Recognition of the Integrity of Chic China Aesthetic Elements Based on Computer Vision Technology

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Abstract

Recent trends in the fashion industry indicate that China Chic (CC) has emerged as an integral part of the Chinese lifestyle. The fashion industry in recent years was dominated by foreign brands or luxury brands because of the economic conditions and the failure to produce iconic designs by the domestic fashion industry. Recent years have witnessed the genesis of China-chic brands that began to produce original designs with a traditional touch to modern outfits. As a result of which, many international fashion elements were integrated into their clothes and accessories. However, many types of security attacks are pronounced on these elements, which will degrade their market value. This work proposes a computer vision-based defrauding model that relies on a Siamese-based Convolutional Neural Network (S-CNN) to detect counterfeited and fake products. This is done by injecting adversarial attacks on Simplified Graph Convolutional Networks (SGCN) that effectively misclassify the Adversarial Images (AdI), which are created by the Improved Fast Gradient Sign Method (I-FGSM). The training phase of the proposed model is performed using the ImageNet dataset augmented with AdI. The testing is done using the custom dataset of the CC elements, which showed a 6% improvement over the S-CNN, which is a breakthrough in preserving the integrity of the CC elements.