

## **ABSTRACT**

Accurate and reliable optimization and simulation of the dam reservoir system to ensure optimal use of water resources cannot be achieved without precise and effective models. Providing insight into reservoir system operation and simulation modeling through a comprehensive overview of the previous studies and expanding research horizons can enhance the potential for accurate and well-designed models. The current research reviews previous studies that have used optimization methods to find optimal operating policies for a reservoir system over the past 20 years. Indeed, successful operating policies cannot be obtained without achieving accurate predictions of the main hydrological parameters in the reservoir system, which are inflow and evaporation. The present study focuses on giving an overview of the applications of AI-based models for predicting reservoir inflow and evaporation. The advantages and disadvantages of both optimization algorithms and predictive models have been summarized. Several recommendations for future research have also been included in the present review paper.