High Road Car Counter: Overview

This presentation explains how to count cars using image processing.

We compare images of the road with and without cars for detection.

Load and Match Images

Load Images

One with cars, another without to capture background.

Resize Image

Ensure both images have the same dimensions for comparison.

Convert Images to Grayscale

Manual Grayscale Formula

Calculate using: Gray = 0.299*R + 0.587*G + 0.114*B.

Highlight luminance accurately for background subtraction.

Purpose

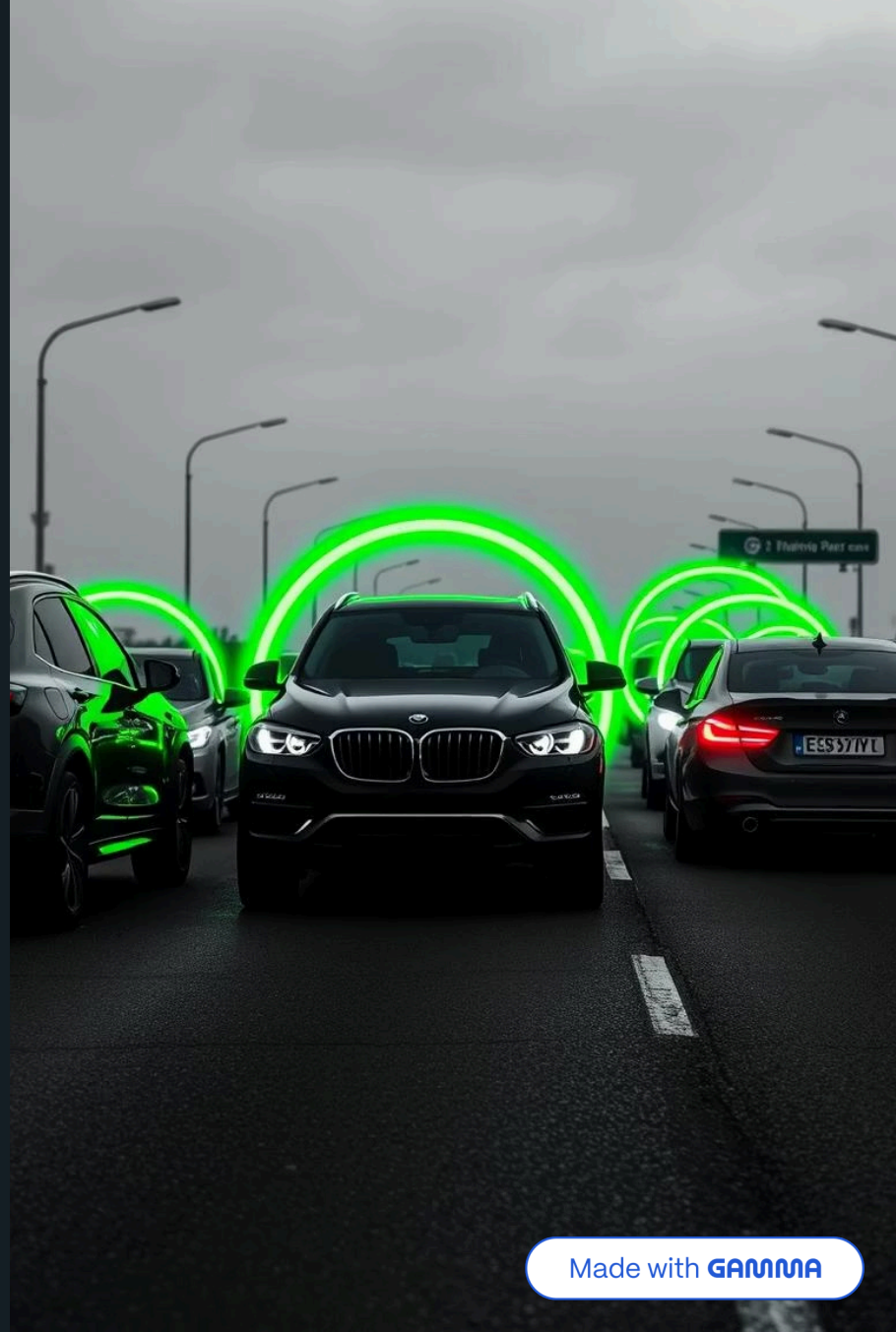
Simplifies image processing by reducing color complexity.

