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Slope stability evaluation using Gaussian processes with various covariance functions

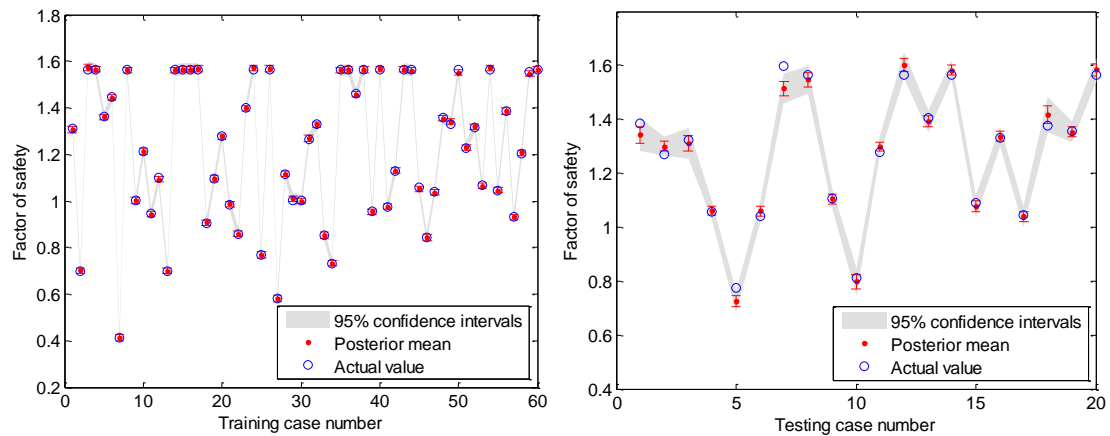
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Graphical abstract



Highlights

- We propose a stability evaluation method for slopes based on Gaussian processes (GPs).
- Sixteen covariance functions are tested on two datasets for slope stability evaluation problems.
- GPs models can reflect the complex relationship between input and output variables.
- The attractions of GPs include a simple training process and a predictive distribution of the system output.
- Experimental results show the effectiveness of the proposed methodology.

Abstract

This paper presents a stability evaluation method for slopes based on Gaussian processes (GPs), which is a popular machine learning technique for nonlinear system modeling. Covariance function is one of the most critical parts in GPs modeling, because it determines the properties of sample functions drawn from the Gaussian process prior.

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