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Fuzzy and genetic algorithm based approach for classification of personality traits oriented social media images

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Abstract

In recent years, the usage of social media has been increasing exponentially because of its various real world applications in digital communication such as content sharing, entertainment, creating awareness, sending alerts, etc. One such task is to upload images/videos, write comments and post user reactions to express feedback, which can then be used to study human personality traits. Classifying images according to different personality traits, like Agreeableness, Conscientiousness, Extraversion, Neuroticism, Openness, etc., is challenging and essential because of several real-world applications mentioned above. This paper proposes a new personality-traits based method for classifying social images using Fuzzy and genetic algorithms. For each user, the proposed approach extracts profile picture, banners and descriptions to construct a set of vocabularies with the help of text detection, recognition and image annotation. For each word in the vocabulary, we employ a fuzzy logic-based method for obtaining a fuzzy co-occurrence matrix by defining the relationship between the words, which results in a fuzzy co-occurrence matrix for each input data point. We also propose a genetic algorithm based fusion method to generate a feature matrix, which is ultimately fed to the fully connected neural network for classification. The effectiveness of the proposed approach is demonstrated on our dataset with five classes containing 5000 images along with four benchmark datasets, namely, (i) five classes of Liu et al.'s dataset (33556 images) (ii) five classes of PERS dataset (28434 images), (iii) ten classes of Krishnani et al.'s dataset (2000 images), and (iv) two classes of facial emotions of FERPlus dataset (26398 images). The results show that the proposed approach outperforms the existing methods for all the datasets in terms of classification rate. (C)& nbsp;2021 Elsevier B.V. All rights reserved.

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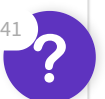
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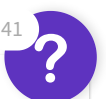
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