SmallSEOTools

PLAGIARISM SCAN REPORT

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6.3 ALGORITHM DETAILS
6.3.1 Generative Networks
A generative model is a class of statistical models that are a contrast to the classifier models dubbed as discriminative models. Informally speaking, a generative model creates new data instances based on the distribution of the data itself. Generative models tackle a more difficult task, i.e. to model data. A generative model might capture correlations among underlying distribution and draw conclusions. Goodfellow et al. (2014) proposed the most famous type of generative model, i.e. Generative Adversarial Network, which is composed of two smaller networks called a discriminator and a generator. The generator's task is to create fake images that convince the discriminator and the discriminator usually classifies between real and fake data.
6.3.2 Adversarial Networks
With two networks that are neural networks, the adversarial modeling framework is the most straightforward to apply. A distribution pg over data x is called the generator's distribution. To learn this distribution, we define some prior noise on the input variables pz(z) and represent a mapping to a space with G(z;qg), where G is a differential function of neural network parameterized by qg. Another neural network D(x;qd) is defined such that it provides a scalar output, representing the probability
that data x comes from the input distribution rather than pg. The goal is to train D to maximize the probability of assignment of the correct label to both training examples and samples from G. The network G is trained to minimize log(1□D(G(z)).
6.3.3 Conditional GANs
As mentioned earlier, GANs are generative models that learn a mapping from a random noise vector z to output pg. The mapping from vector z to an output image y can be represented as G : z ! y (Goodfellow et al.; 2014). Isola et al. (2018) presented a new approach for GANs called Conditional GANs. Instead of learning just from a random noise vector, conditional GANs learn a mapping from input x and the vector z to y such that G : fx; zg!y. By doing this, we train the discriminator to do as well as possible to detect the generator's fake outputs whereas the generator is trained to produce results that are almost indistinguishable from the real data. The objective function of conditional GAN can be expressed as:

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