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Iraqi Journal of Science, 2024, Vol. 65, No. 4, pp: 2198-2210
DOI: 10.24996/ijs.2024.65.4.36



ISSN: 0067-2904

Counting the Cells Based on Their Size Using Fuzzy Logic and the Image J System

Abstract

Medical diagnosis is the process of identifying the presence of a specific disease.

Medical images play an important and major role in helping the doctor and specialist in the process of diagnosing the patient's condition. As a result of the technological development taking place in the fields of artificial intelligence, which processes data quickly and efficiently by responding to various conditions and situations, providing a great deal of flexibility and accuracy, it is widely used in helping to diagnose diseases. Fuzzy logic was used to find the number of cells in medical images, where the increase or decrease in the number of cells beyond the normal limit indicates the presence of a specific disorder or disease.

This paper aims to use fuzzy logic and the Image J system to determine the appropriate mechanism and method for counting cells according to their size in the medical image, where a set of basic steps are implemented on the image by using the Image J system. This includes converting to mask, outlining, filling holes, watershedding, setting measurements, and analyzing particles. After that, using fuzzy logic to determine the best appropriate methods for counting cells in medical images based on size, enter a single random value for size, and cells smaller than that value are ignored. The area and perimeter of cells are accounted for.