



NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

2025 - 2026

Batch Number	DG5
Team Members	Ammisetty Chamundeswari (22471A05L1) Tadi Anusha (22471A05O4) Chaganti Rethika Reddy (23475A0509)
Guide	N. Vijay Kumar, M.E
Title	Earthquake Prediction Using Deep Learning with Spatiotemporal Priors
Domain/Technology	DEEP LEARNING
Base Paper Link	https://ieeexplore.ieee.org/document/10679183
Dataset Link	https://www.kaggle.com/datasets/mostafamousavi/stanford-earthquake-dataset
Software Requirements	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (COLAB)
Hardware Requirements	System Type: Intel Core i5 or above RAM: 8 GB Number of cores: 5 Number of Threads: 4
Abstract	This paper presents a real-time earthquake early warning (EEW) system using a hybrid Transformer-LSTM deep learning model to improve the speed and accuracy of epicenter distance and magnitude estimation . By leveraging the first 3 seconds of P-wave data from a single seismic station, our model integrates attention mechanisms and lightweight neural networks for rapid, low-latency predictions. We enhance traditional LSTM approaches with Transformer-based architectures to better capture long-range dependencies in seismic signals, while quantization and pruning optimize the system for edge deployment. To overcome limitations in long-distance detection, we incorporate early S-wave features and multi-station fusion where available. Experimental results show a reduction in prediction error by 20% compared to existing methods, with sub-second inference times , making it suitable for real-time alerts. Our framework also introduces uncertainty estimation and explainable AI to improve reliability and trust in EEW systems.

Signature of the student(s)

Signature of the Guide

Signature of the project coordinator