

Denoising Autoencoders

Denoising autoencoders add a different type of constraint to the network by inputting some Gaussian noise into the inputs. This noise injection forces the autoencoder to learn the uncorrupted form of the input features; by doing so, the autoencoder learns the internal representation of the dataset without memorizing the inputs.

Another way a denoising autoencoder constrains the input is by deactivating some input neurons in a similar fashion to the Dropout technique. Denoising autoencoders use an overcomplete network architecture. This means that the dimensions of the hidden Encoder and Decoder layers are not restricted; hence, they are overcomplete. An illustration of a denoising autoencoder architecture is shown in Figure 37-4.

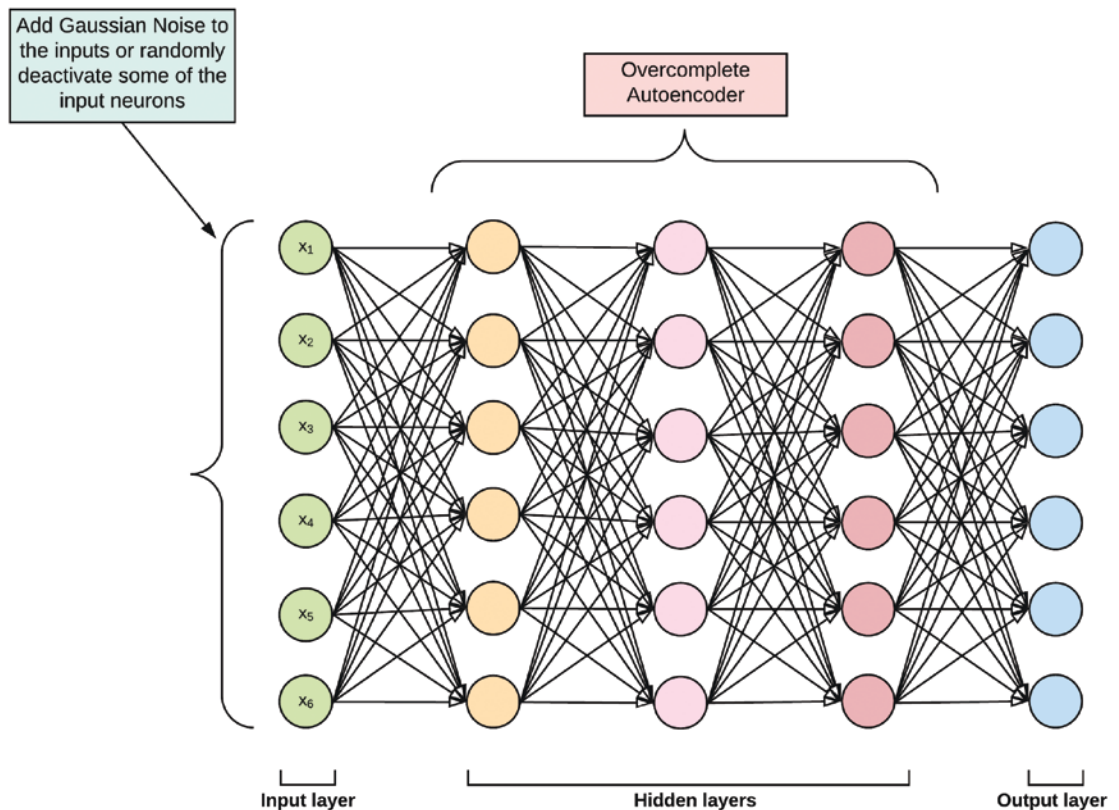


Figure 37-4. Denoising autoencoder. Constraint is applied by either adding Gaussian noise or by switching off some a random selection of the input neurons.

This chapter discussed how deep neural networks can be employed in an unsupervised fashion to reconstruct the inputs to the network as the network's output. This is the final chapter in Part 6 that provides a general theoretical background to deep neural networks and how they are implemented in TensorFlow 2.0. In Part 7, we will discuss doing advanced analytics and machine learning on Google Cloud Platform.

PART VII

Advanced Analytics/ Machine Learning on Google Cloud Platform