Abstract

Despite the progress occurred in seismic instrumentation, the assessment of seismic vulnerability and damage qualitative indexes, such as that provided by Mercalli intensity is highly valuable and useful for practical purposes. In order to link the qualitative measures of earthquake action and its effects, statistical regression is commonly applied. In the paper, a different approach is adopted. It consist of regarding the Mercalli intensity as a class rather than a numerical value. A modern statistical classification tool known as Support Vector Machine is used for classifying the instrumental information in order to assess the corresponding Mercalli intensity. It is shown that the method gives satisfactory results with regard to the high uncertainties linked to such a qualitative seismic damage measure.

Keywords

Mercalli Intensity, earthquake damage, statistical learning, support vector machines, pattern recognition.