Accelerating CBIR System using Graphics Processing Unit in OPEN CV Environment

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 125
- 
Number 8

Year of Publication: 2015

Authors:

Bhavneet Kaur, Sonika Jindal,

10.5120/ijca2015906124
{bibtex}2015906124.bib{/bibtex}

Abstract

Content Based Image Retrieval is a system for retrieving the images from a dataset of images. The CBIR has several stages including feature extraction at the initial level and then performing the similarity matching. Later on based upon the similarity matching results the required images can be extracted. Images are a complex data to handle as they are composed of matrices and vectors of data and also due to

multi thread execution of algorithms, programmability and low cost, image processing becomes an appropriate field of achieving parallelism. To parallelize the phases of CBIR a special hardware is used known as Graphics Processing Unit. The objectives of the published work is to develop a Content Based Image Retrieval system and test it on benchmark WANG database using suitable and efficient techniques so as to achieve efficient results. As images are complex and there is an approach of achieving parallelism while dealing with images, so after implementing CBIR, the feature extraction phase has been parallelized and the tendency of GPU processor is exploited to obtain the speed up. An accuracy of range between 22 to 67%
for individual categories of the database was achieved. Finally on comparing the execution times of serial implementation and parallel implementation a considerable speed up of 15% on an average was obtained.

References

16. Bhavneet Kaur ,Sonika Jindal,(2014),An implementation of Feature Extraction over medical images on OPEN CV Environment, in Proceedings of, IEEE Devices, Circuits and
Communications (ICDCCom), 2014 Ranchi, India.


Index Terms

Computer Science  
Image Processing

Keywords

CBIR, Graphics Processing Unit, Feature extraction, Similarity matching, SURF, KNN, CUDA, OPEN CV