



# CLGC: A Corpus for Chinese Literary Grace Evaluation

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## ◆ Motivation

- Literary grace (文采) is regarded as one of the elements constituting the style and quality of articles in China.
- Literary grace also has attracted scholars in the natural language processing (NLP) field. Many studies have referred to several aspects of it and been applied in real-world applications, including Automated Essay Evaluation (AEE), quality assessment, machine translation, opinion mining, dialogue modeling, and modeling argumentative discourse.
- There have been few publicly available corpora annotated with literary grace.
- Constructing a corresponding larger-scale, multi-level, high-quality, and adaptable corpus is a matter of concern.

## ◆ Contributions

- We provide a relatively large-scale Chinese corpus with literary grace annotation, containing multi-level labels. The corpus can be used to facilitate the study of literary grace in literature, linguistics, and natural language processing.
- We analyze the corpus and explore linguistic features that affect readers' aesthetic judgments from three aspects: word, sentence, and paragraph levels
- We propose a new task, named Literary Grace Evaluation, which aims to make a comprehensive assessment of the literary grace level. Then we classify the corpus with machine learning models. The result shows that the features we chose are very effective in the literary grace evaluation task.

## ◆ Experiments

Method	P	R	F1	
Majority	47.1	63.85	51.8	
TextRNN	60.07	75.05	66.72	
TextCNN	77.07	79.38	75.58	
SVM	word-level features	77.71	80.75	77.81
	sentence-level features	65.13	72.45	64.46
	paragraph-level features	76.66	71.35	62.86
	word-level + sentence-level	79.56	81.85	79.71
	word-level + paragraph-level	79.24	81.7	79.26
	sentence-level + paragraph-level	67.81	72.55	64.51
word-level + sentence-level + paragraph-level features	79.08	81.55	79.17	

Table 4: The weighted average precision, recall, f1-score of Literary Grace Evaluation with SVM, TextCNN and TextRNN

To test the effect of the features mentioned above on the Literary Grace Evaluation task, we use SVMs as the classifier to classify the corpus automatically. Our experiment is based on 8,000 training data, 1,000 test data, and 1,000 validation data. The results are presented in Table 4.

The results prove that all the features are effective for the LGE task. They can improve the model performance to varying degrees. Word-level features have the most significant impact among them. Sentence and paragraph-level features have relatively little influence. However, they also play an essential role in literary grace assessment, further illustrating the necessity of evaluating literary grace in language units above the sentence level.

## ◆ The Corpus

The texts in CLGC were divided into three classes according to their literary grace level. The language of segments labeled as ``1" is plain and less rhetoric. Higher-level labels represent higher literary grace. Table 1 shows sentences selected from level 3 texts. Each text contains 200 to 300 tokens, and we provide multi-level annotations for every sentence in the text.

This corpus consists of 10,000 texts from novels and prose, including 64% level 1 texts (6,448 texts, 1,192,144 tokens), 19% level 2 texts (1,959 texts, 369,946 tokens) and 15% level 3 texts (1,593 texts, 294,748 tokens). Compared with the existing corpora, our corpus has the following features:

- (1) Focus on the real sense of literary grace, not just limited to the specific features;
- (2) Provide multi-level annotations that include literary grace level, sentence category, and figure-of-speech type tags;
- (3) Use a simple majority voting scheme to select the most probably literary grace label as the ground truth;
- (4) Contain paragraph-level materials varied in the domain.

TXT Name	Literary Grace Level	Sentence	Sentence Category	P	Figure-of-speech count	Figure-of-speech Type
sw1_116	3	如一个娇媚的女子，面带微笑、静静地守在那里，等待着有缘人穿越万水千山寻梦在这里。As a charming woman with a smile, stay there silently, waiting for a nice ring, who treks through thousands of rivers and mountains here to fulfill his exquisite dream.	C	0	1	['BY']
		pp	pp	pp	pp	pp
		白墙青瓦、小船河道、弯弯的石拱桥，你在这头微笑，我在那头张望。(White walls, green tiles, boats and rivers, curved stone arch bridges, you with a smile at this end, while I stay at the other end.)	C	0	1	['DO']
		我从不相信一见钟情，直到我看到那一幅幅美丽的图片，只那么一瞬间。(I never believed in love at first sight until I saw those beautiful pictures, just for a moment.	C	0	0	['']
		钟情，这个词，便深深的烙在心窝里。(Love, the word, is deeply etched in my heart.	C	0	1	['BN']
		西塘，宛如生命中一场艳遇，在钟情的土壤中开始生根发芽。(Xitang, like an adventure in life, began to take root and sprout in the soil of love.)	C	0	2	['BY','BN']
		pp	pp	pp	pp	pp
		西塘，河流纵横，绿波荡漾，宁静的光阴在桨声四起的水波间开始了一天的美好时光。(Rivers cross, green waves ripple in Xitang. With the sound of paddles, the quiet time starts a beautiful day among the water waves.)	C	0	1	['BN']
		end	end	end	end	end

