An Improved canny edge detection algorithm-IEEE(2009)

CANNY arithmetic operator has been proved to have good detective effect in the common usage of edge detection. However, CANNY operator also has certain deficiencies. Based on the analysis of the traditional CANNY algorithm, an improved canny algorithm is proposed in this paper. In the algorithm, self-adaptive filter is used to replace the Gaussian filter, morphological thinning is adopted to thin the edge and morphological operator is used to achieved the refining treatment of edge points detection and the single pixel level edge. The results of experiment show the improved CANNY algorithm is reasonable.

**[Efficient Implementation of Canny Edge Detection Filter for ITK Using CUDA 2012](https://www.computer.org/csdl/wscad-ssc/2012/4847/00/4847a033-abs.html)**

This work presents an efficient CUDA implementation of the Canny edge detection Filter for the Insight Segmentation and Registration Toolkit (ITK). The algorithm is tested on three generations of NVidia GPGPUs, showing performance gains of 3.6 to 50 times when compared to the standard ITK Canny running on two CPU models. The CUDA-enabled Canny is also compared to a more efficient Canny implementation from the OpenCV library. Examples of coding strategies to avoid warp serialization in CUDA are shown on a smart implementation of the Sobel filter, as well as on other algorithms.

Image Retrieval based on Image-to-Class Similarity 2016

Similar image/shape retrieval has attracted increasing interests in recent years. A typical strategy of

existing retrieval algorithms is to rank the images according to the image-to-image similarities, e.g.,

the similarities between the query image and the images in the database. This strategy ignores the

inherent information of the class that the query image belongs to (we call it query class). To address

this issue, rather than using image-to-image similarity, we propose a simple yet effective retrieval

method based on exploring the image-to-class similarity. The method uses an iterative framework,

where the size of the query class is progressively enlarged according to the previous retrieval results,

and the ranked list is generated according to the similarities between the images in the database and

the query class. This framework enables us to explore the inherent information of the query class, and

hence helps to improve the retrieval accuracy. Experimental results on various datasets demonstrate

that our method is able to effectively improve the image and shape retrieval accuracy compared to

state-of-the-art methods.