1997 Paper 9 Question 8

Neural Computing

Discuss how neural operators which encode, analyse and represent image structure in natural visual systems can be implemented in artificial neural networks. Include *four* of the following issues in your discussion:

- receptive field structure

- adaptiveness and perceptual learning

- hierarchies of tuning variables in successive layers of the visual pathway

- wavelet codes for extracting pattern information in highly compressed form

- self-similarity of weighting functions

- associative memory or content-addressable memory for recognising patterns such as faces and eliciting appropriate response sequences

[20 marks]