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Enhancing Image Analysis through K-Means Clustering for Color Segmentation

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ABSTRACT

Dealing with a multitude of images can be an exceedingly labor-intensive endeavor. Machine learning techniques provide an efficient solution for a wide array of image analysis and manipulation tasks, and the K-means clustering algorithm, in particular, offers a valuable time-saving approach. This algorithm determines an optimal number, K, of clusters and identifies their central points, or "centroids," facilitating the extraction of the K most predominant colors within an image, thus enabling their utilization in diverse applications.

Keywords

ML, AI, image analysis, K-means clustering, clustering-algorithm, extract, dominant-color, percentage, editing, algorithm, finding.

INTRODUCTION

K-means clustering is a method through which a set of data points can be partitioned into several disjoint subsets where the points in each subset are deemed to be ‘close’ to each other (according to some metric). A common metric, at least when the points can be geometrically represented, is your bog standard euclidean distance function. The ‘k’ just refers to the number of subsets desired in the final output. It turns out that this approach is exactly what we need to divide our image into a set of colours.

METHODOLOGY

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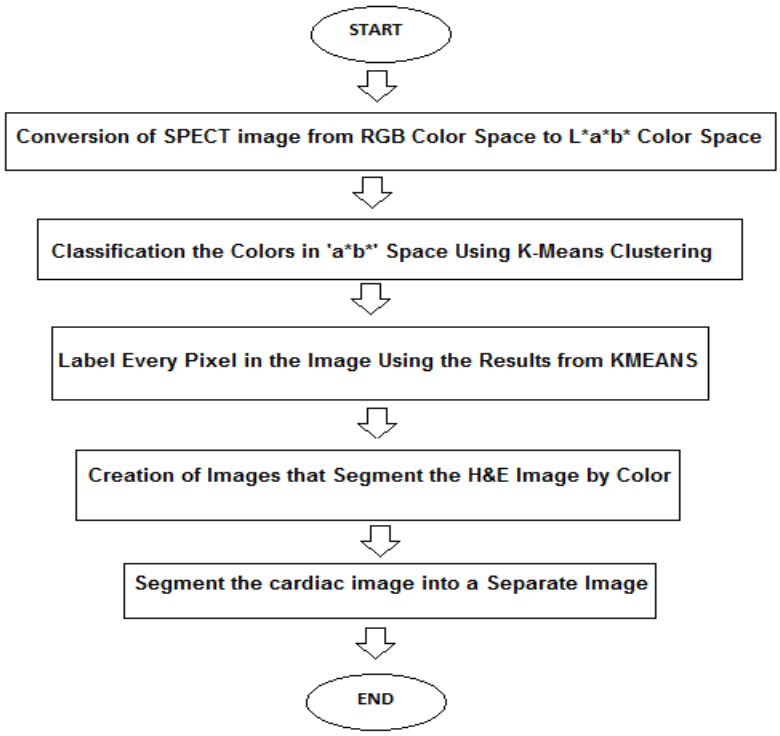

Fig1. Steps of Colour-Based Segmentation Using K-Means Clustering

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