國立陽明交通大學應用數學系
學術演講公告

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講　題：A Unified Noise and Watermark Removal from
　　　　Information Bottleneck-based Modeling

時　間：112 年 3 月 21 日(星期二) 下午 2:00 –3:00

地　點：(光復校區) 科學一館 223 室

Abstract

　　We propose a method to deal with image denoising and watermark removal simultaneously. The noises and watermarks are both considered to have different nuisance patterns from the original image content, therefore should be detected by robust image analysis. The unified detection method is based on the well-known information bottleneck (IB) theory and the proposed SIB-GAN where image content and nuisance patterns are well separated by a supervised framework. The possibility of working on a unified solution for the image denoising and watermark removal tasks is not based on how the two tasks are related to each other but based on the fact that the proposed methodology is effective enough to deal with the two tasks, homogeneous or heterogeneous ones at the same time. To achieve the goal, we adopt an IB-aware GAN-based model to separate the noises/watermarks from the original image and the original one can be extracted from the procedure. We have tested the proposed method on some well-known datasets including Berkeley segmentation dataset, ISTD, BIDeN, MNIST and others, with some necessary complication by including additional noises/watermarks to the images. With appropriately chosen of the controlled parameter in IB theory, we can obtain resultant images very close to the original image content, or owning superior performance to almost all state-of-the-art approaches that deal with the same tasks.

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