Prepares images for difference computation in next step.

Compute Image Difference

Subtract grayscale empty image from image with cars.

Result highlights areas where cars appear as white regions.



Apply Threshold to Highlight Cars

Thresholding

Pixels with difference > 30 set to white (255).

Result

Clear binary mask emphasizing car locations.

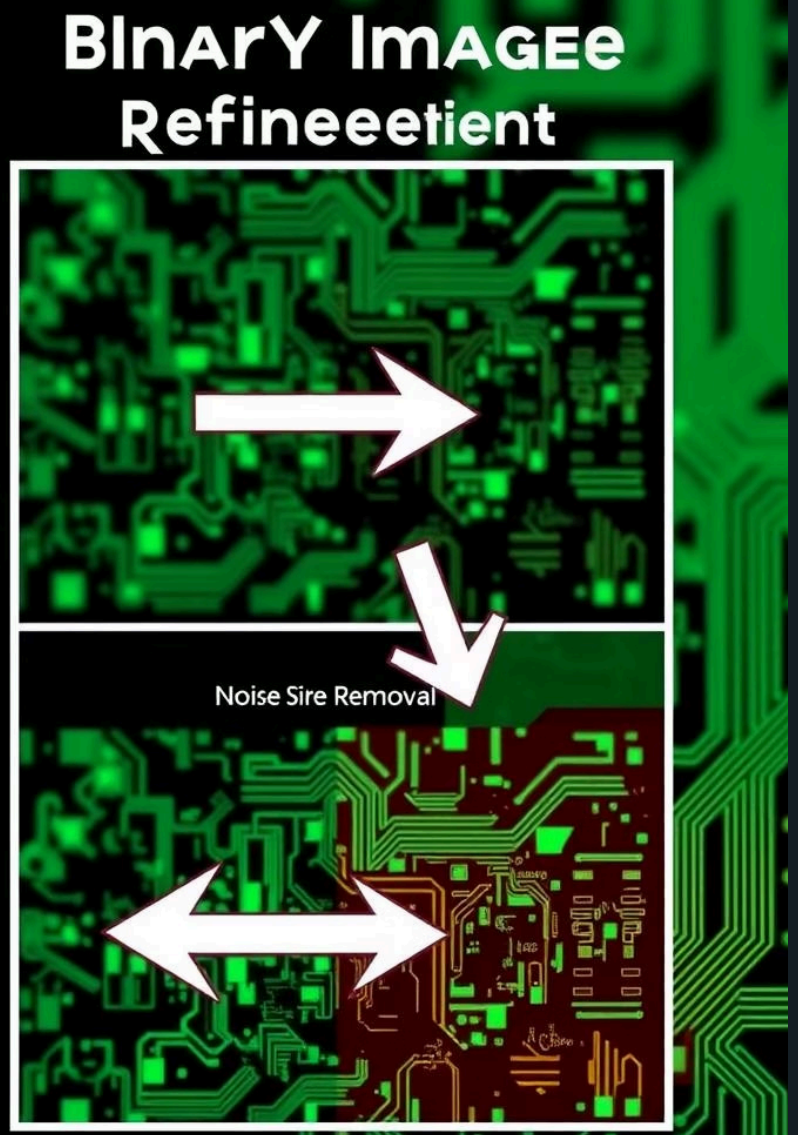
Morphological Operations: Define Dilation & Erosion

Dilation

Expands white regions to fill gaps.

Erosion

Shrinks white regions to remove noise.



Noise Removal Using Morphology

Closing

Dilate then erode to fill holes inside objects.

