

Event Discrimination with Machine Learning Techniques at the Piskés-tető Infrasound Array, Hungary

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The infrasound array in Hungary at Piskés-tető (PSZI) has been collecting data since 2017. For signal processing, the Progressive Multichannel Cross-Correlation (PMCC) method is used, which resulted in about a million detections so far. Among these detections there are about 10 000 categorized, hand labelled events from quarry blasts, storms and power plant noise that constitute the dataset for training and testing. We extracted both time and frequency domain features from the raw waveforms, and also calculated PMCC specific features. For event discrimination purposes we tested two machine learning algorithms, the Random Forest and Support Vector Machine methods. These classifiers were trained to separate quarry blasts from storms and coherent noise from the nearby power plant. We measure the performance of the classifiers with the f1 score, and analyse the confusion matrices. For both classifiers the results reach 0.9 f1 score.

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Promotional text

The objective of our presentation is to show a pipeline in which from infrasound detections we train and test machine learning models for quarry blast event separation from other sources.

Oral preference format

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