

SVM classification of explosions and earthquakes using seismic features

Among methods for big data exploration, machine learning is becoming more reliable solution in decision making systems and figure out trends in data or testing new models and algorithms on specific data sets. Support vector machine is a supervised learning method in classification and regression analysis. This research was conducted to evaluate the application of support vector machine (SVM) classifier on classification of explosions and earthquakes from recorded seismic signals. The dataset used to train the model comprised of 500 earthquakes and 40 explosion which occurred in the region of Rudbar Lorestan dam in the time span of 4 years. These data was randomly divided to two sections; the training section with 75%, and the testing section with the 25% of total number of events. The features used as predictors were time domain, frequency spectrum, magnitude, depth, length and STA/LTA of each records. The results indicated that SVM successfully learned the relationship between the inputs and outputs, and classified the output classes of explosions and earthquakes.

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Track Classification: Theme 3. Verification Technologies and Technique Application