

# A Comparative Study of AI-Assisted English Translation Strategies for Pingju Opera

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## Abstract

With the advancement of artificial intelligence (AI), large language models (LLMs) have demonstrated broad application prospects in the field of subtitle translation. This study takes two representative lyrical segments—*Naming the Flowers* (报花名) and *Praising Yue'e* (夸月娥)—from the Pingju opera *A Flower as Matchmaker* 《花为媒》 as its corpus, and compares the English subtitles generated by two main-stream LLMs. The analysis focuses on three dimensions: linguistic style, cultural imagery, and communicative adaptability. By integrating Newmark's theories of semantic and communicative translation and Nida's theory of functional equivalence, the study evaluates the strategic tendencies and functional performance of AI models in generating Pingju subtitles. The results show that LLM-1 emphasizes semantic completeness and cultural fidelity, making it suitable for formal performance settings, while LLM-2 features concise language and a brisk rhythm, better aligning with mass communication contexts. This paper aims to provide strategic insights for AI-assisted Pingju translation practice and promote the effective dissemination of regional Chinese opera in international contexts.

## Keywords

Pingju Opera; AI-Assisted Translation; Subtitling; Translation Strategies

## 1. Introduction

As one of China's five major traditional operas, Pingju originated in Tangshan, Hebei Province. Known for its vivid language, emotional directness, and realist aesthetic, it was recognized as a national intangible cultural heritage in 2006 (Zhang et al., 2015). As a literary-performative art form, Pingju embodies regional identity and national aesthetic values, offering unique potential for cross-cultural communication.

With the promotion of the "Chinese culture going global" strategy, traditional Chinese operas have drawn increasing academic attention. Compared with Peking Opera, which has explored more mature channels for international communication, Pingju remains in its early stages of global dissemination. Its lyrics feature strong rhythm, rich rhetorical devices, and vivid imagery, with meanings closely tied to performance context and situational cues. These linguistic and performative characteristics pose challenges for traditional translation approaches, particularly in achieving both textual fidelity and aesthetic resonance, thus affecting the effectiveness of cross-cultural transmission.

Recent advances in large language models (LLMs) provide new opportunities for translating culturally rich texts. AI-powered tools like ChatGPT, DeepSeek, and Qwen-MT demonstrate high capabilities in semantic generation, stylistic adaptation, and multimodal alignment, showing promise in subtitle translation and intercultural communication (Zhang, 2025). Compared with human translation, AI-assisted translation enhances efficiency and may better handle rhythm, tone, and contextual coherence.

This study analyzes English subtitle translations of two lyrical segments—*Naming the Flowers* (报花名) and *Praising Yue'e* (夸月娥)—from the classic Pingju opera *A Flower as Matchmaker* 《花为媒》, using outputs from two mainstream LLMs. By examining linguistic style, cultural imagery, and communicative adaptability, the study explores the feasibility of AI-assisted Pingju translation and offers strategic insights for promoting regional Chinese opera globally.

## 2. Research Background

### 2.1 National Emphasis on Cultural Communication

With the enhancement of China's comprehensive national strength and growing international influence, overseas audiences have demonstrated an increasing demand for understanding Chinese civilization. Culture has become a crucial window for the international community to comprehend China. As a key carrier for cross-cultural exchange, the arts not only offer intuitive aesthetic experiences but also play an irreplaceable role in the mutual learning between civilizations and the construction of cultural identity.

In recent years, China has continuously advanced the international dissemination of fine traditional culture, advocating for diverse approaches to help the world better understand China. Since 2017, emphasis has been placed on strengthening cultural communication capacity and establishing systems aligned with national development, as shown by the issuance of the *Opinions on Implementing the Project for Inheriting and Developing Fine Traditional Chinese Culture* in 2017 (General Office of the Communist Party of China (CPC) Central Committee & General Office of the State Council, 2017). The 14th Five-Year Plan highlighted the need to enhance the global appeal of culture (State Council of the People's Republic of China, 2021). More recent initiatives further stressed improving cultural presentation and communication, demonstrating the growing strategic role of cultural communication in national development.

Against this backdrop, Pingju opera, known for its colloquial style and local charm, plays a key role in cultural communication. Through subtitle translation, it preserves artistic heritage while embracing innovation, offering a new model for regional opera to enter the global stage and contributing to the global visibility and affinity of China's cultural image.

