具自適應核形狀參數的徑向基底函數網路

葉怡成,陳重志,黃冠傑
資訊管理學系
資訊學院
icyeh@chu.edu.tw

摘要

Radial Basis Function Network (RBFN) is usually employed for classification problems, whose kernel has centroid and radius parameters determined with supervised or unsupervised learning. However, it has a shortcoming that it regards each independent variable as the same position; hence, the boundary of classification is circle. But in fact, each independent variable has different influence to the classification, it is more reasonable that the boundary of classification is ellipse. To overcome the shortcoming, we proposed the RBFN with adaptive kernel shape parameters and deduced its learning rule, using supervised learning. To verify whether the architecture is more accurate than conventional RBFN, experiments with five human-made problems and seven real-world problems were conducted. The results showed that this architecture is really more accurate than Back-Propagation Network and conventional RBFN, and the shape parameters can represent the influence of independent variable to classification.

關鍵字：Radial basis function network, supervised learning, kernel function, classification