

A Phone Image Appreciation Method for Chinese Jingdezhen Porcelain of the Ming and Qing Dynasty

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Abstract. Chinese ancient porcelain market has been a social hot spot, and this article is mainly for Jingdezhen porcelain of the Ming Dynasty, especially object for lots of blue and white. We can use the Android operating system and digital image processing technology in designing an appreciation of ancient ceramics system, this modern image processing method extracts main features of ancient ceramics, such as blue and white color characteristics, and these characteristics can be entered into a phone database. It will extract the ceramic image feature information by programming of Java process after Android human interface, and then compare them with the corresponding database information, finally, output contrastive result of information.

Keywords: Android, Ancient porcelain Appreciation, Image Processing.

1. Introduction

World history of civilization has been for thousands of years of human interest in antiques, and not because of the changing times retreat cut, but more to cultural appreciation as the main purpose. Today, society has become a major driving force of economic investment; it is now no longer confined to their own admiration for antiques, but focuses more on their long-term business value.

As a big country in the international history of China, and its population is climbing antiques, antiquities price also will be soaring. As a leader in the ancient art - ancient ceramics, the price is even more alarming, in this condition, driven by the city of ancient ceramics fakes should also be born, the impact of the entire ancient ceramics market, while its true professional proportion of the population is very low, ordinary people on the very lack of understanding of ancient ceramics, very easily lead to be misled or overconfident.

In another field, with the popularity of Android phones, it has become an essential communication tool for people, along with the development of mobile phone technology updates; mobile phone use has become increasingly widespread, from the initial communication to the present Internet camera navigation. In order to more fully play its role, in order to facilitate the collection of ancient ceramics population screening authenticity, we will propose an Android-based appreciation of ancient ceramic method, and select the Ming Dynasty blue and white porcelain in Jingdezhen targeting specific design.

2. Ancient ceramics basic image recognition

2.1 Starting with the inscription

Under normal circumstances, the identification of ancient porcelain approach is to start from the main inscription, shape, decoration and glaze colors and features, the article is mainly on the inscription and color recognition features were identified.

Handed down today and imitation goods in the Ming and Qing dynasties porcelain majority, while the Ming and Qing dynasties, almost all model year and features. When we identify the authenticity of porcelain, need to focus on the following three points:

(1). First, it should be noted the inscription, pay attention to the inscription of strokes, such as horizontal, vertical, left, flick, hook, pick, point and other features. Because each person's calligraphy,

writing kiln models must also select a font, a certain level, and thus are bound to carefully imitate imitation, fear has no place like. Such flaws, it provides clues for identification porcelain. But note that this is just far enough, Ming and Qing dynasties, although the inscription, but the font is very realistic imitation of the late Qing Dynasty, it is difficult to identify, have a detailed comparison of the font and position, and avoid errors.

(2). The Ming font use almost kasha, but Dongle, Luanda, Hangzhou use only a few, and the Qing Sunshine are also prevalent in the using of kasha, then the kasha is used less in Yongzheng until the years after Jialing, it became mainstream until the late Qing Dynasty was restored to kasha main trend. Secondly, the color models are different. Ming and Qing porcelain blue and white dominated the inscription more. Ming Dynasty blue and white color models if observed with a magnifying glass, showing its colors are mostly deep sink. The dynasty after colored imitation goods are mostly scattered, shallow float. Luanda style swatch often presents black, blue, gray and other colors on the same objects, which, though not beautiful, but it is difficult to imitate the characteristics of future generations.

(3). In terms of the structure of words and fonts also have some rules to follow. For example, some question the Ming Dynasty kiln certain years, some problems making certain years, and Qing Imperial has not and will both use the "system", has not been found useful "made" the word.

In short, we should pay attention to observe the inscription in all aspects of their strokes, font, color, and other structures and models should also be aware of the same period inscription strokes early, middle and late still inconsistencies.

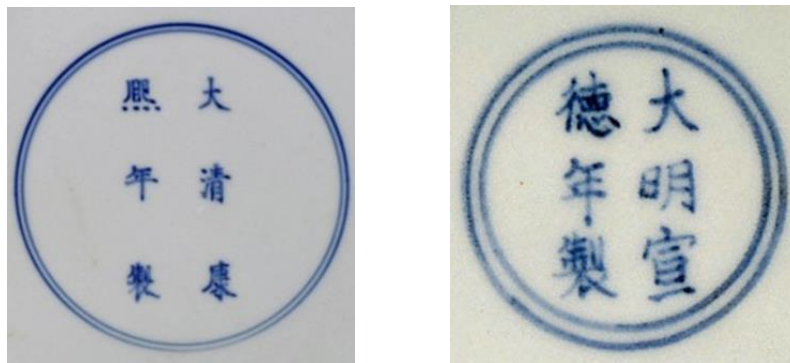


Fig. 1 the inscription samples in Ming and Qing dynasty

2.2 Starting from the color feature

From the perspective of color ornamentation, decoration on ceramics with the same styling with distinctive characteristics of the times and with the continuous improvement of painted porcelain abundant raw materials and technology, both in subject matter and form of expression has its own level and characteristics of different ages. Thus it became a division of the era, authenticity of a strong clue.

