

## Performance Prediction Methodology of Slow Aging Assets

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**Abstract :** Asset management of urban infrastructures faces a multitude of challenges that need to be overcome to obtain a reliable measurement of performances. Predicting the performance of slowly aging systems is one of those challenges, which helps the asset manager to investigate specific failure modes and to undertake the appropriate maintenance and rehabilitation interventions to avoid catastrophic failures as well as to optimize the maintenance costs. This article presents a methodology for modeling the deterioration of slowly degrading assets based on an operating history. It consists of extracting degradation profiles by grouping together assets that exhibit similar degradation sequences using an unsupervised classification technique derived from artificial intelligence. The obtained clusters are used to build the performance prediction models. This methodology is applied to a sample of a stormwater drainage culvert dataset.

**Keywords :** artificial Intelligence, clustering, culvert, regression model, slow degradation

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