Classification of Saudi Traditional Costumes using Deep Learning Technique

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Abstract:

This study aimed to develop a system for classifying traditional clothing from the Kingdom of Saudi Arabia using convolutional neural networks. A dataset of 339 images across 3 categories was collected and preprocessed, including normalization, cropping, and blurring to enhance image quality.

The proposed system accomplished classification through a two-step process: Dataset collection utilizing Artificial intelligence (AI) techniques to gather 339 labeled images of clothing from Saudi Arabia which served as the training foundation, and classification using the Inception v3 CNN model with transfer learning.

Testing is achieved with an overall accuracy of 84.85% based on a confusion matrix, demonstrating the model's ability to correctly classify traditional clothing. Weighted Euclidean distance matching was also implemented to retrieve the top 5 similarity matches for query images.

A graphical user interface allows practical implementation and end-user clothing classification. The promising results indicate deep learning is viable for this application. However, limitations include the small dataset size. Future work involves collecting a larger, more diverse set of traditional Saudi clothing images to further improve classification performance.

Keywords:

Traditional Clothing, Saudi customs, Deep Learning, Inception v3 CNN model.

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Paper History:

Paper received November 25, 2023, Accepted January 1, 2024, Published on line March 1, 2024

