

Neuromorphic Features of Probabilistic Neural Networks

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Abstract: We summarize the main results on probabilistic neural networks recently published in a series of papers. Considering the framework of statistical pattern recognition we assume approximation of class-conditional distributions by finite mixtures of product components. The probabilistic neurons correspond to mixture components and can be interpreted in neurophysiological terms. In this way we can find possible theoretical background of the functional properties of neurons. For example, the general formula for synaptical weights provides a statistical justification of the well known Hebbian principle of learning. Similarly, the mean effect of lateral inhibition can be expressed by means of a formula proposed by Perez as a measure of dependence tightness of involved variables.

Keywords: probabilistic neural networks; distribution mixtures; sequential EM algorithm; pattern recognition;

AMS Subject Classification: 62P10; 62H30; 68T10;

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