《仿生模式识别与多权值神经元》

图书基本信息

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出版社：国防工业出版社

作者：王守觉//刘扬阳//来疆亮//刘星星

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章节摘录

版权页： 插图： A child in a very small age can quickly identify their relatives, regardless of the situation whether his (her) relative is alone in the room or in the crowd;whether in sunny noon or in the dimly lit evening; and whether his or her dressing, wearing or hair-style changes. These capabilities seem so natural on children or adults. However, it is not easy to teach the computer to do similar things, despite the modern high-speed computers calculate 100 times faster than the speed of the sum of all human brains. Today's information science and artificial intelligence disciplines have developed over dozens of years, but the computers do not know how to calculate in face of imaginal thinking problems. The reason lies in the difference of imaginal thinking and logical thinking in time and space. The computer of Yon Neumann structure can be "familiar"with the logical thinking problems dealt in the left brain of human, but is "helpless" with imaginal thinking problems dealt in the right brain. Therefore,the ancient mathematical tools and calculation methods are no longer applica-ble, thus the creation and development of new disciplines is expected. 4. 1.2 The Principle of High-Dimensional Biomimetic Informatics It is well known that digital information such as an image can be thought of as a point in a high-dimensional Euclidean space in informatics. If each num-ber of a piece of data is regarded as a coordinate value, the whole group of numbers could correspond to a vector in a high-dimensional space. Usually, representing digital data as points is a kind of illustration and vi-sualization of analytic formulas, which helps people understand the classifica-tion and distribution of the sample data in high-dimensional space easily. For example, a hidden neuron in Back-Propagation (BP) Algorithm can be seen asa hyperplane, although BP Algorithm didn't come up from the geometric char-acters of hyperplanes in high-dimensional space.

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