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Machine Learning; Researchers at University of Texas Austin Have Reported New Data on Machine Learning (A Machine-learning Workflow To Integrate High-resolution Core-based Facies Into Basin-scale Stratigraphic Models for the Wolfcamp and Third Bone Spring Sand, ...)

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2024 JAN 1 (VerticalNews) -- By a News Reporter-Staff News Editor at Journal of Engineering -- A new study on Machine Learning is now available. According to news reporting originating in Austin, Texas, by VerticalNews journalists, research stated, "The characterization of subsurface reservoirs that are dominated by mudrock facies is hindered by the in-herent heterogeneity and high degree of spatial variability typical of mudrock depositional systems. Subsurface reservoir properties that include porosity and permeability, fluid saturations, stratigraphic thicknesses of res-ervoir units, and source rock potential are ultimately controlled by the spatial distribution of sedimentary rock facies, which supports efforts to improve subsurface characterization workflows."

Financial support for this research came from Mudrock Systems Research Laboratory (MSRL) at the **Bureau of Economic Geology**.

The news reporters obtained a quote from the research from the University of Texas Austin, "Although core-based data provide direct measurements of rock attributes that are used to inform static reservoir models, capturing high-resolution core-based rock facies and downscaling these observations to tie to lower-resolution wireline logs remains a challenge. The effort to integrate core-based facies to reservoir-scale models is especially difficult when trying to capture thin-bedded heterogeneity that is common to mudrock systems. Herein, a workflow is developed and applied to visualize and integrate multivariate and spatially complex core-based data sets with wireline logs. Formation-specific core-based chemofacies training data sets are developed by integrating core descriptions with chemofacies clusters developed from high-resolution X-ray fluorescence core scanning. Core-based rock attribute data (e.g., XRD mineralogy, total porosity, and total organic matter content) are used to describe the chemofacies, providing a means to upscale low-resolution rock attribute measurements to high-resolution core-based chemofacies. Supervised core-based chemofacies training data sets are then used with neural network multiclass classification machine-learning tools to train triple combo wireline logs (gamma ray, deep resistivity, bulk density, and neutron porosity) to predict rock facies from wireline logs, providing a new approach to apply core-based facies classifications to wireline log studies."

According to the news reporters, the research concluded: "A basin-scale case study that applies this workflow is described for the Third Bone Spring Sand and units of the Wolfcamp Formation in the Delaware Basin of West Texas, United States."

This research has been peer-reviewed.

For more information on this research see: A Machine-learning Workflow To Integrate High-resolution Core-based Facies Into Basin-scale Stratigraphic Models for the Wolfcamp and Third Bone Spring Sand, Delaware Basin. Interpretation, 2023;11(4). Interpretation can be contacted at: Soc Exploration Geophysicists - Seg, 8801 S Yale St, Tulsa, OK 74137, 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 J. Evan Sivil, Priyanka Periwal and Jesse Melick.

Keywords for this news article include: Austin, Texas, United States, North and Central America, Bone Research, Cyborgs, Emerging Technologies, Health and Medicine, Information Technology, Machine Learning, University of Texas Austin.

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