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Deep Vision: A Robust Dominant Colour Extraction Framework for T-Shirts Based on Semantic Segmentation

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Abstract : Fashion is a human expression that is constantly changing. One of the prime factors that consistently influences fashion is the change in colour preferences. The role of colour in our everyday lives is very significant. It subconsciously explains a lot about one's mindset and mood. Analyzing the colours by extracting them from the outfit images is a critical study to examine the individual's/consumer behaviour. Several research works have been carried out on extracting colours from images, but to the best of our knowledge, there were no studies that extract colours to specific apparel and identify colour patterns geographically. This paper proposes a framework for accurately extracting colours from T-shirt images and predicting dominant colours geographically. The proposed method consists of two stages: first, a U-Net deep learning model is adopted to segment the T-shirts from the images. Second, the colours are extracted only from the T-shirt segments. The proposed method employs the iMaterialist (Fashion) 2019 dataset for the semantic segmentation task. The proposed framework also includes a mechanism for gathering data and analyzing India's general colour preferences. From this research, it was observed that black and grey are the dominant colour in different regions of India. The proposed method can be adapted to study fashion's evolving colour preferences.

Keywords : colour analysis in t-shirts, convolutional neural network, encoder-decoder, k-means clustering, semantic segmentation, U-Net model
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