



Chance or Challenge: The Role of ChatGPT in History Teaching and Historical Research in Higher Education

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Abstract. Since its inception, ChatGPT has attracted widespread attention due to its versatility and intelligence. ChatGPT is able to accurately punctuate Chinese ancient texts, with an accuracy rate of over 90% for general ancient text punctuating. In terms of translating ancient texts, ChatGPT also has a high accuracy rate. In addition, it possesses the ability to address historical inquiries. The emergence of ChatGPT has also affected the teaching of history in universities. We should follow the development of the times, actively use ChatGPT, adjust teaching content and methods in education, enable students to master relevant skills of ChatGPT so as to lay a good foundation for future studies.

Keywords: Artificial Intelligence, ChatGPT, Historical Teaching, Historical Research

1 Introduction

ChatGPT (full name: Chat Generative Pre-trained Transformer) is a chatbot program developed by OpenAI in the United States. It was officially released to the public on November 30th, 2022. ChatGPT is a natural language processing tool driven by artificial intelligence technology that can engage in conversations by understanding and learning human language. It can interact with context to truly chat and communicate like humans, even completing tasks such as writing emails, video scripts, copywriting, translation, code, and papers.

Since its release, ChatGPT has received widespread attention from around the world and created a series of records. It quickly became popular on social media with over one million registered users in just five days. By the end of January 2023, the number of monthly active users of ChatGPT had exceeded 100 million, making it the fastest-growing consumer application in history. In April of the same year, its number of visitors reached 900 million, accounting for more than one-tenth of the global population and six times higher than December 2022. [1]

2 Two Different Attitudes towards ChatGPT in Academics

While its rapid growth has sparked diverse opinions in society, there are both supporters and opponents. Supporters believe that ChatGPT will help humans handle various tasks such as writing emails, video scripts, copywriting, translation, code, and papers, greatly improving work efficiency.

However, Opponents have raised objections mainly from four aspects:

(1) ChatGPT can generate content that is difficult for teachers or journal editors to distinguish between genuine and fake, which is detrimental to classroom education and paper submissions. If students use the content generated by ChatGPT as homework, teachers often cannot identify whether it was written by the student or by ChatGPT, resulting in unfair grading. If contributors submit papers generated by ChatGPT, journal editors also usually cannot identify whether they were written by the student or by ChatGPT, leading to unfair review.

(2) As ChatGPT develops to a certain extent, it becomes uncontrollable, and humans may actually be controlled by ChatGPT because they oppose continuing to develop technology beyond GPT-4. In March 2023, Yoshua Bengio (Turing Prize winner and professor at University of Montreal), Elon Musk (CEO of SpaceX, Tesla & Twitter), and many other famous people “call on all AI labs to immediately pause for at least 6 months the training of AI systems more powerful than GPT-4.”[2]

(3) ChatGPT may leak confidential information or privacy issues, leading to security issues for countries, companies, or individuals. On March 11th, 2023, the DS department of Samsung Electronics began allowing employees to use ChatGPT. However, within less than 20 days, three instances of confidential information leaks occurred. Two of them were related to semiconductor equipment and the other one was related to meeting content. [3]

(4) ChatGPT may create false content, leading to users accepting incorrect knowledge. I once asked ChatGPT to list ten monographs on Macau history, and ChatGPT listed them confidently in a very short time. However, it turned out that these ten books did not exist at all, and they were all fabricated by ChatGPT. Similarly, ChatGPT can provide medical knowledge. To verify whether ChatGPT could replace doctors for consultations, Dr. Lü Hailong, a psychiatrist from the First Hospital Affiliated to Zhejiang University Medical College, let ChatGPT take a test composed of questions from the Chinese Professional Qualification Examination for Doctors, with a total score of 100 points. In the end, ChatGPT scored 57 points failing. [4]

In light of this, some countries and institutions have begun banning the use of ChatGPT. Since January 4th, 2023, the New York City Department of Education has limited access to ChatGPT from their public schools’ internet and devices. From January 24th, 2023, publisher Springer Nature requires that large language models such as ChatGPT cannot be listed as authors in any of its journals. [5]On February 6th, academic journal Science banned the use of generated text by ChatGPT in papers and also prohibited naming ChatGPT as an author. [6]In February, the University of Hong Kong planned to initiate discussions among teachers and students about the impact of AI on teaching. However, before that, it decided to ban the use of ChatGPT or other AI tools in all classes, assignments, and assessments at HKU. [7]

On March 31st, the Italian data-protection authority announced the immediate ban on the use of ChatGPT, and imposed restrictions on OpenAI from processing information about Italian users. The DPA also initiated an investigation into the matter. [8] Italy became the first Western country to enforce a ban on ChatGPT.

