling low-resource languages. Therefore, lexicographers should test

the capabilities of artificial intelligence, learn how to use it, and incorporate it into their work.

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