

# AI Applications In Oil Extraction, Review and Case of Study: Convolutional Neural Networks Applied to Seismic Image Analysis

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Application of AI methods in the energy industry has been increasing in the last years. The introduction of AI in the different segments of the energy industry has turned out to be revolutionary. Some of these segments are considered as fundamental for the economic development of countries. This means, increasing their efficiency can highlight the difference between conservatory and vanguardist economies. The ability of AI methods to find patterns in data makes AI a strong tool in decision making. In the energy sector, some of the decisions that must be taken has shown a high level of complexity due to the quantity of features and data that needs to be considered. In such cases, the decisions that are taken by hand, have the risk not be optimum and that the economic waste of the implementation be too high. That is why methods in Deep Learning (DL) and Machine Learning (ML) are being introduced in the decision making process and energetic analysis in different parts of the world. These methods can be applied, for instance, in the prediction of the projections in the different energy markets, the analysis of geophysical data in order to maximize the natural resources and the optimization of the logistic in the energy exploitation, among others. In this work, we want to present a review of some AI methods in the oil industry, and an application example. In this study case, we analyze seismic images applying convolutional neural networks (CNN) to them in order to localize and segment salt bodies, which are of great importance while we are analyzing oil yields. We acknowledge funding from the European Union's Horizon 2020 Programme under the ENERXICO Project, grant agreement No. 828947 and under the Mexican CONACYT-SENER-Hidrocarburos grant agreement No. B-S-69926.

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