

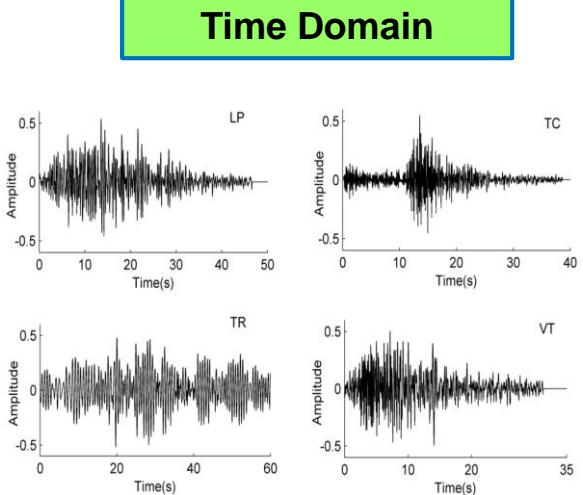
Classification of seismic events using a cross-correlation based approach

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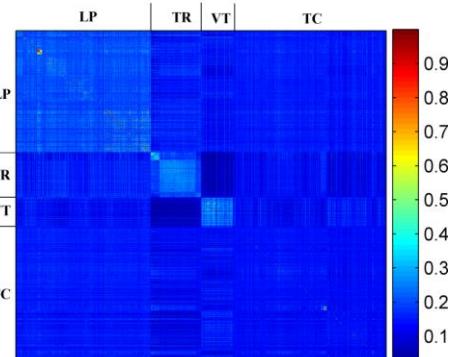
sampled signals $u(m)$



Short Term Fourier
Transform STFT



1D cross-correlation



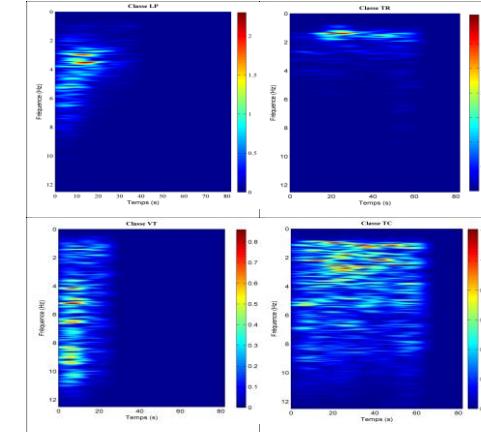
$$MNCC_{uv} = \frac{\max(|R_{uv}(k)|)}{\sqrt{R_{uu}(0)R_{vv}(0)}}$$



Classification

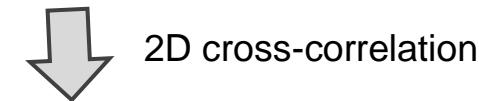
Global accuracy of 59,7%

Time-Frequency domain

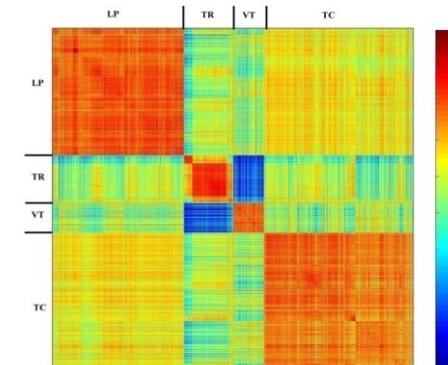


spectrogram $U(n,p)$

$$U(n,p) = \left| \sum_{m=1}^N u(m)w(m-n) e^{-i2\pi pm} \right|^2$$



2D cross-correlation



$$MNCC_{UV} = \frac{\max(|R_{UV}(k)|)}{\sqrt{R_{UU}(0)R_{VV}(0)}}$$



Global accuracy of 92,48%