عنوان مقاله:

Predicting the energy dissipation of a rough sudden expansion rectangular stilling basins using the SVM algorithm

محل انتشار:

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نویسندگان:

Rasoul Daneshfaraz - *Department of Civil Engineering, Faculty of Engineering, University of Maragheh, Maragheh, Iran.*

.Ehsan Aminvash - ۱*Department of Civil Engineering, Faculty of Engineering, University of Maragheh, Maragheh, Iran*

.Reza Mmirzaee - *Department of Civil Engineering, Faculty of Engineering, University of Semnan, Semnan, Iran*

.John Abraham - *School of Engineering, Faculty of Engineering, University of St. Thomas, St Paul, USA*

خلاصه مقاله:

In this research, the performance of support vector machine in predicting relativeenergy dissipation in non-prismatic channel and rough bed with trapezoidalelements has been investigated. To achieve the objectives of the present study,۱۳۶ series of laboratory data are analyzed under the same laboratory conditionsusing a support vector machine. The present study entered the support vectormachine network without dimension in two different scenarios with a height of ۱.۵۰and ۳.۰ cm rough elements. Two statistical criteria of Root Mean Square Error andcoefficient of determination are used to evaluate the efficiency of input compounds.Hydraulically, the results show that at both heights of the rough elements, energydissipation increased with increasing Froude number. The results of the supportvector machine show that the height of the roughness element is ۱.۵۰ cm in thefirst scenario, combination number ۶ with R۲ = ۰.۹۹۰ and RMSE = ۰.۰۱۲۹ fortraining mode and R۲ = ۰.۹۹۳ and RMSE = ۰.۰۳۲ for testing mode and the heightof the roughness element ۳.۰ in the second scenario, combination number ۶ withR۲ = ۰.۹۸۹ and RMSE = ۰.۰۱۱۲ for training mode, R۲ = ۰.۹۹۴ and RMSE = ۰.۰۲۲۴for testing mode are select as the best models. Finally, .sensitivity analysis isperformed on the parameters and H / y۱ parameter is selected as the most effectiveparameter

کلمات کلیدی:

Relative energy dissipation, Support Vector Machine, Input parameters, Froude number