1. Industrial datasets

Heterogeneous industrial sources

- DS AI4I manufacturing sensors
- DS MetroPT3 compressor telemetry
- DS Engine condition monitoring

I/O Industrial sensor streams

2. Shared preprocessing

Leakage-safe harmonisation

- PRE Clean and align signals → PHY Add physics features
- 14D Shared 14-feature schema → TRN Train-only scaling

3. FusionXNet-Edge

Lightweight multimodal fusion

FX Input contract (1 x 14)

- CNN CNN
- LST BiLSTM
- GRU GRU
- MLP MLP
- PHY Physics branch

FX Late fusion head → P Anomaly probability

4. Evaluation and transfer

Unified paper protocol

- EVAL Fixed-threshold in-domain evaluation → CMP DL / ML / meta comparison
- XFR Cross-domain transfer testing → THR Reuse source threshold

5. Edge-ready outcome

Practical contribution

EDGE Edge-ready anomaly monitoring

Selective cross-domain transfer

Efficiency-performance trade-off