If we encounter a black porcelain enamel color Changhua contour, you should wonder whether it is true and reliable, because the application of the black contour lines earlier than the initial Masanori. Pastel generally no earlier than the late Kangxi, of course, hard to believe there are pastel imitation Shi Ming porcelain is not a fake. Qianlong period due to the extensive use of ocean color, and draw a pattern of decorative ornamentation Western methods, the pursuit of some works fine lines and ornamentation singular strokes, leaving part of the pattern inherent in lost national style. It also reflects the characteristics of a certain age.

3. The design of ancient ceramic phone image system

3.1 The basic framework of the overall system design

Our design use the aid system Android phone camera and full touch mode, and the user can also use the ceramic kind polygonal degree shooting, then collect the information and call the ceramic picture feature information database for comparison, the final output ratio.

The results, which provide some reference information for the user appreciation of ancient ceramics, ceramics for easy user identification for authenticity.

The design has four specific steps:

- (1)The first step, the ceramic image is zoomed in feature region, which is mainly for the color of ceramic ornamentation and inscription.
- (2)The second step is about the characteristics of the image gray area.
- (3)The third step is grayscale image linearization and segmentation process.
- (4)The fourth step is to establish a database of ancient ceramics.

The system consists of image pre-processing module, feature extraction module, the similarity metric module, feedback information Modules, (See Fig.2) as shown below. Below are the respective roles of the system configuration of the modules:

- (1) Image preprocessing modules: each captured image and the image on the current library image pre-processing;
- (2) Feature extraction module: the example of ancient ceramics picture feature information extraction and storage of the captured image will now feature information Extract database information retained contrast;
- (3) Similarity measure module: the current captured image feature information and database information similarity comparison;
- (4) Feedback module: Comparison of the results of the similarity information feedback to the user (See Tab.1).

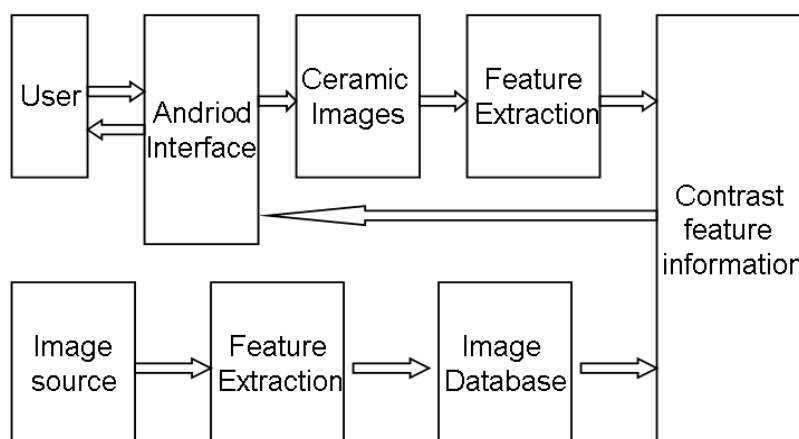


Fig. 2 Overall system design framework

Table 1. The main characteristics of the Ming and Qing porcelain

Era	Color	Inscription	Quantitative data
HongWu	Black gray	Made in Hongwu Ming dynasty	Color (03-13) _H Ins (00000001) _B
XuanDe	Deep blue	Made in XuanDe Ming dynasty	Color (14-21) _H Ins (00000010) _B
KangXi	Sapphire	Made in KangXi Qing dynasty	Color (23-34) _H Ins (01000011) _B
YongZhen	Gray purple	Made in YongZhen Qing dynasty	Color (43-52) _H Ins (01000100) _B
QianLong	Pure blue	Made in QianLong Qing dynasty	Color (67-81) _H Ins (01000101) _B

3.2 The basic design of the analog phone interface

Entire program interface design using blue and white effect, run by android simulation program, built-in database, users can shoot ancient ceramics, then click interface "than on" button, you will quickly process images and calls to the database information, and eventually display the results in Fig.3.

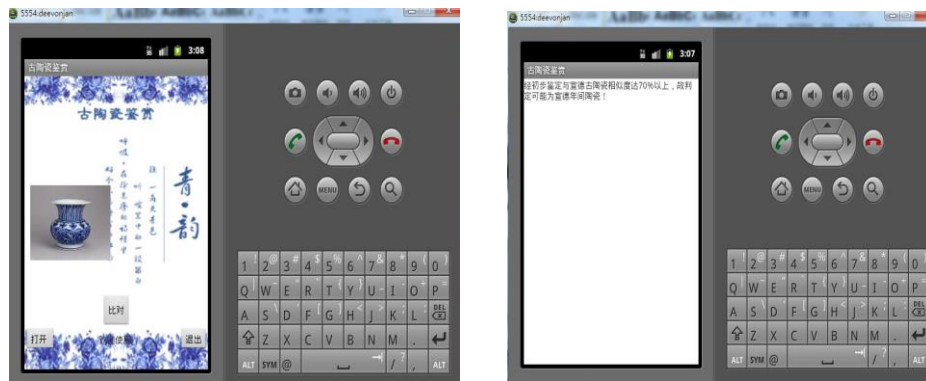


Fig. 3 Analog phone debugger interface

4. Conclusion

There are some areas for improvement in the system ,such as database information into the process, we need to improve gradually because of insufficient sample collection of ancient ceramics, this will affect the recognition rate in some extend, it is necessary to greatly improve the diversity of the sample. For identification of ancient ceramics, this is a good and effective attempt in other disciplines direction.

5. Acknowledgements

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