### 2.2 Current Status of English Translation of Pingju Opera

In the course of Chinese opera's global outreach, Peking Opera has taken the lead in developing a relatively systematic mechanism for international dissemination. This includes script translation, subtitle production, multilingual publishing, overseas performances, and professional talent development. Since Mei Lanfang's U.S. tour in 1930, Peking Opera has maintained global visibility and accumulated substantial translation experience. Compared to full English performances, subtitled versions better retain artistic features and enhance audience receptiveness through multi-modal presentation, making them a more viable approach for intercultural transmission (Guan & Li, 2024).

In contrast, Pingju Opera remains at an early stage of English translation and international communication. A pioneering case in the 1980s was the English adaptation of *Qin Xianglian* 《秦香莲》 by Han Ruijie and Zhao Yuxing, which creatively integrated rhythmic techniques and was well received both at home and abroad (Chen, 1987). However, this practice did not evolve into a sustainable model. Today, Pingju faces linguistic, technical, and resource-based challenges. The emergence of AI—especially LLMs—offers promising support for automated subtitle generation and cultural adaptation, enabling scalable, cost-effective solutions for Pingju's global dissemination (Xu & Zhao, 2024).

## 3. Research Design

### 3.1 Research Corpus

This study draws on two lyrical segments from the Pingju opera *A Flower as Matchmaker: Naming the Flowers* and *Praising Yue'e*. As a representative work in the Pingju repertoire, the opera embodies typical themes and stylistic features of the genre. *Naming the Flowers* uses floral metaphors to represent human traits, characterized by parallelism, rhythmic flow, and rhetorical refinement. In contrast, *Praising Yue'e* emphasizes emotional expression and

psychological portrayal through vivid, colloquial language and strong sentiment. These segments differ in rhetorical strategies, rhythm, and emotional tone, offering varied linguistic and aesthetic challenges for translation. Their selection reflects the need to explore multiple dimensions of Pingju's linguistic artistry and to evaluate how different translation strategies perform under distinct stylistic and expressive conditions (Qian, 2012).

The study employs two mainstream LLMs with strong translation performance. LLM-1, trained on extensive English corpora, excels in generating fluent and idiomatic output. LLM-2, built on a multilingual architecture, performs well in Chinese–English semantic alignment and terminology processing. The two models differ in language style, cultural reference handling, and translation strategies, providing a comparative basis for evaluating the effectiveness of AI-assisted subtitle translation in the context of traditional Chinese opera.

### 3.2 Translation Theories

According to Newmark's (1988) theory of semantic translation and communicative translation, translation should not only retain the form and cultural imagery of the source text but also consider the comprehension and reception of the target audience. In the context of Pingju translation—particularly subtitle translation—translators must strike a balance between preserving cultural specificity and ensuring communicative effectiveness. The richly rhetorical and culturally symbolic nature of opera lyrics calls for preservation in English translation; however, the subtitle format demands brevity and clarity to facilitate immediate audience comprehension during performance. AI-generated translations often fluctuate between “semantic fidelity” and “communicative adaptation,” making Newmark's framework a useful tool for analyzing the strategies employed by large language models.

Nida's (1993) theory of functional equivalence further emphasizes that the value of a translation lies not only in formal correspondence but in the extent to which it produces an equivalent effect on the target audience. His distinction between formal equivalence and dynamic equivalence provides a critical evaluative framework for Chinese opera subtitles. Since subtitles directly impact viewing experiences, dynamic equivalence becomes a crucial metric for judging translation quality. If an AI-generated subtitle is literally accurate but fails to elicit immediate understanding or emotional resonance from the audience, its communicative effectiveness is significantly undermined.

### 3.3 Research Methodology

This study adopts a comparative analytical approach by selecting two representative lyric segments from the Pingju opera *A Flower as Matchmaker*—namely *Naming Flowers* and *Praising Yue'e*—as the primary corpus. Using identical prompts, the lyrics were input into two mainstream LLMs to generate corresponding English translations, which were then systematically compared. The analysis focuses on three key dimensions:

- 1) Linguistic accuracy, assessing the appropriateness and grammaticality of vocabulary and syntax;
- 2) Cultural imagery reproduction, examining how rhetorical devices, analogies, and cultural symbols are handled;
- 3) Stylistic fidelity, evaluating whether the translations convey the original performative features and character tone;

Grounded in these dimensions, and informed by the translation theories of Newmark and Nida, the study classifies and evaluates the strategic tendencies and functional performance of each model's output.