3 The Role of ChatGPT in Historical Research

3.1 Automatic Punctuation of Classical Chinese Text

Currently, the global collection of Chinese ancient texts is estimated to consist of approximately 30 billion characters. The majority of these ancient texts have not been punctuated, proofread, or translated into modern Chinese, resulting in significant difficulties for ordinary readers. Prior to the introduction of ChatGPT, several automatic punctuation tools had already been developed. These tools have demonstrated high accuracy rates in automatically punctuating classical Chinese texts. For instance, the Ancient Poetry and Prose Sentence Segmentation system claims an accuracy rate exceeding 90%, achieved through advanced Deep Learning algorithms trained on billions of ancient Chinese texts over an extended period, equivalent to a master's degree level in Chinese. [9]

The commonly used technology for automatic punctuation is BERT (Bidirectional Encoder Representation from Transformers), a truly revolutionary natural language processing technology. It has ushered in the era of pre-training models, wherein models are initially trained with massive amounts of data and subsequently fine-tuned based on specific requirements. The Peking University Digital Humanities Center has trained BERT models on classical Chinese texts and conducted successful tests in automatic punctuation, automatic sentence reading, and named entity recognition. Similarly, ChatGPT's automatic punctuation capabilities are comparable to previous technologies. When tested with a sample of classical Chinese text, I observed an accuracy rate of around 90% for general automatic punctuation, with only a few exceptions like book titles such as *Qi Sheng* failing to receive proper punctuation. It is important to note that ChatGPT is primarily trained on English text at present, but it is expected that with additional training on Chinese text in the future, ChatGPT's accuracy will further improve. [10]

3.2 Translation and Polishing in Classical Chinese and English

Several machine translation tools have been available on the market, including DeepL, Google Translate, Tencent TranSmart, Microsoft Translator, LanMT, and others. These tools have extensive resources and established reputations. How does ChatGPT's actual translation performance compare? Following professional testing conducted by the Wenxiang Jiao team, it has been found that ChatGPT performs competitively with commercial translation products on high-resource European languages but lags behind significantly on low-resource or distant languages (See tables 1 and 2).

Table 1. Comparison of different prompts for ChatGPT to perform Chinese-to-English (Zh⇒En) translation[11]

System	BLEU↑	ChrF++↑	TER↓
Google	31.66	57.09	56.21
DeepL	31.22	56.74	57.84
Tencent	29.69	56.24	57.16
ChatGPT w/Tp 1	23.25	53.07	66.03
ChatGPT w/Tp 2	24.54	53.05	63.79
ChatGPT w/Tp 3	24.73	53.71	62.84

Table 2. Performance of ChatGPT for multilingual translation[12]

System	De-En		Ro-En		Zh-En	
	⇒	⇐	⇒	⇐	⇒	⇐
Google	45.04	41.16	50.12	46.03	31.66	43.58
DeepL	49.23(+9.3%)	41.46(+0.7%)	50.6(+0.9%)	48.39(+5.1%)	31.22(-1.3%)	44.31(+1.6%)
Tencent	n/a	n/a	n/a	n/a	29.69(-6.2%)	46.06(+5.6%)
ChatGPT	43.71(-2.9%)	38.87(-5.5%)	44.95(-10.3%)	24.85(-46.0%)	24.73(-21.8%)	38.27(-12.1%)

