AI-ASSISTED ANNOTATION / THERMAL ANOMALY DETECTION

AI-assisted thermal anomaly annotation for solar PV O&M

Technical scope of an open-source workflow combining DJI radiometric thermal data, YOLOv8-based anomaly recognition, and GIS-ready outputs.

DOCUMENT	DATE	PREPARED BY	STATUS
TP-002	OCT 2026	SPECTRA GROUP S.A.S.	SOURCE REVIEW

Technical summary

The repository implements an end-to-end toolchain for automated solar O&M thermal analysis. It extracts radiometric and temperature information from DJI thermal imagery, prepares datasets for model training, runs YOLOv8-based anomaly classification/inference, overlays predicted bounding boxes on source imagery, and generates geospatial outputs linked to drone GPS metadata.

01 Functional scope

DJI thermal extraction. Uses the DJI Thermal SDK to access radiometric and temperature data from supported DJI Zenmuse/Mavic Enterprise thermal images.

Anomaly recognition. YOLOv8 training and inference targets classes including Multi_Cell, Cell, Module_Offline, String_Offline, Bypass_Diode, and Vegetation.

Dataset preparation. extract_dataset.py and extractor.py organize and preprocess thermal-image sets for model development and execution.

02 Outputs & deployment

Visual annotation. Predicted anomalies are rendered as bounding boxes on the original RGB/thermal imagery.

Geospatial reporting. overlay_shapes.py produces GIS-friendly GeoJSON/shapefile artifacts associated with drone GPS metadata.

Runtime & training. Python 3.11+ and DJI Thermal SDK v1.8+ are prerequisites; the repository supports model training from custom datasets and cross-platform standalone builds.

SOURCE	GitHub repository: isitraghav/ai-assisted-thermal-annotation · Branch: main · License: MIT https://github.com/isitraghav/ai-assisted-thermal-annotation · Accessed: 04 Oct 2026

SOURCE TITLE AI-assisted Thermal Anomaly Annotation