

文章题目：

A Practical Bayesian Framework for Backpropagation Networks

主要内容：

本文偏重数学理论分析，在贝叶斯概率的框架下对前馈神经网络进行了理论分析，包括这样的算法是否能够学到的有效的信息，用于减缓过拟合的 L2 正则化在贝叶斯的框架下应当如何进行解释等，同时也从其他计算学习理论的角度进行了分析，探索正则化的方式，VC-dimension 等。

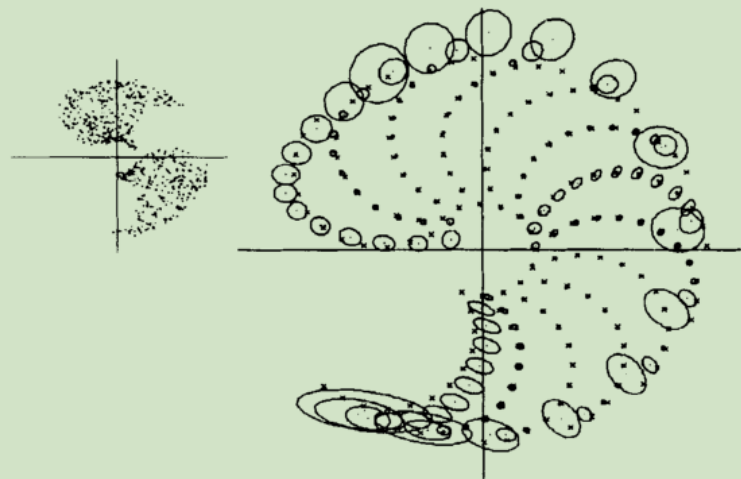


Figure 1: Typical neural network output (inset — training set). This is the output space (y_a, y_b) of the network. The target outputs are displayed as small x 's, and the output of the network with 1σ error bars is shown as a dot surrounded by an ellipse. The network was trained on samples in two regions in the lower and upper half planes (inset). The outputs illustrated here are for inputs extending a short distance outside the training regions, and bridging the gap between them. Notice that the error bars get much larger around the perimeter. They also increase slightly in the gap between the training regions. These pleasing properties would not have been obtained had the diagonal Hessian approximation of Denker and Le Cun (1991) been used. The above solution was created by a three layer network with 19 hidden units.