

SOLVING CHALLENGING PROBLEMS IN THE OIL INDUSTRY USING ARTIFICIAL INTELLIGENCE BASED TOOLS

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ABSTRACT

Predictive modelling is a process used in predictive analytics to create a statistical model of future behaviour. Predictive analytics is the area of data mining concerned with forecasting probabilities and trends. On the other hand, Artificial Intelligence (AI) concerns itself with intelligent behaviour, i.e. the things that make us seem intelligent. Following this process of thinking, in this work we have as the main goal the assessment of the impact of using AI based tools for the development of *intelligent* predictive models, in particular those that may be used to classify industrial waste, such as the residual waters in a refinery, based on the type of the mixtures of crude oil that arrive into the site to be processed.

Indeed, these models will enable the prediction of the quality classes of the effluents that will be disposed, in order to assure that Industrial Residual Water does not affect negatively the ecology of the receptors or the Staff Health and Safety and obeys the current legislation. The software employed was Clementine 11.1 and C5.0 Algorithm was used to induce decisions trees. The data in the database was collected from 2006 to 2007, and includes production data and effluent analysis data.