

A machine learning approach for assessment and prediction of reservoir safety using on-site visual Condition Assessment Index (CAI)

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ABSTRACT

Currently, in the Republic of Korea, the Korea Rural Community Corporation (KRC) conducts detailed safety inspections of reservoirs nationwide to evaluate their stability, predict early collapse, and reinforce them. The index used for this is the Condition Assessment Index (CAI). However, the problem with the CAI is that it requires a lot of manpower, time, and money. Therefore, it is very important to quickly identify the dominant factors that can be obtained through visual observation before the detailed safety inspection. This study aims to derive the dominant factors that affect CAI. Machine learning is used to obtain the dominant factors, and Support Vector Regression (SVR) and Random Forest (RF) algorithms are used. These techniques are used to assess the performance of the machine learning algorithm and to derive the factors that have a significant impact on the stability of the reservoir.

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