

工程与应用

## RQEA-SVR在交通流预测中的应用

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**摘要** 建立在统计学习理论和结构风险最小化准则基础上的支持向量回归 (SVR) 是处理小样本数据回归问题的有利工具, SVR的参数选取直接影响其学习性能和泛化能力。文中将SVR参数选取看作是参数的组合优化问题, 确定组合优化问题的目标函数, 采用实数量子进化算法 (RQEA) 求解组合优化问题进而优选SVR参数, 形成RQEA-SVR, 并应用RQEA-SVR求解交通流预测问题。仿真试验表明RQEA是优选SVR参数的有效方法, 解决交通流预测问题具有优良的性能。

**关键词** [支持向量机](#) [参数优选](#) [实数量子进化算法](#) [交通流预测](#)

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## Application of RQEA-SVR in traffic flow forecasting

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### Abstract

Support Vector Regression (SVR) based on statistical learning theory and structural risk minimization principle is a powerful tool for solving small-sample regression problem, and selecting appropriate parameters is very crucial to learn accuracy and generalization performance of SVR. Firstly, the parameters selection of SVR is considered as a combinatorial optimization problem, and the objective function of optimization problem is set. Then, Real-coded Quantum Evolutionary Algorithm (RQEA) is employed to solve this problem furthermore to select appropriate parameters of SVR, which is called RQEA-SVR, and RQEA-SVR is applied to the problem of traffic flow forecasting. The experiment results show that the proposed method is an effective approach for parameters selection of SVR, and the good performance for traffic flow forecasting is obtained.

**Key words** [Support Vector Regression \(SVR\)](#) [parameters selection](#) [real-coded quantum evolutionary algorithm](#) [traffic flow forecasting](#)

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