Special Issue

Machine Learning-Enabled Reservoir Dynamics Prediction and Recovery Factor Optimization

Message from the Guest Editors

This Special Issue requests high-quality and novel research contribution and innovative review works focusing on dynamic model development, optimization processes, and software applications in the fields of conventional and unconventional reservoir systems, production optimization, and enhanced oil and gas recovery prediction by coupling real-time data and ML/DL/explainable AI techniques. Prospective research topics include, but are not limited to, the following areas:

- Physics-informed machine learning-based predictive models, feature selection and dimensionality reduction techniques for reservoir behavior analysis and near-wellbore geomecahnics.
- Efficacy of hybrid/metaheuristic optimization techniques to reservoir dynamics and oil recovery prediction.
- Genetic algorithm and advance novel approach-based improved model for predicting oil recovery.
- Validation and field case studies of ML/DL/XAI guided robust models to hydrocarbon reservoir description and forcasting.
- Application of commercial simulation tools for reservoir dynamics model and oil recovery performance.
- Innovative guidelines and workflows for integrating ML/DL/XAI into digital oilfield and reservoir management practices.

Guest Editors

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