



LUND
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Module 4: Analyzing image content with computer vision

Lesson 4.2: Image classification and object detection

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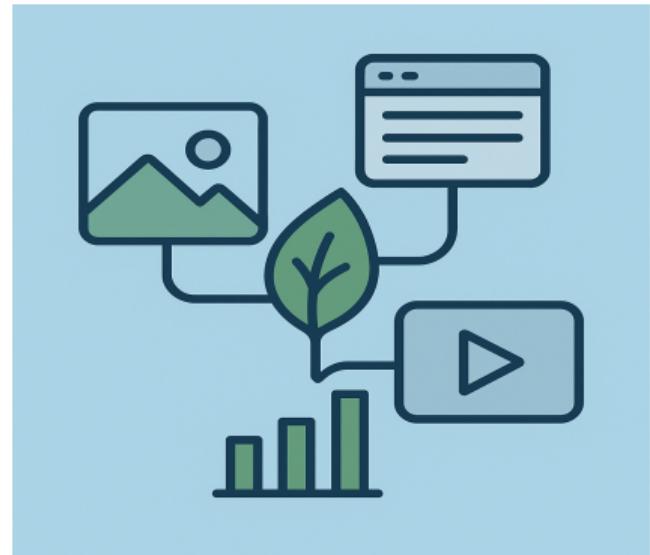
Image classification and object detection

- Pixels lack intrinsic meaning
- CV infers meaning from patterns
- 2D order enables locality
- Classification assigns learned labels
- Detection locates named instances



Applications in sustainability communication

- Sources include PDFs, web
- Quantify greenwashing color cues
- Operationalize qualitative frame types
- Measure actor prominence shifts
- Consent bias fairness concerns



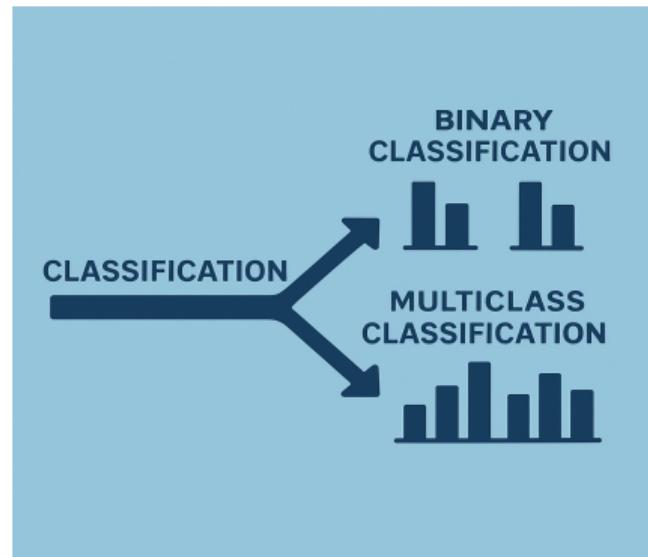
Install computer vision models in Colab

- Colab offers managed GPUs
- Hugging Face supplies pretrained models
- Embeddings enable text-image checks
- Notebooks capture reproducible workflows
- Ephemeral limits favor accessibility



Inferential image analysis, classification

- Classification handles diverse labels
- Parallels supervised text labeling
- Separate natural symbolic cues
- Need balanced curated data
- Labels must reflect content



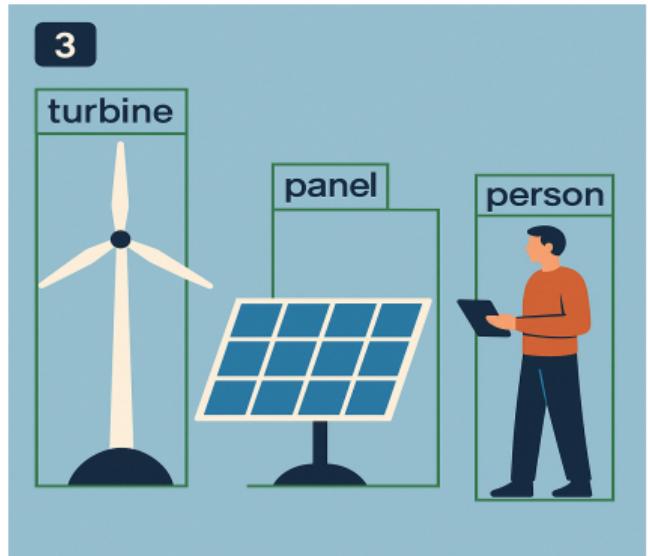
Iterate classification to dataframe

- Pipelines iterate images, frames
- Store results in dataframes
- Tables enable filtering comparisons
- Handle multilabel long-tail classes
- Aggregation should preserve nuance



Inferential image analysis, object detection

- Detection localizes multiple instances
- Counts and sizes signal salience
- Dense occluded scenes challenge recall
- Class imbalance skews detectors
- Supports actor copresence measures



Object localization and confidence scores

- Boxes give rectangular localization
- Tracking captures temporal transitions
- Confidence scores need thresholds
- Report confidence validation checks
- Filter low-confidence detections

