

2ND EDITION ARTIFICIALLY INTELLIGENT EARTH EXPLORATION: BETWEEN EXPECTATIONS AND THE CURRENT SITUATION

30 NOVEMBER–2 DECEMBER 2021

SEG WORKSHOP



SEG
DIGITAL
INTELLIGENCE
SERIES

PROGRAMME

CENTRAL STANDARD TIME
(GMT - 4:00)

SCHEDULE

5:00 - 11:00AM : USA/CST (GMT-5:00)

11:00 - 5:00PM : (GMT)

3:00 - 9:00PM : UAE/OMAN/GST (GMT +4:00)

7:00 - 12:00PM : ASIA PACIFIC

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SESSION SPONSOR



Tuesday, 30 November 2021

Day 1

5:00 - 5:10	Welcome Address by Committee Chair - by Ali Al-Naamani, PDD
5:10 - 5:25	SEG Leadership Keynote
5:25 - 5:40	Opening Address by Aiman Bakhorji, Saudi Aramco
5:40 - 5:55	Opening Address by Hassan Barwani, Petroleum Development Oman
5:55 - 6:10	Networking Break - 15 Min
Session 1 DEEP LEARNING IN GEOSCIENCE	
6:10 - 6:30	KEYNOTE : Deep Learning Applications in Seismic Exploration Jianwei Ma (Peking University)
6:30 - 6:45	Calibration and Uncertainty Quantification of Bayesian Convolutional Neural Networks for Geophysical Applications Lukas Mosser (Earth Science Analytics AS)
6:45 - 7:00	"MLReal: Bridging the Gap Between Training on Synthetic Data and Real Data Applications in Machine Learning" Tariq Al Khalifah (KAUST)
7:00 - 7:15	Use of "Earth Intelligence@" for Automating Geophysical Data Integration Luc Sandjivy (Earth Resource Management, Services France)
7:15 - 7:35	KEYNOTE : Introduction to Efficient Carbon Capture Storage through Machine Learning Life Cycle Tarry Singh (DeepKapha.ai)
7:35 - 8:05	Moderated Discussion - 30 mins
8:05 - 8:20	Networking Break - 15 mins
Session 2 DENOISE AND MULTIPLE ATTENUATION	
8:20 - 8:40	KEYNOTE : Deep Learning Ground-Roll Attenuation with Surrogating Physics Constraint Weichang Li (Aramco Americas)
8:40 - 8:55	Application of Deep Learning for Surface Wave Noise Attenuation Ferhan Ahmed (Saudi Aramco)
8:55 - 9:10	Hyper-Parameter Selection for Self-Supervised Seismic Denoising Claire Birnie (KAUST)
9:10 - 9:25	Internal Multiple Attenuation for Land Seismic Data with Convolutional Neural Network Tianyue Hu (Peking University)
9:25 - 9:55	Moderated Discussion - 30 mins
9:55 - 10:10	Speed Networking
10:10 - 10:30	Post Event Online Bingo Game with Prizes

