Oil Spill Detection Using Machine Learning

Objective: Detect oil spills using AIS data and SAR-2 satellite imagery. **Motivation:** Oil spills cause major ecological damage—early detection is critical.

Phase 1 – AIS-Based Anomaly Detection

- Inputs: Latitude, Longitude, SOG, COG, Heading.
- Process: Anomaly detection using motion profiling.
- Clustering: DBSCAN used to localize suspicious maritime behaviour.

Phase 2 – SAR-2 Image Analysis

- Data: SAR-2 Synthetic Aperture Radar satellite images.
- Advantage: Works in all weather, clear oil slick visualization.
- Technique: Image processing & deep learning used to detect spills.

Final Output & Impact

- Fusion: AIS + SAR data for accurate, cross-validated oil spill detection.
- Applications:
    - Real-time maritime monitoring.
    - Environmental protection.
    - ○ Support for marine agencies.