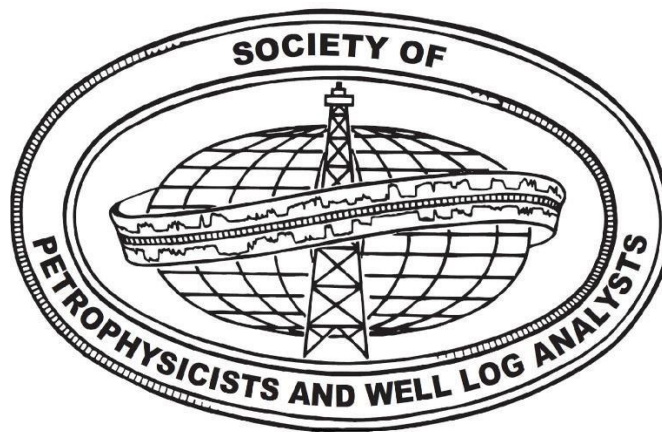# 2023 SPWLA PDDA TOPICAL CONFERENCE

Petrophysical Machine Learning

Technical Program

in person and virtual

October 10-11, 2023
Halliburton North Belt Campus - Auditorium
(3000 N Sam Houston Pkwy E, Houston, TX 77032)

Day 1 Tuesday – Oct 10

07:30-08:30 **Registration and Welcome Snack**

08:30-08:45 Opening Remarks, *Hyungjoo Lee (Helmerich & Payne)*

08:45-09:15 Keynote speaker, *Ahmed Fouda, (Halliburton)*

09:15-10:15 Panel Discussion: **Machine Learning in Petrophysics: The Opportunities and Challenges**
Panelist: *Carlos Torres-Verdín (The University of Texas at Austin)*
Shuvajit Bhattacharya (Bureau of Economic Geology)
Michael Ashby (Devon Energy)
Moderator: *Hyungjoo Lee (Helmerich & Payne*)

10:15-10:30 **Coffee Break 1**

10:30-11:30 **Session 1 – Machine Learning for the Frontiers with Petrophysics**

10:30-10:30 (V) **Evaluation of Fracturing Effect of Tight Reservoirs based on Deep Learning**
Yuxin Ke, Chuang Hei, and Ankang Feng (Yangtze University)

11:00-11:30 (V) **Full Borehole Image Data Computation Using GAN Based Model**
Yubo Liu (China University of Petroleum)

11:30-13:00 **Lunch Recess: Catered Lunch**

13:00-14:30 **Session 2 – Machine Learning Application on Petrophysics**

13:00-13:30 **Machine Learning for Well Logging Applications – Best Practices for a Streamlined, Reproducible and Scalable Research & Development**
Sanjeev Malaur (Probe Technology Services)

13:30-14:00 **Optimizing Contamination Estimation Proxy Models with Sequential Residual Symbolic Regression**
Wei Shao, Christopher Michael Jones, Songhua Chen, Bin Dai, and Zhonghuan Chen (Halliburton)

14:00-14:30 **Bread and Butter Applications of Artificial Neural Networks in Cased-Reservoir Analysis**
Richard Odom (Probe Technology Services)

14:30-14:45 **Coffee Break 2**

14:45-16:00   **Session 3 – PDDA SIG Updates and Halliburton**

14:45-15:15   **Summary of 2023 SPWLA PDDA SIG Activities and Future Plans**
Hyungjoo Lee (Helmerich & Payne), Wen Pan (Shell), and Michael Ashby (Devon Energy)

15:15-16:00   **Halliburton's Advanced Products and Services**
Marketing Teams (Halliburton, tentative)

16:00   **Adjourn**

Day 2 Wednesday – Oct 11

08:00-09:00   **Morning Snack and Coffee**

09:00-11:15   **Session 4 – Automatic Well-Log Depth Shift**

09:00-09:15   **2023 SPWLA PDDA Machine Learning Competition Introduction: Automatic Well-Log Depth Shift with Data-Driven Methods**
Michael Ashby (Devon Energy)

09:15-09:30   **2023 SPWLA PDDA Machine Learning Competition Summary: Automatic Well-Log Depth Shift with Data-Driven Methods**
Wen Pan (Competition chair, Shell) | Fan Meng, Siyuan Chen, Yingying Ye, and Hailong Jiang (No. 1 Team Dreamstar) | Hyunmin Kim, Heesung Kong, Inwook Baek, and Jinhyeon Baek (No. 2 Team WELL-LOGGED) | Xuekai Sun, Hao Sun, Siyi Li, and Zimeng Zhao, (No. 3 Team ARC_CNLC) | Ankang Feng, Yuxin Ke, Wei Hu, and Yifan Wu (No. 4 Team All for A Dream) | Byunghoon Choi, Hojin Kang, and JunHa Park (No.5 Team IGPL)

09:30-10:00 (V)   **Supervised Learning based Automatic Well-Log Depth Shift using Convolutional Neural Network**
Hojin Kang, Byunghoon Choi, and JunHa Park (Inha University)

10:00-10:15   **Coffee Break 1**

10:15-10:45 (V)   **Automatic Well-Log Depth Shift with Gated Recurrent Unit Network Based on Multilevel Wavelet Decomposition and Dynamic Time Warping**
Fan Meng, Siyuan Chen, Yingying Ye, Hailong Jiang, Xiangyu Fan, Feng Wu, and Hengru Zhang (Southwest Petroleum University)

10:45-11:15 (V)   **A Pick-Pair-Based DTW Algorithm for Well Log Alignment and Depth Shift**
Hao Sun, Xuekai Sun, Siyi Li, and ZiMeng Zhao (China National Petroleum Corporation)

11:15-11:30   **Final Meeting Remarks**
Hyungjoo Lee (Helmerich & Payne)

11:30   **Adjourn**