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Seminario de CMM-Data, y CMM-Mining

Title

"Scalable P-wave passive seismic topography"

Speaker

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Abstract:

The goal of this work is to simultaneously reconstruct the location-dependent velocity field of seismic P-waves in an underground mine, and the unknown seismic sources during a given period, or dynamically over time, by using only registered data of passively generated P-waves (in particular, not relying on calibration shots as is usually the case). To that end, we develop a two-step algorithm based on Bayesian modeling and on the use, to our knowledge for the first time in geostatistics applications, of a stochastic gradient descent method, a scalable approach which has proved extremely successful in recent developments in Machine Learning. This method allows our algorithm to deal with the heavy amount of historical data from the world's largest underground mine, while gaining increasing accuracy with respect to the method employed on-site. We present a proof of concept on synthetic data, and first results on real data in a simplified setting. Perspectives will also be discussed. Based on work in progress with J. Fontbona, D. Neira and J. Prado (CMM).

Martes 03 de Julio a las 15:00 hrs. Sala AMTC 101.

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