Condition Assessment of Water Infrastructure via Ensemble Intelligent Systems

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The scope of this research is to investigate various deterioration mechanisms on water infrastructure, such as pipe age, pipe installation, water pressure, water quality, operational and maintenance practices, and leakage. An integrated model for the assessment and quantification of the water main condition index was developed using the adaptive neuro-fuzzy inference system (ANFIS) and the fuzzy inference system (FIS). The model was applied to predict the condition indices of the Arequipa provinces and the Arequipa region as a whole. The model provides a decision support tool for infrastructure and utility managers regarding when to intervene, maintain, replace, or rehabilitate, and focus their constrained funding on the most deserving assets.