WATER LEAK DETECTION FRAMEWORK

DATA ACQUISITION LAYER

Sensor Based Time Series Data

DATA PREPROCESSING LAYER

Data Cleaning
Missing Values

Feature Engineering
Statistical Features

Model Preparation
Train/Test Split (70/30)

INTELLIGENCE ANALYSIS LAYER

Random Forest
Gradient Boosting
XGBoost
SVM
Logistic Regression
K-Neighbors
Neural Network

DECISION SUPPORT LAYER

Performance Metrics

Accuracy
Precision
Recall
F1-Score
Kappa
Cross Validation

Leak

Burst

No Leak

Classify

EXPLAINABLE AI LAYER

SHAP
LIME
PI