Construction of an Image Retrieval Program for Ancient Artifacts

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***Abstract*—This thesis explores various content-based image retrieval methods, focusing on region-based matching and a combination of content-based and keyword-based retrieval. The author applies these methods to the retrieval of ancient artifacts, considering both shape and color. The program also integrates keyword and shape-based search functionalities. The work concludes with a discussion of future research directions, including further study of image segmentation techniques and image classification methods to enhance the system's performance. The author describes the implementation of the program and its application to the specific task of retrieving ancient artifacts, but does not provide specific numerical evaluations of its performance.**

***Index Terms*—image retrieval, content-based, region-based, shape, color**

I. Introduction

The thesis provides an overview of image retrieval methods, including text-based and content-based approaches. It then delves into region-based image retrieval and a combined approach involving content-based and keyword-based search. The author applies these techniques to the specific challenge of retrieving ancient artifacts, considering both shape and color characteristics. The work aims to develop a program that can effectively retrieve ancient artifacts based on their visual features, such as shape and color, and also supports keyword-based searches. [1]

II. Methods

The methods section covers region-based image retrieval, including color-based techniques and Fourier-based shape description. The author also discusses image segmentation and region-based matching techniques, such as Unified Feature Matching (UFM). The program integrates these methods to support keyword and shape-based searches. The author uses the CxImage library and an open-source image retrieval library to implement the program. The implementation includes the segmentation and feature extraction of images, followed by the application of UFM to match regions across images. [1]

III. Results

The results section reports on the application of content-based image retrieval methods to the specific task of retrieving ancient artifacts. The author describes the implementation of the program and its performance, but does not provide specific numerical evaluations. The program successfully retrieves images based on shape and color, and also supports keyword-based searches. However, the author notes that the system's performance could be improved through further research into image segmentation and classification techniques. [1]

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IV. Discussion

The discussion highlights the limitations of the program and suggests future research directions, such as further study of image segmentation and classification techniques to improve system performance. The author notes that the current implementation does not provide detailed performance metrics, and that more work is needed to optimize the system for specific applications. The program's effectiveness in retrieving ancient artifacts is demonstrated, but the author emphasizes the need for continued research to enhance its capabilities. [1]

V. Conclusion

The thesis concludes with a summary of the achieved results, including the application of content-based image retrieval methods to the retrieval of ancient artifacts. The author also outlines future research directions, emphasizing the need for further study of image segmentation and classification techniques. The program successfully implements region-based and content-based search functionalities, but the lack of performance evaluations limits its overall effectiveness. [1]

References

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