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Probability & Neural Networks

We shall view neural networks through a probabilistic lens and show how to provide a probabilistic account of many parts of a neural network: the outputs, weights, and activations. We shall see how viewing networks in this way leads to many interesting learning algorithms and neural models for generating samples of data, such as images. Variational inference will be a recurring tool for approximate inference in these probabilistic neural models. We shall review variational inference and show how it can be combined with neural networks, providing both regularization methods and generative models.