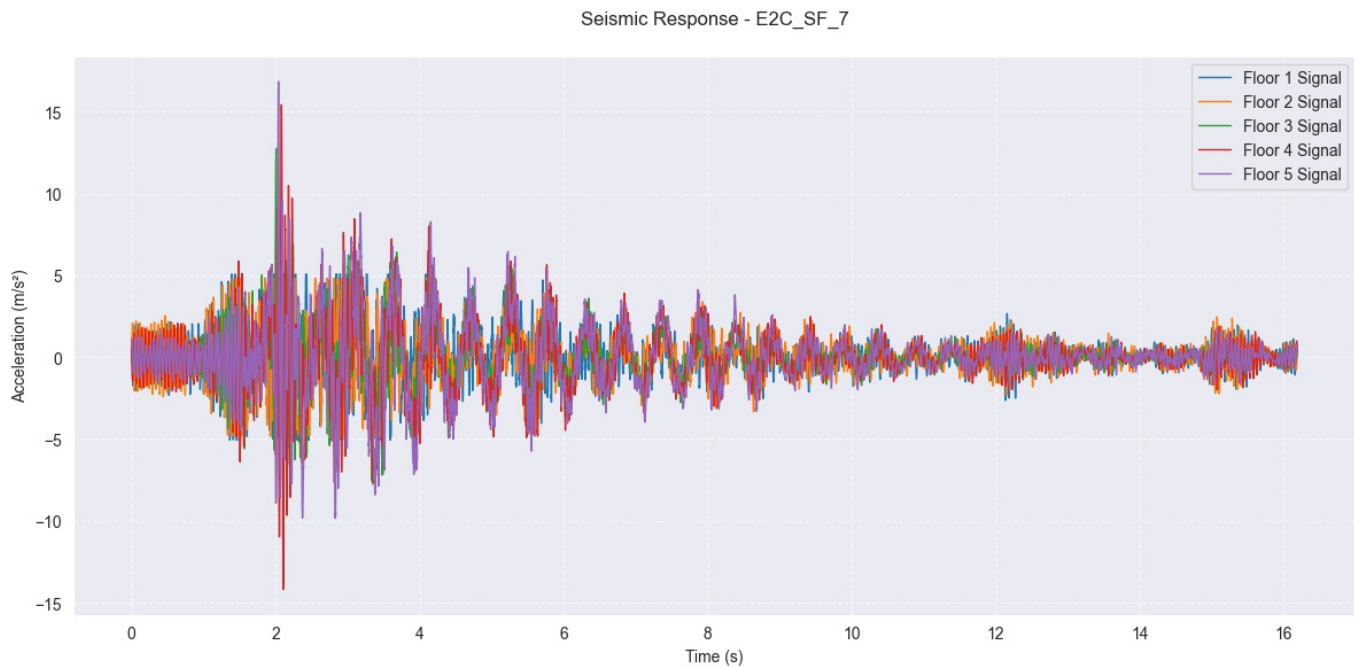


```
In [6]: import sys
import os
import warnings
warnings.filterwarnings("ignore")
sys.path.append(os.path.abspath('Sources'))
import about_ml_models as mlm
```

```
In [10]: #falla =True -> para obtener datos con fallas estructurales
#falla =False -> para obtener datos sin fallas estructurales
#falla =None -> selección aleatoria de los datos

data_IM, X_new_scaled=mlm.get_seismic_signals(falla=False)
```



=====

SEISMIC SIGNAL REPORT

=====

GENERAL INFORMATION:

Signal ID: E2C_SF_7
Structure E2: 6 columns, 5 levels
Earthquake C: Imperial Valley, 10/15/1979, El Centro
Damage Status: Undamaged

INTENSITY MEASURES BY FLOOR:

IM	Description	Floor 1	Floor 2	Floor 3	Floor 4	Floor 5
PGA	Peak Ground Acceleration	4.1353	4.2185	6.8303	6.9516	9.2652
PGV	Peak Ground Velocity	0.4199	0.5065	0.3443	0.4141	0.4943
IA	Arias Intensity	1.6165	2.2863	3.5114	4.623	6.831
CAV	Cumulative Absolute Velocity	8.0352	10.0499	11.8299	14.082	16.3044
RMS	Root Mean Square Acceleration	0.8204	0.9757	1.2092	1.3874	1.6865
DS	Significant Duration	7.261	7.243	6.1	6.087	6.053
FP	Predominant Frequency	15.625	7.8125	3.9062	3.9062	3.9062
IH	Housner Intensity	2.9583	3.1667	0.8984	1.0516	1.2558
ET	Time Energy	10.0953	14.2789	21.9294	28.872	42.6613
EWT	Wavelet Energy Total	10615.9	17125.1	21966.1	29929.6	43151.4

```
In [11]: # Load models
models_det = mlm.load_models()

# Make predictions
results, consensus = mlm.predict_damage(X_new_scaled, models_det)
```

STRUCTURAL DAMAGE PREDICTION REPORT

Random Forest [0] 0.00%

XGBoost [0] 0.60%

WARNING:tensorflow:5 out of the last 5 calls to <function TensorFlowTrainer.make_predict_function.<locals>.one_step_on_data_distributed at 0x0000024C856B0C20> triggered tf.function retracing. Tracing is expensive and the excessive number of tracings could be due to (1) creating @tf.function repeatedly in a loop, (2) passing tensors with different shapes, (3) passing Python objects instead of tensors. For (1), please define your @tf.function outside of the loop. For (2), @tf.function has reduce_retracing=True option that can avoid unnecessary retracing. For (3), please refer to https://www.tensorflow.org/guide/function#controlling_retracing and https://www.tensorflow.org/api_docs/python/tf/function for more details.

1/1  0s 99ms/step

Neural Network [0] 0.34%

MODEL PREDICTIONS:

Model	Prediction	Damage Probability
Random Forest	No Damage	0.00%
XGBoost	No Damage	0.60%
Neural Network	No Damage	0.34%

CONSENSUS ANALYSIS:

Model Agreement: 0%

Final Assessment: LOW PROBABILITY OF DAMAGE

```
In [12]: # damage location prediction
if consensus>0.5:
    mlm.ubicar_falla(data_IM)
```

In []:

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