

The 8th International Conference on Computer Science and its Applications (CSA 2016)
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Segmentation and Counting of Cell in fluorescence Microscopy images using improved chain code algorithm

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Abstract. This study aims to automatically segment of oval cell in fluorescence stained cell image and quantify cell counts. For this study, an algorithm for oval cell contour tracking was suggested based on the classic chain code method and overlapped cells were segmented using border line angle variation information. For verifying the accuracy of the suggested method, our method and Freeman's chain code method were applied to the same oval cell images. Then the border line tracking results were identified and the execution speed and computation per pixel were compared. Also, it was compared with the segmentation result of the Watershed technique, which is a general region-based segmentation, for evaluating the cell segmentation result with the naked eye. We applied an automatic algorithm to quantify cell counts in 20 cell images. For verifying the accuracy of cell counting, our algorithm was compared with the result of the manual counting method and ImageJ tool-based counting method.

Keywords: Fluorescence microscopy image, Cell Segmentation, Chain code technique, oval cell, Cell Counting

1 Introduction

Recently, many researchers were measured from cell images of the microscope for check of medicine treatment and pathologic diagnosis of cellular tissue in bioinformatics field. Cell image processing was mostly performed by a specialist's subjective visual inspection, and it was required a lot of time, costs, high concentration as well as derived proper result. To acquire an objective and high reproducibility of cell image, many studies have been conducted about automated

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