Stochastické řízení zásobní funkce nádrže s pomocí neuronových sítí

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Abstract

Described models are used random forecasting period of flow line with different length. The length is shorter than 1 year. Forecasting period of flow line is transformed to line of managing discharges with same length as forecast. Adaptive managing is used only first value of line of discharges. Stochastic management is worked with dispersion of controlling discharge value. Main advantage stochastic management is fun of possibilities. In article is described construction and evaluation of adaptive stochastic model base on neural network (NS). The NS model is used neural network as replacement of classic optimization algorithm. If model is given pattern matrix of management, matrix is given by model base on classic optimization algorithm, and forecast, controlling discharge value is computed by model for chosen probability of controlling discharge value. Model was tested and validated on made up large open water reservoir. Results were evaluated and were compared with model base on traditional algorithms. Evaluation was done for 100% forecast (forecasted values are real values). The management of the large open water reservoir with storage function was logically. The main advantage of NS model is computing speed. Classical optimization model is needed much more time for same calculation as NS model, therefore classic model were needed using clusters for stochastic calculation.

Anotace:

Příspěvek popisuje konstrukci modelu vycházejícího z neuronových sítí pro stochastické řízení zásobní funkce nádrže a srovnání modelu s tradičními metodami optimalizace řízení (genetické algoritmy).

Klíčová slova: stochastiký, zásobní funkce, průměrný měsíční průtok, neuronová síť

Anotation:

Development of model base on neural network for stochastic management of storage function open water large reservoir is described in article. Evaluation between model using neural network and classic methods for managemnet of storage function is included.

Keywords: stochastic, storage function, average monthly flow, neural network