

## **A hybrid technique for selecting support vector regression parameters based on a practical selection method and grid search procedure**

### **ABSTRACT**

In order to enhance the generalization ability of the practical selection (PLSN) method for choosing the optimal parameters of the support vector regression (SVR) model that was proposed by Cherkassky and Ma (2004), we investigate a new hybrid technique that combines the PLSN method and the grid search procedure. We explore this and find it to be suitable for different types of additive noise including Laplacian noise density. We show that the proposed parameter selection for SVR achieves a good generalization performance by testing several regression problems (low-and high-dimensional data). Moreover, the proposed method is effective for finding the optimal parameters of SVR for all kinds of noise, including Laplacian noise. The generalization performance of the proposed method is compared with that of the PLSN method, with some numerical studies for Gaussian noise as well as non-Gaussian noise. The results show that the proposed method is superior to the PLSN method for various types of noise.

**Keyword:** Machine learning; Support vector regression; Parameter selection; Grid search