

عنوان مقاله:

Simulation of bridge pier scour depth base on geometric characteristics and field data using support vector machine algorithm

محل انتشار:

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خلاصه مقاله:

In this paper, two groups of datasets including Froehlich (۱۹۸۸) and USGS were implemented to simulate scour depth for bridge piers of three shapes (circular, sharp-nose and rectangular) using support vector machine (SVM) algorithm. The results of the SVM were compared with gene expression programming (GEP) and the non-linear regression model. Independent parameters extracted using dimensional analysis were Froud number (Fr), the ratio of pier length to pier width (L/b), the ratio of sediment particle diameters (d_{50}/d_{84}), the ratio of sediment mean size to pier width (d_{50}/b) and attack angle of water flow (α). Different combinations of independent variables were used to achieve optimum performance of the simulator. The results showed that among three simulators, the SVM algorithm had the best performance to predict local scour depth. The sensitivity analysis revealed that among independent parameters, the descending order of effectivity was Fr , sediment size, L/b , and α .

کلمات کلیدی:

Intelligent model, Sensitivity analysis, scour depth, field data

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