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Energy - Oil and Gas Research; Investigators at China University of Geosciences Report Findings in Oil and Gas Research (A Deep-learning-based Approach for Reservoir Production Forecast Under Uncertainty)

2021 JUL 30 (VerticalNews) -- By a News Reporter-Staff News Editor at Energy Weekly News -- Investigators publish new report on Energy - Oil and Gas Research. According to news reporting from Hubei, People's Republic of China, by VerticalNews journalists, research stated, "This paper presents a deep-learning-based proxy modeling approach to efficiently forecast reservoir pressure and fluid saturation in heterogeneous reservoirs during waterflooding. The proxy model is built on a recently developed deep-learning framework, the coupled generative adversarial network (Co-GAN), to learn the joint distribution of multidomain high-dimensional image data."

Funders for this research include Chinese Academy of Sciences, Jackson School of Geosciences at UT Austin, ==Bureau of Economic Geology== State of Texas Advanced Resource Recovery (STARR) program.

The news correspondents obtained a quote from the research from the China University of Geosciences, "In our formulation, the inputs include reservoir static properties (permeability), injection rates, and forecast time, while the outputs include the reservoir dynamic states (i.e., reservoir pressure and fluid saturation) corresponding to the forecast time. Training data obtained from full-scale numerical reservoir simulations were used to train the Co-GAN proxy model, and then testing data were used to evaluate the accuracy and generalization ability of the trained model. Results indicate that the Co-GAN proxy model can predict the reservoir pressure and fluid saturation with high accuracy, which in turn, enable accurate predictions of well production rates. Moreover, the Co-GAN proxy model also is robust in extrapolating dynamic reservoir states."

According to the news reporters, the research concluded: "The deep-learning proxy models developed in this work provide a new and fast alternative to estimating reservoir production in real time."

This research has been peer-reviewed.

For more information on this research see: A Deep-learning-based Approach for Reservoir Production Forecast Under Uncertainty. SPE Journal, 2021;26(3):1314-1340. SPE Journal can be contacted at: Soc Petroleum Eng, 222 Palisades Creek Dr, Richardson, TX 75080, USA.

Our news journalists report that additional information may be obtained by contacting Zhi Zhong, China University of Geosciences, Wuhan, Hubei, People's Republic of China. Additional authors for this research include Alexander Y. Sun, Bo Ren and Yanyong Wang.

Keywords for this news article include: Hubei, People's Republic of China, Asia, Oil and Gas Research, Energy, China University of Geosciences.

Document ENRGWK0020210723eh7n00040