By conducting detailed case comparisons, this research explores the expressive characteristics and cultural adaptability of different AI models in translating Pingju lyrics. The findings aim to systematically reveal stylistic and strategic variations in AI-generated opera translations, offering practical insights for enhancing the cross-cultural dissemination of Pingju through subtitle translation.

## 4. Comparative Analysis of Translations by Two LLMs

### 4.1 Translation Analysis of Naming Flowers

*Naming Flowers* constructs a rhythmically layered seasonal panorama through the sequential depiction of floral imagery across the four seasons. The language is characterized by parallel sentence structures and densely packed symbolic imagery, blending strong folkloric elements with rhetorical elegance. Due to space constraints, this study selects three representative lines from the original lyrics for analysis. The English translations generated by LLM-1 and LLM-2 are compared as follows:

**Table 1. English Translation Comparison of Selected Lines from *Naming Flowers in A Flower as Matchmaker* by LLM-1 and LLM-2**

Original Lyrics	Translation by LLM-1	Translation by LLM-2
春季里风吹万物生	In spring, the wind awakens all things.	In spring, the waking winds breathe life anew.
桃花艳, 李花浓, 杏花茂盛	Peach blossoms glow, plum blooms deepen, apricot flowers bloom.	Peach blossoms glow, plum blooms blush, apricot boughs burst with snow.
雪纷纷, 梅花雪里显精神	Snowflakes fall, plum blossoms bloom with spirit.	In winter, snowflakes weave their thread.

From the perspective of language style, LLM-1 tends to adopt concise and structurally clear sentence patterns. Its translations are natural, fluent, and semantically explicit, facilitating real-time comprehension in stage subtitles. LLM-2, by contrast, favors a more literary and metaphorical approach, employing vivid imagery and syntactically complex expressions. While this poetic style enhances rhetorical richness, it sometimes leads to semantic deviation. For instance, the phrase “apricot boughs burst with snow” creates a striking image but may be misinterpreted as a winter scene, thereby undermining the original springtime theme of “杏花盛开” (apricot flowers in full bloom).

In terms of cultural imagery reproduction, LLM-1 predominantly uses literal translation strategies, striving for word-by-word correspondence and preserving floral references such as “peach,” “plum,” and “apricot”, which aids in the accurate conveyance of cultural features. LLM-2, on the other hand, prioritizes aesthetic effects, occasionally omitting key images. For example, the third line excludes the explicit mention of “plum blossom” (梅花), using only “snowflakes” to imply the seasonal atmosphere—thus failing to reflect the culturally significant symbolism of “plum blossoms blooming in snow”.

In summary, LLM-1 performs better in terms of informational integrity and subtitle adaptability, making it more suitable for scenarios such as live performances where instant comprehension and cultural transmission are prioritized. LLM-2, while rich in linguistic tension and artistic expression, is more appropriate for literary rewriting or aesthetic dissemination targeting native English-speaking audiences.

## 4.2 Analysis of the Translation of Praising Yue’e

The excerpt *Praising Yue’e* presents a vivid and progressively layered depiction of Li Yue’e’s beauty and charm. Characterized by refined language, rich rhetorical devices, and a fusion of traditional aesthetics with poetic expression, it stands as one of the most expressive and artistically significant segments in Pingju opera. This study selects six representative lines from the excerpt to conduct a comparative analysis of the translations produced by LLM-1 and LLM-2.

