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29 December 2016, Article number 7808330, Pages 306-310
6th International Conference on Computer and Communication Engineering, ICCCE 2016; International Islamic University MalaysiaKuala Lumpur; Malaysia; 25 July 2016 through 27 July 2016; Category numberE5811; Code 125901

Development of Particle Swarm Optimization Based Rainfall-Runoff Prediction Model for Pahang River, Pekan (Conference Paper)

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Abstract   ⌄ View references (22)

Flooding is a natural disaster which has been occurring annually throughout the whole world. The disaster, such as other natural catastrophe could only be mitigated rather than it being completely solved. Runoff prediction proved to be very vital in pre-flooding management system. In recent years, Artificial Neural Network has been applied in various prediction models of hydrological system. It is proposed to model the rainfall-runoff system of Pahang River in Pekan. Mean rainfall data of 5 hydrological stations are used as the input and water level data as the output. The Artificial Neural Networks are trained with Particle Swarm Optimization. The performances of Artificial Neural Networks were measured with Ackley cost function value. Neural network configuration of 450 number of maximum iteration, 6 number of particles and 1.9 and 2.0 values of Particle Swarm Optimization parameter constant for global best (c1) and Particle Swarm Optimization constant for personal best (c2) respectively shows the highest global best function value. The neural network configuration of 300 number of maximum iteration, 3 numbers of particles and 2.2 value of (c1) and (c2) produces lowest global best function value. The output shows Artificial Neural Network trained by Particle Swarm Optimization can successfully model rainfall-runoff. © 2016 IEEE.

Author keywords

neural network   particle swarm optimization   rainfall-runoff

Indexed keywords

Engineering controlled terms:	Cost functions	Disasters	Floods	Forecasting	Neural networks
	Particle swarm optimization (PSO)	Rain	Water levels		

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Source Type: Conference
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