Objective
➢ To prevent human-caused damages to pipelines.
➢ To detect and identify machinery threat on pipeline right-off-way (ROW).
➢ To localize threat objects and classify the severity of threat to the pipeline.
➢ To develop a real-time threat detection system which works on the flight.

Typical Threat Objects on Pipeline ROW

Challenges
• Cast shadows
• Low illumination
• Over exposure
• Partial occlusions
• Different scales
• Varying resolution

Proposed Scheme
The proposed technology can be categorized into three phases.

Image Enhancement

Key Regions of Interest Selection

Feature Extraction

Experimental Results
Multiple Threat Detection
Partial Occlusion
Cast Shadows
Challenging Background

Object of Interest
Ringlet Partition
Gradent Orientation
Feature Formation

Row Image ➔ Distinct Corners and Edges Extraction ➔ Regions Density Computation ➔ Key Regions Selection

Original Image

Enhanced Image

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