MACHINE LEARNING TO ANALYSE STRESS PATTERNS

from sklearn.ensemble import RandomForestRegressor

# Example data: vibration, stress, temperature, and crack size

data = pd.read\_csv('vibration\_stress\_data.csv')

# Features and target

X = data[['vibration', 'stress', 'temperature']]

y = data['crack\_size'] # Target: crack size or structural damage level

# Train/test split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Train the model

model = RandomForestRegressor(n\_estimators=100)

model.fit(X\_train, y\_train)

# Predict crack size or structural damage

predictions = model.predict(X\_test)

# Print predictions

print(predictions)