

Exploring cosmo-seismic correlation with machine learning

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This research endeavors to forecast earthquakes with a magnitude of 6 or greater within a 1000 km radius from three cosmic ray stations, employing machine learning methodologies. Our approach incorporates a feature store library for streamlined data preparation, encompassing 360 hours of cosmic ray data and the time elapsed since the last earthquake. Utilizing a feature store library and a dual-module model, we achieve a test AP of 0.320, surpassing the baseline of 0.288. The earthquake-focused metric addresses the practicality of forecasts, revealing a promising ability to prognosticate a significant percentage of earthquakes with a false alarm rate below 30%. Statistical significance tests, comprising 300,000 experiments, establish a robust 6 sigma or more significance.

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