

最佳化演算法於支援向量迴歸參數選擇之分析

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摘要

支援向量機(Support Vector Machine, SVM)起初設計於處理兩類的分類問題。關於參數的選取多採用固定一參數，另一參數漸進式逼近。在分類問題中，參數有 γ 和 C ，故漸進式的方法不會太過繁雜，但對於預測方面，支援向量迴歸(Support Vector Regression, SVR)參數分為 γ 和 C ，採用固定漸進式會變的相當複雜而無法有效的進行。本研究針對各種啟發式演算法 - 螞蟻演算法(Ant Colony System, ACS)、禁忌搜尋法(TABU Search)、免疫演算法(Immune Algorithm, IA)以及粒子群體演算法(Particle Swarm Optimization, PSO)進行預測方面參數的選擇最佳化分別對各種不同的資料做預測來分析比較結果，共採用五個不同類型的資料，分別為電力總用量、交通流量、維修失敗可靠度、機場租車以及複合材料強度等資料。藉由各種演算法的比較，來呈現對於各種資料的搜尋能力。最後建立對於各種類型資料的演算法搜尋參數模式。

關鍵詞：支援向量機；支援向量迴歸；螞蟻演算法；禁忌搜尋法；免疫演算法；粒子群體演算法；向量機；演算法；可靠度；搜尋法；資料

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