System	De-Zh		Ro-Zh		De-Ro	
	⇒	⇐	⇒	⇐	⇒	⇐
Google	38.71	21.68	39.05	25.59	33.31	32.27
DeepL	40.46(+4.5%)	22.82(+5.2%)	38.95(-0.2%)	25.39(-0.7%)	35.19(+5.6%)	34.27(+6.1%)
Tencent	40.66(+5.0%)	19.44(-10.3%)	n/a	n/a	n/a	n/a
ChatGPT	34.46(-10.9%)	19.80(-8.6%)	30.84(-21.0%)	19.17(-25.0%)	33.38(+0.2%)	29.89(-7.3%)

However, ChatGPT possesses a noteworthy feature that sets it apart – the ability to modify existing translations based on instructions. This is a crucial function that is not available in Google Translate and other translation tools. By using Google Translate and other translation tools for the initial translation, followed by using ChatGPT to refine and revise the translation, and ultimately conducting manual proofreading, significant time can be saved while ensuring accuracy.

3.3 Answering Historical Questions

One of the prominent capabilities of ChatGPT is its ability to answer historical questions based on existing knowledge. For instance, I asked “What are the differences between the Yuan and Ming dynasties?” ChatGPT provided brief answers to several points, “Some differences between the two dynasties include: The Yuan dynasty was founded by the Mongol Empire while the Ming dynasty was founded by a Han Chinese peasant. The Yuan dynasty was known for its military conquests and its promotion of trade along the Silk Road while the Ming dynasty was known for its artistic achievements and its promotion of Confucianism. The Yuan dynasty was the first time that

non-Chinese people ruled all of China while the Ming dynasty was the last dynasty ruled by ethnic Han Chinese.” And if further prompts are given, it can provide more detailed responses.

However, it is worth noting that ChatGPT may not provide satisfactory answers to certain simple questions. For instance, when asked “What are the differences in maritime policy between the Yuan and Ming dynasties?” ChatGPT may respond with, “I couldn’t find any information on the differences in maritime policy between the two dynasties.” This can be surprising as it is a commonly known question in academic circles.

4 Embrace ChatGPT and Address its Teaching Challenges

From the analysis above, it is clear that ChatGPT plays an indispensable role in historical research. In the face of the challenges brought by AI represented by ChatGPT, education must keep up with future trends. According to a survey, over 89% of students used ChatGPT to help with homework assignments in January 2023. [13] This makes us realize that banning ChatGPT is unrealistic and unnecessary. Therefore, instead of banning it, we should embrace ChatGPT and teach students how to use it effectively. To this end, Ni Minjing, Deputy Director of Shanghai Education Committee, proposes that education reform urgently needs to make significant adjustments in three aspects: (1) The primary goal of education is to cultivate individuals who can think independently and have the ability to judge values correctly, rather than acquiring specific knowledge; (2) The second is that the methods and approaches of education need to be significantly adjusted. The main direction is to use learning tools such as ChatGPT to coordinate and improve teaching methods, instead of avoiding or fearing them; (3) Thirdly, beyond knowledge learning, we should pay more attention to the quality of learning. [14]

In practical teaching, we should also make some adjustments. First, we need to adjust the content of history teaching. In the past, we often let students memorize a lot of knowledge while neglecting the cultivation of their understanding and analytical abilities. In the future, we should increase the training content that can be learned using ChatGPT so that students can flexibly master the prompts and steps of ChatGPT and ultimately use it to analyze and understand history. Second, the content and format of homework should also be adjusted. To avoid cheating by using ChatGPT, we can assign fewer written reports and replace them with oral reports or exams.

5 Conclusion

Through the analysis above, it can be seen that the emergence of ChatGPT has brought new opportunities and challenges to historical research. ChatGPT is able to accurately punctuate Chinese ancient texts, with an accuracy rate of over 90% for general ancient text punctuating. In terms of translating ancient texts, ChatGPT also has a high accuracy rate. Most importantly, it can refine translations based on instructions to achieve a high level. At the same time, ChatGPT can also answer some historical questions based on

existing knowledge. However, its training in certain aspects of Chinese historical common sense is clearly not yet excellent enough. Despite the various issues with ChatGPT, it has become popular in many countries around the world. The academic community should embrace the trend of the times and actively adjust teaching content and methods to enable students to master various techniques of ChatGPT, laying a good foundation for future research.

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