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CTBT: SCIENCE AND TECHNOLOGY CONFERENCE
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9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE

Earthquake-nuclear-explosion Discrimination using Discrete Wavelet Transform Machine Learning (DWTML) supervised techniques

LIGHTNING TALK

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- Our study focuses on the classification of earthquakes and nuclear explosions using the Discrete Wavelet Transform (DWT) in conjunction with multiple machine learning (ML) techniques.

- By integrating various wavelet filters, we aimed to enhance the performance and accuracy of the ML algorithms in this investigation.

- We extracted 26 frequency bands from the seismic signals and used them as inputs for eight different ML models resulting in a total of 208 trained models.

- From this analysis, 11 frequency bands achieved AUC values greater than 80%, while two specific bands reached the highest performance with AUC values of 83%.These results demonstrate the effectiveness of combining wavelet-based signal decomposition with diverse ML models for accurate seismic event classification.

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