

Bay Area Geophysical Society Seminar Series



Applying Artificial Intelligence and Machine Learning Algorithms for Improving Efficiency and Accuracy of Geoscience Workflows

Dr.ir. Aria Abubakar

Head of Data Science & Advisor
Digital Subsurface Solutions at Schlumberger

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Abstract:

In recent years we have witnessed great achievements accomplished by artificial intelligence (AI) and machine learning (ML), in various areas such as e-commerce, computer vision, social media, self-driving cars, natural language processing, and healthcare. Driven by the advances in the GPU technology, cloud computing, and the rapidly increasing data volumes within the geoscience applications, the energy industry has recognized and embraced the tremendous potential of AI/ML. Early research and development utilizing these algorithms for geoscience applications have shown encouraging and promising results. In the last few years we have seen “explosion” of presentations around these topics.

In this seminar we will discuss a variety of highly successful geoscience applications that leverage AI/ML algorithms to improve efficiency, accuracy, and to automate workflows, and to explore a new way of extracting values from geoscience data. We will focus on the automated evergreen subsurface model building workflow utilizing seismic, wellbore and other geophysical data. In addition, we also will touch upon a variety of general questions which naturally

arise due to the emergence of these technologies in geosciences. Some of these questions are: What other challenging problems can be formulated and solved effectively by AI/ML? How do we tailor the AI/ML and data analytics algorithms and paradigms to meet the specific properties of geoscience data? When should we and should we not apply AI/ML and data analytics approaches? Lastly but more importantly, how can we translate AI/ML and data analytics-based workflows from proof-of-concept works to scalable commercial products.

Presenter's Bio:



Aria Abubakar was born in Bandung, Indonesia. He received an M.Sc. degree in electrical engineering in 1997 and as well as a Ph.D. in technical sciences in 2000, both from the Delft University of Technology, The Netherlands. He joined Schlumberger-Doll Research in Ridgefield, CT, USA in 2003, where he remained for 10 years, ending his tenure as a scientific advisor and the manager of the Multi-Physics Modeling and Inversion Program. Aria is currently the head of Data Science for the Digital Subsurface Solutions. His main responsibility is to oversee and coordinate the utilization of artificial intelligence, machine-learning and data-analytics technology for subsurface applications throughout Schlumberger. Aria was the 2014 SEG North America Honorary Lecturer and the 2020 SEG-AAPG Distinguish Lecturer. He holds 40 U.S. patent applications, has published five book/book chapters, and written more than 100 scientific articles in journals, 200 conference proceedings papers, and 60 abstracts.

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