Table 1: Sentences selected from level 1 text and level 3 text (``C" means declarative sentence; ``BY" means bi yu, including metaphor and simile; ``P" means paragraph-level rhetoric)

## ◆ Analysis

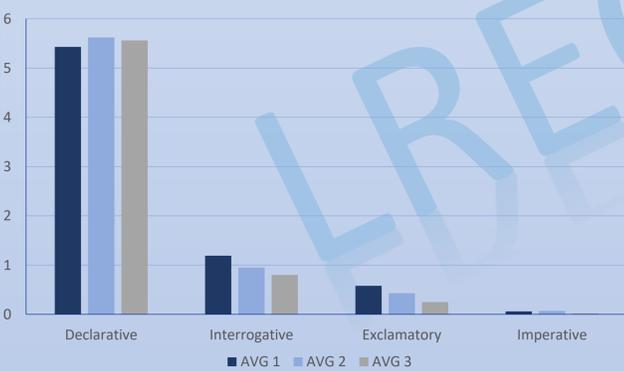


Table 2: The distribution of sentence category in the different level texts

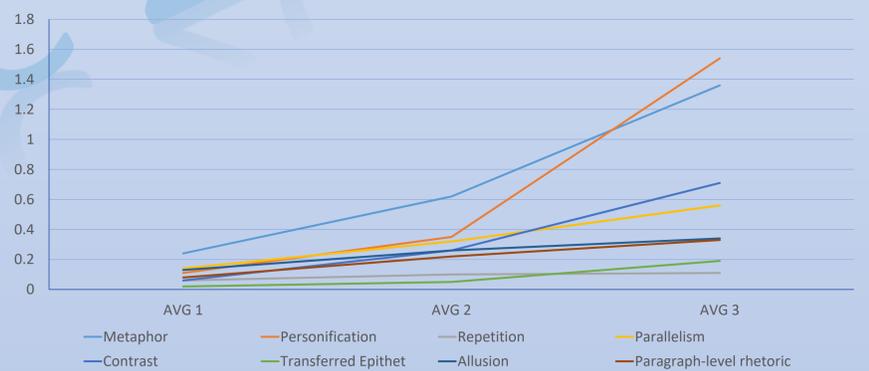


Table 3: The basic statistics of figure-of-speech tags

We further analyze the corpus from three aspects to find out linguistic features that affect Chinese readers' aesthetic judgment.

### ■ Lexical semantic

The words related to machinery, meteorology, natural objects, plant, color, and condition are easier to bring readers high aesthetic experience, e.g.花 (flower), 岁月 (years), 风 (wind). In comparison, the words related to the general term, relatives, society, social contact, address, and interjection are harder to bring this experience, e.g.他们 (they), 警察局 (police station), 妈妈 (mom).

### ■ Part-of-speech

Texts with high literary grace intend to use more descriptive words. Descriptive words are used to describe colors, states, and modalities of people or objects, e.g.雪白 (white), 滚烫 (hot), 毛茸茸 (fluffy). They are related to the appearance and shape of people and objects, which can give readers a vivid feeling.

### ■ Type-token ratio

The lexical diversity of high literary grace text is richer than low literary grace text.

### ■ Sentence category

The use of exclamatory and interrogative sentences can lead to lower literary grace. Table 2 shows the basic statistics of sentence category.

### ■ Figure-of-speech type

The figure-of-speech number is highly correlated with literary grace level ( $r=0.535^{**}$ ,  $p<0.01$ ). As for the different types of figure-of-speech, BN (Personification and Skeuomorphism) is the most correlated with the literary grace level ( $r=0.440^{**}$ ,  $p<0.01$ ), then is BY (Simile and Metaphor) ( $r=0.379^{**}$ ,  $p<0.01$ ), PB (Parallelism) ( $r=0.238^{**}$ ,  $p<0.01$ ) and DO (Contrast) ( $r=0.312^{**}$ ,  $p<0.01$ ). The last is TG (Transferred Epithet) ( $r=0.175^{**}$ ,  $p<0.01$ ). Table 3 shows the basic statistics of the figure-of-speech types.

### ■ Text topic

We merge the similar topics into two main topics as follows:

*High Literary Grace*: Romantic topic, includes life, travel, memory, nature, emotion, etc.  
*Low Literary Grace*: Daily life topic, includes everyday life, society, common verb, social, etc.

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