ID de Contribution: **42** Type: **Talk**

Towards deep learning for seismic data processing

Seismic data processing plays a crucial role in various applications, including sedimentary and tectonic interpretation, hydrocarbon exploration, geothermal characterization, among others. The seismic imaging problem is ill-posed because of data acquisition limited to the surface of the Earth and limited sampling. To circumvent this, conventional seismic processing workflows include many steps approximating the physics of wave propagation to successfully image the Earth's interior. Some of these steps include data interpolation, velocity estimations, coherent and random noise elimination, among others seismic gather conditioning. Common challenges of these steps are related to their computationally demanding nature, heavy parametrization, and time-consuming manual tasks from experts, as a-priori interpretation of the data may in some cases be needed for successful results. In this work we investigate different deep learning methods, based on convolutional neural networks (CNNs), to overcome the challenges of several key steps in the conventional seismic processing workflow. In particular, we train CNNs to perform seismic data interpolation and coherent and random noise elimination. Our deep learning models report successful generalization capacities to very distinctive field data examples, mitigating the challenges of conventional methods and alleviating unwanted manual tasks. As a result, deep learning models can be a more efficient tool than deterministic algorithms when approximations of the physics are needed in multiparameter geophysical problems.

Auteurs principaux: Dr RABAUTE, Alain (Sorbonne Université); Dr KEUPER, Janis (Fraunhofer); M. FERNANDEZ, Mario (ENS); Dr DELESCLUSE, Matthias (ENS); Dr ETTRICH, Norman (Fraunhofer)

Orateur: M. FERNANDEZ, Mario (ENS)

Classification de Session: Talks: PhD students session

Classification de thématique: Methods: Data Analysis