Hopfield Neural Networks

BOOK

- I Neural Networks: Methodology and Applications
- II Elements of Artificial Neural Networks
- III
  Handbook of Brain Theory and Neural Networks
- IV
  Principles of artificial neural networks
- V
  Neural Networks and Statistical Learning

- VI An introduction to Neural Networks
- Introduction to the Theory of Neural Computation

Hopfield Neural Networks

- I CHP8 Neural Networks without Training for Optimization
- II CHP 6-7
- IV CHP 7
- V CHP 6-7

Applications

- Graph-Bisection
- linear programming
- TSP
- Associative Memory

Simple “ Neural” Optimization Networks: An A/D Converter, Signal Decision Circuit, and‘aLinear Programming Circuit

THE LINEAR PROGRAMMING NETWORK

IV. The Linear Programming Network

The linear programming problem can be stated as the attempt to minimize a cost function

$$\pi = \vec{A} \cdot \vec{V} \tag{14}$$

where $\vec{A}$ is an N-dimensional vector of coefficients for the N variables which are the components of $\vec{V}$. This minimization is to be accomplished subject to a set of M linear

$$\vec{D}_j \cdot \vec{V} \geq B_j, \qquad j = 1, \cdots, M$$

$$\vec{D}_j = \begin{bmatrix} D_{j1} \\ D_{j2} \\ \vdots \\ D_{jN} \end{bmatrix} \tag{15}$$