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Discharge modelling in smooth and rough compound channels using genetic programming**Alok Adhikari¹, N Adhikari² and K C Patra¹**¹NIT Rourkela, India²Biju Patnaik University of Technology, India

Discharge results observed from the experimental channels for smooth and rough surfaces, along with data from a compound river channel are used in the Genetic Programming. Model equations are derived for estimation of discharge in compound channel for various types of channel surfaces. Five hydraulic parameters are used for developing the model equations. Models derived are tested and compared with other soft computing techniques. Evaluations of all the approaches are carried out using five performance parameters. Finally, the effect of parameters responsible for the flow behaviour is shown through sensitivity analysis. GP is found to give the most promising results. This work aims to benefit the researchers engaged in modelling of discharge using machine learning techniques.

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