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Clustering based Indexing of Celebrity Cartoon Images for Retrieval

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Abstract:
Celebrity cartoon image has its own attention as it characterizes a famous personality and also serves as a good
platform to communicate the scenario, express emotions and makes it easy to perceive without much effort. Retrieval
of celebrity cartoon images based on a query cartoon image is a difficult task because of the presence of caricatures,
sketches, drawings, painting and artistic style variations. Matching cartoon images and retrieving them is a challenging
task as artists may vary the same image with different styles and shape exaggerations for the same feature. A novel
clustering based tree is constructed with different levels and each level with varied number of nodes. The nodes are
expected to have similar images which are identified using partitional clustering. Tree based indexing is created by
designating unique indices for each node. The indices are framed in such a way that they follow their parent node. The
given query image traverses the tree till leaf node to retrieve the images based on a distance threshold. If the required
number of images are not retrieved, then backtracking is done to retrieve the similar images in the other children nodes
of same parent which are reached from the root based on the distance. The IIIT-Cartoon Faces in the Wild (IIIT-CFW)
dataset is taken for the experimentation. Images considered in this dataset contains caricatures, paintings, cartoons
and sketches of celebrities. Through analysis, it is found that the proposed approach performs well in terms of
evaluation measures as precision and recall, time and number of relevant retrieved images. Also it can be used in
reduction of search space in recognition of images as the retrieved relevant images could be used as a competent
search space. Hence, the proposed approach aids subsequently the celebrity cartoon image recognition. The proposed

approach is compared against two models as retrieval using linear search and linear search based on class representative.

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☰ Contents

I. Introduction

Cartoons are unique form of effective communication of ideas. The cartoon images can project a compelling perception on thoughts which a written article cannot. Hence, cartoons stand in its place indeed with the advancements in photography to help us to readily understand and interpret the outline depicted. Also, it has diverse applications in the field of education, entertainment, news, movies and infotainment [10].

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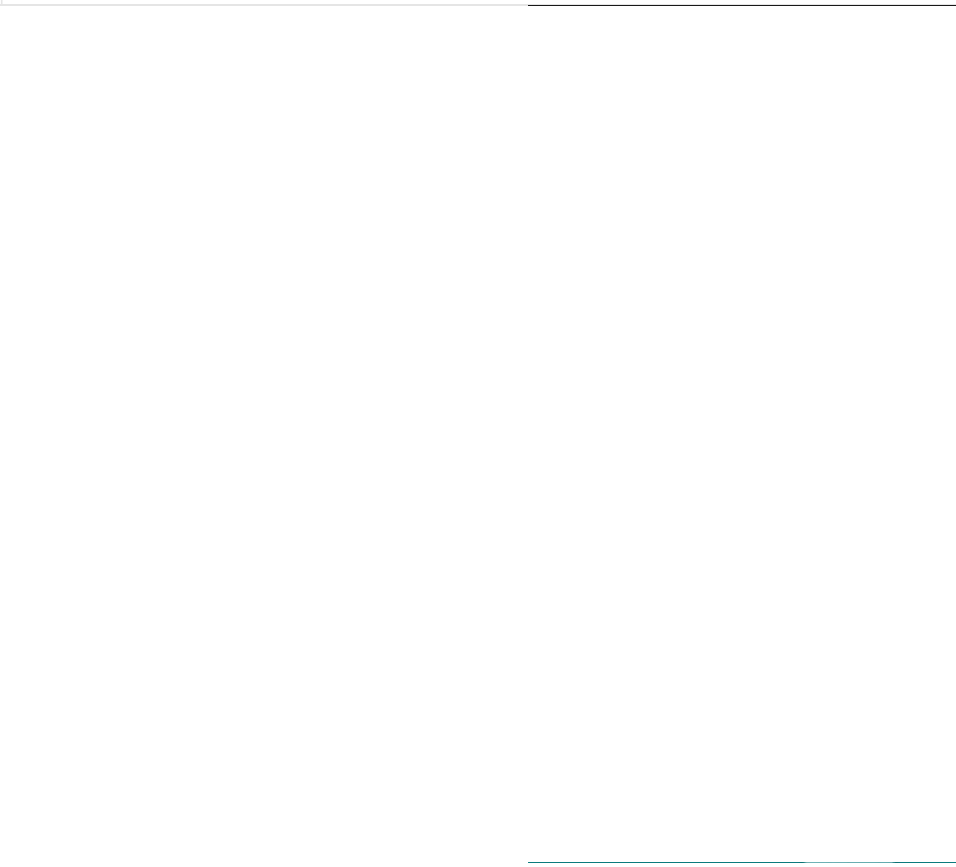
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