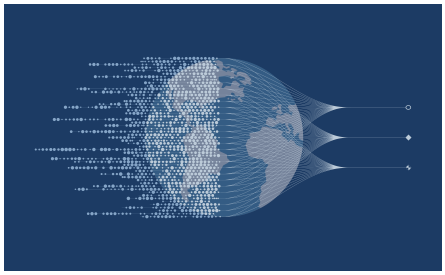

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Advancing Earthquake Localization Using Deep Learning in Gas Storage Fields

Thursday 11 September 2025 11:00 (1 hour)

The identification and precise location of earthquakes are essential for understanding seismicity and mitigating associated risks. This research focuses on utilizing state of the art deep learning methods, specifically PhaseNet, to enhance the accuracy of seismic phase picking and event localization. By analyzing 19 years of continuous seismic data from a gas storage field in Iran, our study aims to develop a comprehensive catalog of induced seismic events. PhaseNet, with its advanced neural network architecture, enables robust phase detection even in noisy environments, making it highly effective for regions with industrial activity. This methodological framework aligns with the themes of the SnT2025 Conference, emphasizing innovative approaches to seismic monitoring and data analysis. Our work demonstrates the potential of integrating artificial intelligence with seismic data processing to improve real time monitoring and risk assessment of gas reservoirs. This research not only addresses scientific and technical challenges but also provides critical insights for industrial applications, contributing to enhanced safety and management of strategic energy resources.

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