

Is Real-Time Mobile Content-Based Image Retrieval Feasible?

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Content-based image retrieval (CBIR) is a method of searching through a database of images by using another image as a query instead of text. Recent advances in the processing power of smart phones and tablets, collectively known as mobile devices, have prompted researchers to attempt to construct mobile CBIR systems. Most of the research that has been conducted on mobile CBIR has focused on improving either its accuracy or its run-time, but not both simultaneously. We set out to answer the question: is real-time CBIR with manageable accuracy possible on current mobile devices? To find the answer to this question, we ran tests using a compiled database of 930 high-resolution images on both a desktop computer and a Nexus 7 tablet. These tests examined the relationship between image resolution, matching method, and image descriptor type on match time and accuracy. By scaling down the images before matching them, we were able to achieve a run-time on Android of less than 10 seconds while maintaining 60% accuracy on average. These results suggest that a mobile CBIR system can be developed with current technology that can sufficiently balance accuracy and run-time.