Wednesday, 1 December 2021

Day 2

Session 3 IMAGE ENHANCEMENTS AND IMPROVED RESOLUTION	
5:00 - 5:15	Machine Learning Workflows to Create Pseudo-3D from 2D Seismic Paul de Groot (DGB Earth Sciences)
5:15 - 5:30	High Seismic Frequency Reconstruction Through a Deep U-NET Architecture Halah Abdulrahman Alasmri (Saudi Aramco)
5:30 - 5:45	Deep Learning Methods for Seismic Data Interpolation Mario Ruben Fernandez (Fraunhofer-Institut für Techno- und Wirtschaftsmathematik (ITWM) & École Normale Supérieure (ENS))
5:45 - 6:00	Increased Efficiency of Deblending Using Deep Learning: Case Study from Sultanate of Oman Nadia Al Kiyumi (CGG)
6:00 - 6:30	Moderated Discussion - 30 mins
6:30 - 6:45	Networking Break - 15 mins
POSTER SESSION	
6:45 - 6:53	Application of Graph Embeddings for Shear-Wave Velocity Prediction David Cova (China University of Petroleum)
6:53 - 7:01	Prediction of Initial Model for Elastic FWI with CNN on Data with Lack of Low Frequencies Pavel Plotnitskii (KAUST)
7:01 - 7:09	Robust Subsalt Fullwaveform Inversion on Challenging Data with the Aid of Unet Abdullah Alali (KAUST)
7:09 - 7:17	Physics-Guided Deep Learning for Seismic Inversion using Variational Autoencoders with Normalizing Flows Arnab Dhara (University of Texas at Austin)
7:17 - 7:25	Deep Learning-Based Resolution Enhancement of Post-Stack Data with Seismic-Well Combination Haoran Zhang (China University of Petroleum)
7:25 - 7:33	Self-supervised Learning for Random Noise Removal in Seismic Data Sixiu Liu (KAUST)
7:33 - 7:41	AVO Inversion for Elastic Modulus Using Semi-Supervised Neural Networks Yuhang Sun (China University of Petroleum)
7:41 - 7:49	Suppression of Seismic Random Noise Based on Self-Supervised Deep Learning Gui Chen (China University of Petroleum)
7:49 - 8:15	Moderated Discussion
8:15 - 8:30	Networking Break - 15 mins
Session 4 VELOCITY ANALYSIS AND INVERSION	
8:30 - 8:45	Physics-Guided Learning-Driven Computational Seismic Imaging: from Synthetic Practice to Field Applications Youzuo Lin (Los Alamos National Laboratory)
8:45 - 9:00	PINNtomo: Seismic Tomography using Physics-Informed Neural Networks Umair bin Waheed (KFUPM)
9:00 - 9:15	Preconditioning Seismic Inverse Problems with AutoEncoders Matteo Ravasi (KAUST)
9:15 - 9:30	Gather Preconditioning and RMO Picking using Deep Neural Network Amroo Al Ramadhani (CGG)
9:30 - 10:00	Moderated Discussion - 30 mins
Session 5 INTERPRETATION AND PICKING	
10:00 - 10:15	Leveraging Machine Learning for Interactive Seismic Horizon Interpretation Graham Baines (Halliburton)
10:15 - 10:30	Machine Learning Application to Build Fault Probability Volumes for Structural Models Maisha Amaru (Chevron)
10:30 - 10:45	AI Seismic Interpretation: Challenges, Solutions and Applications Peter Szafian (Geoteric)
10:45 - 11:15	Moderated Discussion - 30 mins

Thursday, 2 December 2021

Day 3

Session 6 SEISMIC ATTRIBUTES	
5:00 - 5:20	KEYNOTE : Relative Geologic Time-Constrained Convolutional Neural Network for Subsurface Property Estimation Haibin Di (Schlumberger)
5:20 - 5:35	Integration of Multiscale Attributes using a Semi Supervised Machine Learning Algorithm Salma AlSinan (Saudi Aramco)
5:35 - 5:50	Characterizing Karstification using Unsupervised Machine Learning Saleh Al-Uwaiyadh (Saudi Aramco)
5:50 - 6:20	Moderated Discussion - 30 mins
6:20 - 6:35	Networking Break - 15 mins
Session 7 SEISMIC INVERSION	
6:35 - 6:55	KEYNOTE : Hydrocarbon Source Rock and Reservoir Prediction from Seismic Data using Artificial Neural Networks Yang Liu (China University of Petroleum)
6:55 - 7:10	Demystifying Deep Learning for Seismic Inversion Ke Wang (Chevron)
7:10 - 7:25	Advancement in Seismic Inversion using Temporal Convolutional Networks Hussain Alfayez (Saudi Aramco)
7:25 - 7:55	Moderated Discussion - 30 mins
7:55 - 8:10	Networking Break - 15 mins
Session 7 WELL LOGGING AND FORMATION EVALUATION	
8:10 - 8:25	Inference of Density and Velocity with DAS and Deep Learning Vladimir Kazei (Aramco Services Company)
8:25 - 8:40	Facies Classification of Carbonates using Deep Neural Networks Elita Li (Purdue University)
8:40 - 8:55	Machine Learning Prescriptive Well Log Quality Analysis Determination of Casing Effects Klemens Katterbauer (Saudi Aramco)
8:55 - 9:10	Automating Uphole Data Interpretation using Deep Learning Methods Hala Alqatari (Saudi Aramco)
9:10 - 9:40	Moderated Discussion - 30 mins
9:40 - 10:00	Wrap-up by Workshop Technical Co-Chairs