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Deep Learning Approach to Trademark Design Code Identification

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Abstract : Trademark examination and approval is a complex process that involves analysis and review of the design components of the marks such as the visual representation as well as the textual data associated with marks such as marks' description. Currently, the process of identifying marks with similar visual representation is done manually in United States Patent and Trademark Office (USPTO) and takes a considerable amount of time. Moreover, the accuracy of these searches depends heavily on the experts determining the trademark design codes used to catalog the visual design codes in the mark. In this study, we explore several methods to automate trademark design code classification. Based on recent successes of convolutional neural networks in image classification, we have used several different convolutional neural networks such as Google's Inception v3, Inception-ResNet-v2, and Xception net. The study also looks into other techniques to augment the results from CNNs such as using Open Source Computer Vision Library (OpenCV) to pre-process the images. This paper reports the results of the various models trained on year of annotated trademark images.

Keywords : trademark design code, convolutional neural networks, trademark image classification, trademark image search, Inception-ResNet-v2
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