

Predicting Earthquake Intensity via DYFI and Machine Learning

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Abstract: *Earthquake intensity prediction remains challenging due to the complex, nonlinear nature of seismic events. This study uses USGS “Did You Feel It?” (DYFI) responses combined with catalog features—magnitude, depth, latitude, and longitude—for India and Afghanistan. Using Random Forest regression on this citizen-sourced dataset, the model achieves strong intensity predictions ($R^2 > 0.80$) despite the absence of waveform data. Results highlight the potential of machine learning for rapid, post-event intensity estimation in data-scarce regions. Future work will explore hybrid datasets, ensemble models, and real-time implementation to improve accuracy and applicability.*

Keywords: Earthquake Intensity, Machine Learning, Did You Feel It (DYFI), Random Forest Regression, Seismic Hazard Assessment, Catalog Features, Community-Sourced Data

