

A Study of Generative Adversarial Networks with Applications to Paperboard Surfaces

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Abstract

Generative adversarial networks, or GANs, are a type of unsupervised learning method that are known for being able to generate high-quality data. They can create a completely new image, a fake image, that looks just like a real one. Typically, to consider a generated image as a good one, one just lets people look at it. In some cases, this will not be enough. Specifically, one needs to make sure that the generated image has the same statistical properties as real images. In this thesis, images of paperboard surfaces are generated and evaluated considering their statistical properties. Evaluation of the generated images is performed in terms of multidimensional scaling (MDS) using Wasserstein distance and histograms to examine the distributions between images and between groups of images, as well as autocorrelation to consider vertical and horizontal correlations in images. Results with statistical properties similar to the real images were generated. The thesis was conducted together with the food processing and packaging company Tetra Pak.

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