

APPLICATION OF LEAST SQUARES SUPPORT VECTOR MACHINE IN SEISMIC ATTENUATION PREDICTION

Pijush Samui* and T.G. Sitharam**

*Center for Disaster Mitigation and Management

VIT University, Vellore-632014

**Department of Civil Engineering

Indian Institute of Science, Bangalore-560012

ABSTRACT

The potential of least squares support vector machine (LSSVM) in the prediction of seismic attenuation based on rock properties is investigated in this paper. LSSVM is firmly based on the theory of statistical learning. Here, LSSVM is used as a regression technique. In LSSVM, Vapnik's ϵ -insensitive loss function is replaced by a cost function, which corresponds to a form of ridge regression. LSSVM involves equality instead of inequality constraints and works with a least-squares cost function. LSSVM is also used to compute error bars. A sensitivity analysis is performed to investigate the importance of each of the input parameters. The results show that the LSSVM approach has the potential to be a practical tool for the determination of seismic attenuation.

KEYWORDS: Seismic Attenuation, Least Squares Support Vector Machine, Predictions, Artificial Neural Network

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