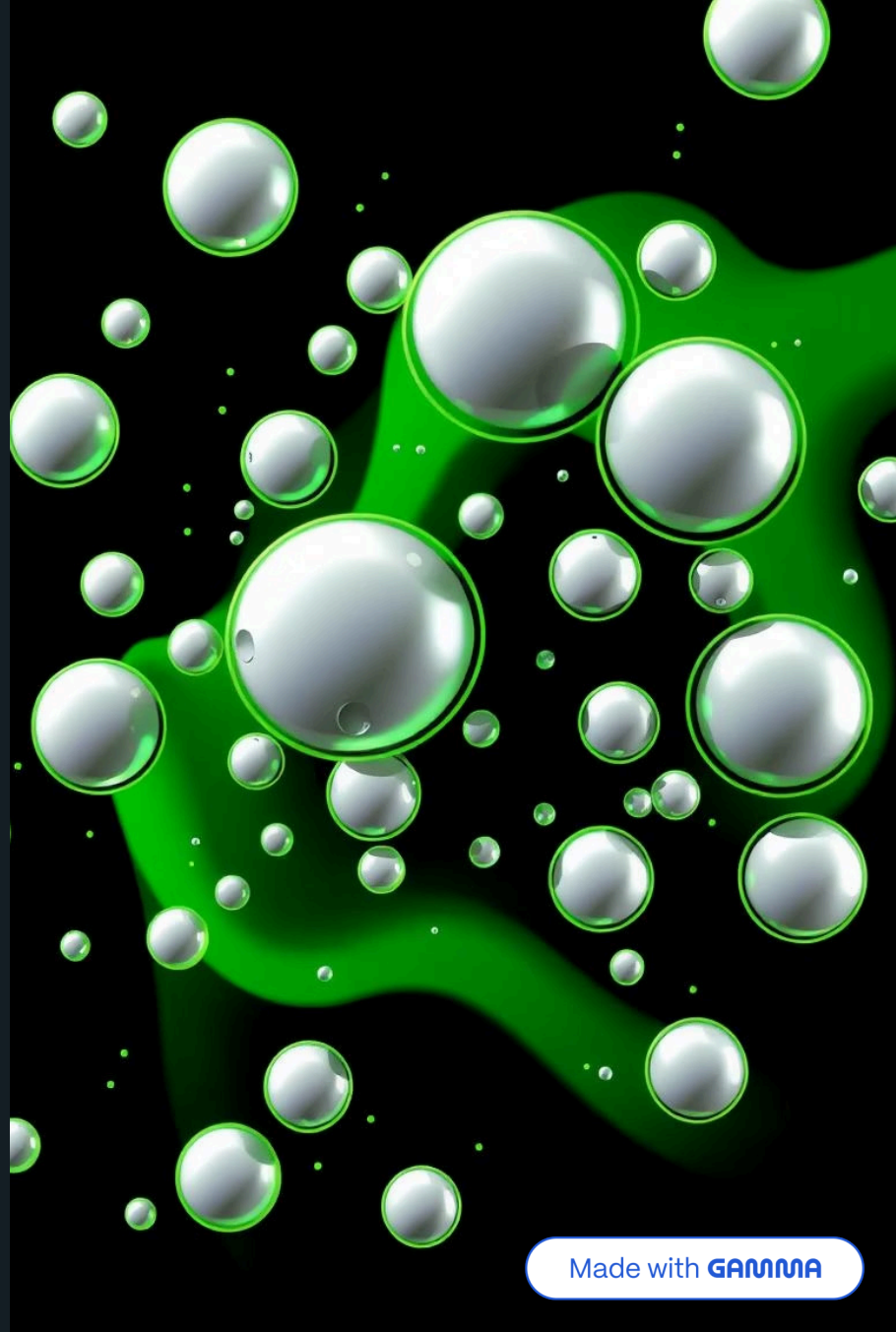
Opening

Erode then dilate to remove small noise spots.

Find Contours of Detected Cars

Use contour detection to outline each object.

Contours define the exact shape of detected cars in the image.



Draw Bounding Boxes on Cars

Contour Filtering

Only contours with area between 100 and 2500 pixels are considered.

Bounding Boxes

Blue rectangles highlight detected cars on the original image.

Display Final Result

The result displays original image with detected cars boxed.

This enables accurate automated vehicle counting on the high road.