Problem Statement

You are given **one satellite image** of a parking lot.

Your task is to use *only classical image-processing/CV techniques* (no machine learning, no training, no YOLO, no UNet, no deep nets) to:

1. **Detect all painted parking spots**
2. **Segment each parking spot into a polygon or bounding box**
3. **Count:**
    - total number of parking spots
    - which spots are occupied
    - which spots are empty

Constraints

You **may NOT use**:

- pre-trained ML models
- segmentation networks
- YOLO / MaskRCNN / DetectRON
- SAM, CLIP, or foundation models

You **may use**:

- OpenCV
- Numpy
- Shapely (for geometry)
- Scikit-image
- Rasterio if needed
- Simple heuristics