Review of: "Flood Prediction Using Artificial Neural Networks: A Case Study in Temerloh, Pahang"

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Potential competing interests: No potential competing interests to declare.

Dear Peer Review Team, Qeios,

I have completed my review of the manuscript. I recommend reconsideration of the manuscript following a minor revision. I have also attached my review comments.

Thank you so much for considering me worthy to review a manuscript submitted to your respected journal.

Dear Author,

Thank you for your paper. It is well written. It is interesting to read about your ANN model for flood prediction. My only concern relates to how you got the ANN structure with two hidden layers and 6 neurons in each hidden layer. I have written about it in the attached comment file.

You can find my comments and recommendations on the manuscript in the enclosed comment file.

Summary

The current paper is devoted to the development of an artificial neural network model for flood prediction in the Temerloh district, Pahang, Malaysia. The authors collected hydrological and meteorological data from the study area, performed correlation analysis, and proposed a two hidden layer ANN structure. The correlation analysis performed by the authors revealed that stream flow and water level are directly and highly correlated to floods, while temperature is inversely and moderately correlated to floods. The authors evaluated the developed model by performing three evaluation tests: confusion matrix, area under the receiver operating characteristic curve (ROC) curve (AUC), and error evaluations. The results revealed that the developed ANN model produced predictions in close agreement with measured data, evident in the high confusion matrix accuracy, high AUC, and low values of mean square error and root-mean-square error. The authors also created a Microsoft Power BI flood monitoring dashboard that could be used for interactive visualization and analysis of flood data.

COMMENTS:

Introduction

- "Traditionally, flood prediction is done by using a hydrological rainfall and runoff model". Please provide a reference for this statement.
- "One of the developments is a physical-based model..." Please provide a reference for this physical-based model.

Results and Discussion

- Rainfall, stream flow, water level, and temperature data collected from two sources were employed in this study. However, a description of the preprocessed dataset is not presented. I will suggest you present a description of the dataset used in this study. Preferably, present a Table of the minimum, maximum, standard deviation, and average of each parameter in the dataset.
- "Next, data scaling is done to ensure that data with a big magnitude does not ..." I will suggest you include a statement about the type of feature scaling performed, e.g., min-max normalization, mean normalization, standardization, or scaling to unit length.
- "The neural network is constructed to have one input layer, two hidden layers with six neurons in each layer, and one output layer to balance..." Is this ANN structure optimum? If yes, how did you obtain the optimum ANN? I will suggest you provide a few sentences describing how you got the optimum ANN structure in this study. Refer to the following paper on how to get the optimum ANN. https://doi.org/10.1016/j.ptlrs.2022.10.004