What is Deep Learning? - And a Bit More

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Abstract

Deep Learning is one of the most active research area today and, from 1.6 billion $ market in 2016, it is expected to grow up to $10.5 billion by 2024. Why? One of the main reasons is the spread of mature deep learning technologies to more industrial applications. Oil & Gas industry is a great candidate, and a big opportunity as well. It is therefore the right time to start understanding what deep learning is all about and where it comes from.

The understanding of the evolution of the statistical approach in history helps to understand how the models we consider today as very high tech, and a bit mysterious, come from a long and deep research process that started over 200 years ago.

We will discuss the needs of predicting the behavior of natural phenomena, and from simple examples of linear predictive model, we will understand how neural network perform. The transition from neural networks to deep learning will then be a simple step. All these techniques will be introduced through examples with some day to day life data, and geophysical data.

Examples will be given using R language, as R constitutes an accessible tool for scientists to practice on statistics and machine learning tools.