Society of Petrophysicists and Well Log Analysts
Petrophysical Data-Driven Analytics

2021 SPWLA PDDA Machine Learning Contest - Call for Registration

SPWLA PDDA SIG is excited to announce its 2021 machine learning contest!

This contest is open to all petrophysics enthusiasts. Top winning teams will be awarded prizes and invited to present at the PDDA SIG annual meeting. Please register with Lei Fu (pdda_sig@swpla.org) by submitting your team information (**names**, **affiliations**, and **contacts)**, before October 15, 2021. The dataset comes from the Equinor Volve field. A data repository is available at: https://github.com/pddasig/Machine-Learning-Competition-2021

Sponsoring Opportunities: SPWLA PDDA SIG is accepting sponsorship for this event to award the top winning teams. Please contact Lei Fu (pdda_sig@swpla.org) for details.

SPWLA PDDA SIG Contest Committee: Lei Fu, Chicheng Xu, Yanxiang Yu, Michael Ashby, McDonald Andy, Bin Dai

Task: Well-log based reservoir property estimation with machine learning

Background: Well logs are interpreted/processed to estimate the in-situ reservoir properties (petrophysical, geomechanical, and geochemical), which is essential for reservoir modeling, reserve estimation, and production forecasting. The modeling is often based on multi-mineral physics or empirical formulae. When sufficient amount of training data is available, machine learning solution provides an alternative approach to estimate those reservoir properties based on well log data and is usually with less turn-around time and human involvements.

Problem Statement: The goal of this contest is to develop data-driven models to estimate reservoir properties including shale volume, porosity, and fluid saturation, based on a common set of well logs including gamma ray, bulk density, neutron porosity, resistivity, and sonic.

You will be provided with log data from about 10 wells from the same field together with the corresponding reservoir properties estimated by petrophysicists. You need to build a data-driven model using the provided training dataset. Following that, you will deploy the newly developed data-driven models on the test dataset to predict the reservoir properties based on the well log data.

Competition Rules:
1. Contestant can be an individual or a group with the maximum size of 4.
2. The contest focuses on data-driven methods, the use of additional data or petrophysical equations is not allowed.
3. Privately sharing code or data outside of teams is not permitted. However, it's okay to share code if made available to all participants on the competition Github repository via submitting issues or pull requests.
4. A contestant will submit the estimated reservoir properties for testing wells as separate .csv files.
5. A contestant will submit the source code and a brief report documenting the accuracy achieved in a few plots.
6. The judges will review the source code.
7. The performance of the model will be quantified in terms of root mean square error (RMSE).
8. A leaderboard will be updating the rank of submissions from each team.
9. The contestant with the best quality source code and the best performance will be declared the winner for this competition.