



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

SPWLA 1st Petrophysical Data-Driven Analytics Contest Call for Team Registration

Problem Statement

Compressional traveltime (DTC) and shear traveltime (DTS) logs are not acquired in all the wells drilled in a field due to financial or operational constraints. Under such circumstances, machine-learning techniques can be used to predict DTC and DTS logs to improve subsurface characterization. The goal of the the 1st Petrophysical Data-Driven Analytics Contest is to develop data-driven models by processing “easy-to-acquire” conventional logs from Well 1, and use the data-driven models to generate synthetic DTC and DTS logs in Well 2. A robust data-driven model for the desired sonic-log synthesis will result in low prediction errors, which can be quantified in terms of root mean squared error (RME) by comparing the synthesized and the original DTC and DTS logs.

You are provided with two datasets: Well 1 dataset and Well 2 dataset. You need to build a generalizable data-driven models using the Well 1 dataset. Following that, you will deploy the newly developed data-driven models on the Well 2 dataset to synthesize DTS and DTC logs. The data-driven model should use feature sets derived from the following seven logs: caliper, neutron, gamma ray, deep resistivity, medium resistivity, photoelectric factor and density. The data-driven model should synthesize two target logs: DTC and DTS logs.

Competition Timeline

Start Date:	March 1, 2020
Team Registration Deadline:	March 31, 2020 11:59 pm CST
Entry Deadline:	April 30, 2020 11:59 pm CST
End Date	
(Final Submission of Code Deadline):	May 7, 2020 11:59 pm CST

Registration

Please send your team name, team members, contact info, and affiliation to pdda_sig@spwla.org. The official competition website is <https://github.com/pddasig/Machine-Learning-Competition-2020>.

One Account Per Participant

You cannot register from multiple accounts and therefore you cannot submit from multiple accounts.

No Private Sharing Outside Teams

Privately sharing code or data outside of teams is not permitted. It's okay to share code if made available to all participants on the competition Github repository.

Team Limits

The maximum team size is five.

Submission

Your submission must follow the same format as the ‘sample_submission.csv’ file provided on the competition website, the final ranking is based on the RMSE score of the hidden dataset.

A blind test dataset from 20% of the hidden dataset is released for your evaluation, you may check your model performance based on this dataset as many times as you wish.

You may select up to three submissions for judging before the entry deadline, the highest score will be used for your rank.

You must submit your runnable code in a Notebook/JupyterNotebook format before the end date, any code submission with severe bugs or results in a different number from the data entry will not be ranked or awarded.

Competition-Specific Terms

Competition Title: Pseudo Sonic Log Generation

Competition Organizer: SPWLA – PDDA SIG

Competition Website:

<https://github.com/pddasig/Machine-Learning-Competition-2020>

Prize Policy: The top five winning teams will be awarded with prizes based on the final prize pool.

Novel and practical algorithms will be recommended for submission to the next *Petrophysics* special issue on PDDA.

Data Licensing

The data come from the VOLVE dataset owned by Equinor.

Data Access and Use: Creative Commons Attribution-NonCommercial-ShareAlike license.

Entry in This Competition Constitutes Your Acceptance of These Official Competition Rules.

The Competition named above is a skills-based competition to promote and further the field of data science. You must submit your registration to pdda_sig@spwla.org to enter. Your competition submissions (“Submissions”) must conform to the requirements stated on the Competition Website. Your Submissions will be scored based on the evaluation metric described on the Competition Website. Subject to compliance with the Competition Rules, Prizes, if any, will be awarded to participants with the best scores, based on the merits of the data science models submitted. Check the competition website for the complete Competition Rules.