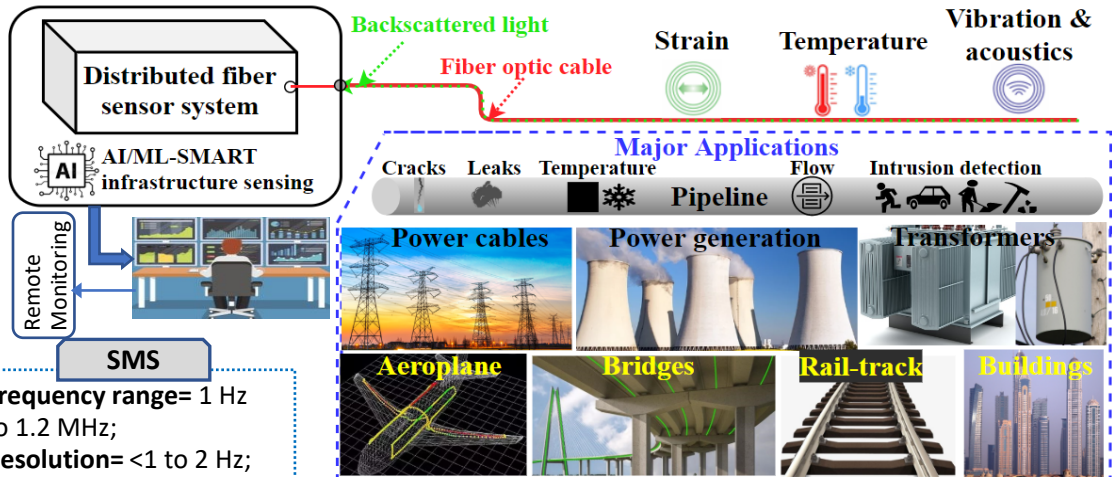


Distributed Fiber Optic Sensor Systems for Multi-Parameter Monitoring

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Distributed fiber optic sensors allow the measurement of structural parameters; such as strain, temperature and vibrations at thousands of locations along a single fiber cable. The distributed/quasi-distributed fiber sensors include;

- ❖ Brillouin optical time domain analysis (BOTDA).
- ❖ Phase-sensitive optical time domain reflectometry (ϕ -OTDR), also called distributed acoustic sensor (DAS).
- ❖ Single-mode-multi mode-single-mode (SMS) fiber sensor.



BOTDA

Sensing range = >100 km;
Spatial resolution = <5 m;
Measurable parameters: strain, and temperature

ϕ -OTDR/DAS

Sensing range = >30 km;
Spatial resolution = <1 m;
Measurable parameters: vibration/acoustics

SMS

Frequency range= 1 Hz to 1.2 MHz;
Resolution= <1 to 2 Hz;

Advantages

- Compact size
- EMI resistance
- Withstand harsh environment
- Real-time and remote monitoring
- High accuracy and stability
- Enhanced structural safety

Field validation

Power Transformer
Oil and Gas Pipeline

Transformer vibrations

