

AUTOMATED MACHINE LEARNING PLATFORM FOR REAL-TIME DRILLING ANALYTICS AND GEOLOGICAL INTERPRETATION

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Operational efficiency while drilling O&G wells is related to obtaining reliable real-time insights and improving decision-making processes. In this context, the AUTOMUD Web Platform is a Drilling Analytics system designed to optimize operations using Machine Learning as a Service (MLaaS) applications connected to field data. The core features of AUTOMUD are the use of trained ML models and a georeferenced Data Warehouse to explore geological and operational patterns to make predictions while drilling. This system enables automated lithology interpretation and artificial LWD logs generation from mud logging data. Trained ML models can discover patterns related to mud logging and lithology variation, making possible the lithology interpretation for a given geological context. At the same time, using correlation wells databases, ML models can generate LWD logs, such as Gamma Ray (GR), using adjusted models that relate patterns between mud logging and LWD data. The computational infrastructure behind this system is based on the synergy between Cloud Computing and Machine Learning Operations (MLOps) concepts applied to drilling activities. These technologies provide an agile development of ML models, allowing them to adapt quickly to changing geological and operational conditions, thus establishing a robust platform for more accurate predictive analysis while drilling.

KEYWORDS: DRILLING ANALYTICS, MACHINE LEARNING AS A SERVICE, MUD LOGGING, DRILLING AI APPLICATIONS