

عنوان مقاله:

Individual and Hybrid Artificial Intelligence Approaches for Spatial Prediction of Flood at Haraz Watershed

محل انتشار:

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خلاصه مقاله:

Floods as one of the natural disasters have been caused severe economic losses and serious damages recorded in agriculture and urban infrastructure over the world. As flood mitigation is costly and time-consuming process, accurate distinguish the areas where are prone to flood is an essential to its better management. In this study, we compared our obtained results from flood modelling process based on the individual and hybrid machine learning algorithms (MLAs) at Haraz watershed, northern Iran. Eleven conditioning factors were effectively selected and then based on 201 flood locations modelling process was performed. The individual and hybrid MLAs were validated and compared using some statistical measures and also area under the receiver operatic curve (AUC). The finding concluded that alternating decision tree (ADT) and Boosted regression tree (BRT) algorithms acquired the most goodness-of-fit and prediction accuracy in comparison to other individual algorithms. Moreover, among hybrid models EMmedian (AUC=679.0) and imperialistic competitive algorithm (ICA) in combination with adaptive network-based fuzzy inference system (ANFIS) achieved the highest performance (AUC=679..). Additionally, our results illustrated that Meta classifiers such as bagging improved the power prediction of base classifies such as logistic model tree classifier (AUC=679.6). This finding helps to decision makers to better management flood prone areas in the study .area

کلمات کلیدی:

Flood, Machine learning, Goodness-of-fit, Over-fitting, GIS, Haraz watershed

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