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Guided By

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Project Title

"FUZZY LOGIC BASED OPERATION OF SPILLWAY GATES: UKAI DAM AS A CASE STUDY"

Abstract:

Fuzzy logic is based on the central idea that in fuzzy sets each element in the set can assume a value from 0 to 1, not just 0 or 1, as in classic set theory. Thus, qualitative characteristics and numerically scaled measures can exhibit gradations in the extent to which they belong to the relevant sets for evaluation. This degree of membership of each element is a measure of the element's "belonging" to the set, and thus of the precision with which it explains the phenomenon being evaluated. Fuzzy sets can be combined to produce meaningful conclusions, and inferences can be made, given a specified fuzzy input function. The work demonstrates the application of fuzzy logic in Gated control of spillway with a resulting fuzzy set output. The operation of Gated Spillways can benefit from simple operational rules and/or sophisticated operating programs. The fuzzy logic based control method does not require a mathematical model and the control operation can be carried out automatically without requiring any human operator interference. Fuzzy logic has been used to solve the problem of the real-time Reservoir Spillway Gated Operation problem. Fuzzy logic based method has been employed to get a relation between Elevation, Gate opening and Discharge/Outflow. The procedure of operating Gated spillways comes in account to optimize the discharge or outflow. A new and efficient control method based on fuzzy logic can be accessed for the real-time flood operation of spillway gates of any dam/reservoir.

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