**Table 2. English Translation Comparison of Selected Lines from Praising Yue’e in *A Flower as Matchmaker* by LLM-1 and LLM-2**

Original Lyrics	Translation by LLM-1	Translation by LLM-2
芙蓉面, 眉如远山秀	A lotus-like face, with eyebrows curved like distant mountains.	Her face a lotus, brows like distant hills.
杏核眼, 灵性儿透	Eyes shaped like apricot pits, gleaming with inner spirit.	Almond eyes sparkle with wit and grace.
露出来十指尖如笋	Revealing ten fingertips as slender as bam- boo shoots.	Revealing ten bamboo-shoot fingertips.
她的腕如白莲藕	Her wrists, fair and smooth like white lotus roots.	Wrists like white lotus roots.
美天仙还要比她丑	Even heavenly fairies pale beside her.	Even fairies would envy her beauty.
嫦娥见她也害羞	Chang’e herself would blush in shame.	The moon goddess would blush in shame.

LLM-2 tends to adopt concise, minimalist sentence structures such as “Wrists like white lotus roots.” While this preserves the core imagery and color description, it lacks semantic elaboration and tactile nuance, thereby failing to fully convey the aesthetic sentiment and rhetorical layering embedded in the original line. As a result, such translation choices may weaken the emotional resonance and cultural imagination of the audience in the context of stage subtitles.

Regarding the rhythm and aesthetic rendering of character portrayal, LLM-1 emphasizes the sequential flow of

action and descriptive layering, as seen in the phrase “revealing ten fingertips as slender as bamboo shoots,” which facilitates visual perception and continuity for the target-language audience. LLM-2, however, favors condensed metaphorical expressions such as “ten bamboo-shoot fingertips.” Although poetic, such condensed phrasing may result in significant informational gaps in subtitle processing, leading to possible cognitive discontinuities for viewers.

Overall, when translating lyric segments that rely heavily on aesthetic rhetoric and character description, LLM-1 demonstrates notable advantages in detail preservation, rhetorical fidelity, and cultural referent retention. It is therefore more suitable for real-time stage subtitle presentation and cross-cultural communication. In contrast, although Model 2 excels in literary artistry, its outputs still require manual post-editing to enhance contextual coherence and cultural accuracy in subtitling applications.

### 4.3 Evaluation of Translation Strategies

Both LLM-1 and LLM-2 demonstrate the capacity to generate stage subtitles for Pingju lyrics, yet they exhibit distinct tendencies in their translation strategies and cultural rendering. LLM-1 places greater emphasis on imagery preservation and stylistic fidelity, with its output largely characterized by semantic translation and formal equivalence. This approach aims to retain the rhetorical structure and traditional aesthetics of the original lyrics, thereby preserving the unique linguistic beauty of Pingju. Therefore, it is better suited for formal cultural dissemination contexts where fidelity to the source text is prioritized.

LLM-2, by contrast, tends to simplify or adapt culturally specific references, as exemplified by translating “嫦娥” as “the moon goddess.” This strategy reflects a more communicative orientation and dynamic equivalence, facilitating accessibility for target-language audiences. However, such adaptations may also diminish the distinctiveness and recognizability of the original cultural imagery.

From a subtitle adaptation perspective, LLM-1 is more appropriate for performance settings that prioritize cultural authenticity and aesthetic presentation, while LLM-2 better suits fast-paced, mass-oriented communication scenarios. Both strategies offer unique advantages. In practical applications, translators may flexibly choose or integrate these approaches based on target audience characteristics and performance objectives, striving for an optimal balance between linguistic artistry and communicative effectiveness.

## 5. Conclusion

This study examined two lyric segments—*Naming Flowers* and *Praising Yue’e*—from *A Flower as Matchmaker*, comparing the subtitle translations of two large language models (LLMs). By analyzing linguistic style, cultural imagery, and communicative suitability, it outlined feasible pathways for AI-assisted subtitle generation in Pingju opera.

The findings have shown the distinct tendencies: LLM-1 emphasizes semantic completeness and cultural fidelity, aligning with formal equivalence and suiting formal performances. LLM-2 adopts concise and rhythmically adaptive expressions, reflecting dynamic equivalence and enhancing accessibility for diverse audiences. A flexible combination of both approaches can improve expressive efficiency and cultural resonance.

As an exploratory attempt, the study has some limitations: the corpus is restricted to two excerpts, and the comparison involves only two models without human evaluation or audience assessment. Future research could broaden the corpus, integrate reference translations and reception studies, and conduct systematic assessments of AI’s adaptability. Such work will enhance the practical value of AI-assisted translation in strengthening the international communication of Chinese opera.

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