

Predicting the Future-Big Data and Machine Learning

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1. Introduction

In recent decades, due to the increase in the capabilities of microprocessors and the advent of graphics processing units (GPUs), the use of machine learning methodologies has become popular in many fields of science and technology. This fact, together with the availability of large amounts of information, has meant that nowadays machine learning and big data have an important presence in the field of Energy.

The special issue “Predicting the Future—Big Data and Machine Learning” of the journal *Energies* is focused on applications of big data architecture and machine learning methodologies in the field of energy. It contains a total of 8 novel and interesting papers written by 29 different authors from 4 countries.

2. The Articles

The research presented in this special issue show that the application of the methodologies referred to above is really intensive within this field. For example, in the case of the paper “Prediction of Health-Related Leave Days among Workers in the Energy Sector by Means of Genetic Algorithms” [1] the methodologies are applied to health and safety issues. Another two papers [2,3] apply different machine learning methodologies to the prediction of raw materials prices for energy production. These papers are entitled “Crude Oil Prices Forecasting: An Approach of Using CEEMDAN-Based Multi-Layer Gated Recurrent Unit Networks” and “Optimizing Predictor Variables in Artificial Neural Networks When Forecasting Raw Material Prices for Energy Production”.

Another three research papers are focused on energy systems performance, load, and work. They are the papers entitled [4] “Energy Multiphase Model for Biocoal Conversion Systems by Means of a Nodal Network”, “Short-Term Load Forecasting for CCHP Systems Considering the Correlation between Heating, Gas and Electrical Loads Based on Deep Learning” [5] and “Non-Intrusive Load Monitoring (NILM) for Energy Disaggregation Using Soft Computing Techniques” [6]. Another really interesting paper [7], entitled “Multivariate Analysis to Relate CTOD Values with Material Properties in Steel Welded Joints for the Offshore Wind Power Industry”, is focused on the analysis of the welded joint of Offshore Wind Power mills. Finally, the paper entitled [8] “Understanding and Modeling Climate Impacts on Photosynthetic Dynamics with FLUXNET Data and Neural Networks” deals with the really interesting topic of the energy industry impact in climate.

3. Conclusions

The articles presented here provide a good overview of the current lines of research of machine learning and big data applied to energy. The increase in the use of artificial intelligence systems in the last years means that the use of these methodologies not only will continue but also will increase its importance in this field.



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