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Machine Learning; New Findings on Machine Learning from University of Texas Austin Summarized (Machine Learning Classification of Austin Chalk Chemofacies From High-resolution X-ray Fluorescence Core Characterization)

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2023 JUL 3 (VerticalNews) -- By a News Reporter-Staff News Editor at Journal of Engineering -- Investigators publish new report on Machine Learning. According to news reporting originating in Austin, Texas, by VerticalNews journalists, research stated, "The Upper Cretaceous Austin Chalk (AC) Group is an unconven-tional reservoir that extends across Texas and Louisiana. It is composed of interbedded layers of marly chalks to calcareous-siliciclastic mudrocks that vary in the degree of lamination, bioturbation, mineral abundance, and organic matter richness."

Funders for this research include MSRL, RCRL, STARR groups at the **Bureau of Economic Geology** of The University of Texas at Austin.

The news reporters obtained a quote from the research from the University of Texas Austin, "Inte-grating lithologic observations with geochemistry is critical for interpreting depositional environments and modeling reservoir properties. Central to this integration is the ability to characterize the geochemistry of core samples at a resolution that captures thin-layered heterogeneity common to mudrock systems. Here, we developed a training data set using a semisupervised chemofa-cies clustering approach that is explored with a deep neural net-work model to predict chemofacies across multiple cores of the AC Group. Eight chemofacies are identified that capture differences in inorganic geochemistry, mineral abundance, rock fabric, and or-ganic matter richness; three classify differences in the marly chalks, four classify differences in the calcareous-siliciclastic mudrocks, and one is transitional between marly chalk and calcareous-siliciclastic mudrocks. Two distinct siliciclastic-carbonate mixing trends are identified that differ in modal abundances of tectosilicates and total clay. Two chemofacies are distinguished based on differences in Mo and V trace element enrichment, suggesting differences in bottom-water redox chemistry."

According to the news reporters, the research concluded: "Collectively, this approach pro-vides a means to integrate geochemical measurements and litholog-ical observations to interpret the depositional environments of mudrock systems and is an important step toward upscaling core data to characterize reservoir quality."

This research has been peer-reviewed.

For more information on this research see: Machine Learning Classification of Austin Chalk Chemofacies From High-resolution X-ray Fluorescence Core Characterization. AAPG Bulletin, 2023;107(6):907-927. AAPG Bulletin can be contacted at: Amer Assoc Petroleum Geologist, 1444 S Boulder Ave, PO Box 979, Tulsa, OK 74119-3604, USA.

Our news correspondents report that additional information may be obtained by contacting Toti E. Larson, University of Texas Austin, Jackson School of Geosciences, Bur Econ Geol, Austin, TX 78712, United States. Additional authors for this research include Robert G. Loucks, J. Evan Sivil, Kelly E. Hattori and Christopher K. Zahm.

Keywords for this news article include: Austin, Texas, United States, North and Central America, Chemistry, Cyborgs, Emerging Technologies, Geochemistry, Machine Learning, University of Texas Austin.

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