

Feature Extraction and Detection Results

Original Image



Hue Channel (HSV)



Morphological Operations



Gabor Filtered



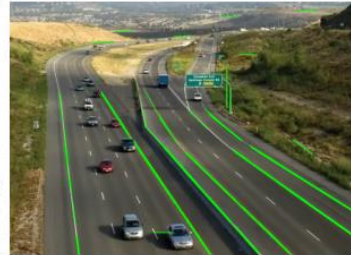
Local Binary Pattern (LBP)



Canny Edges



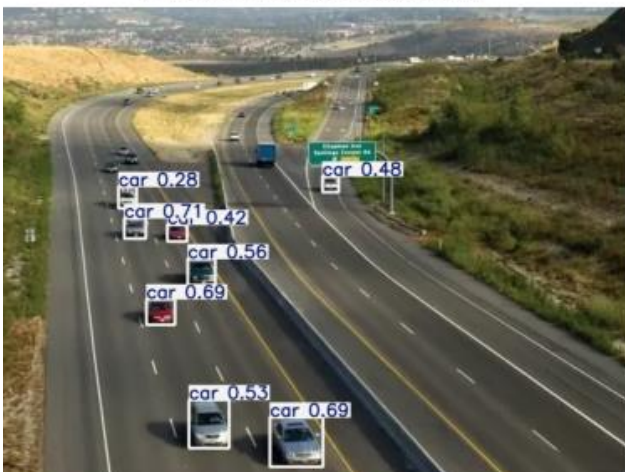
Hough Lines



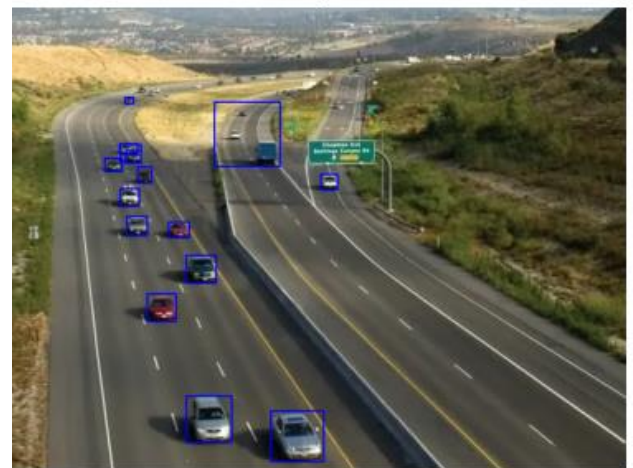
Hough Circles



YOLOv8 Object Detection

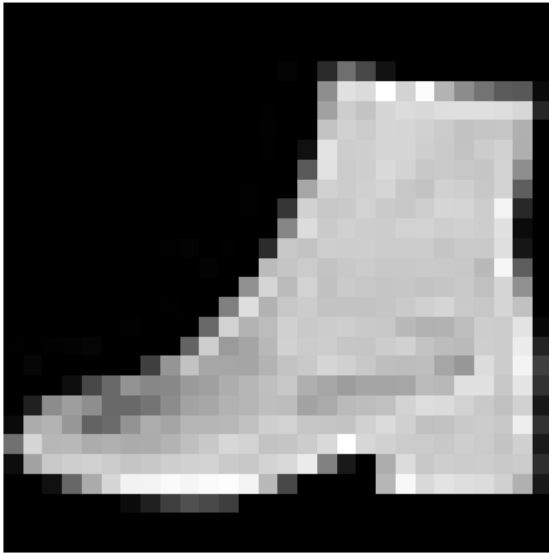


Faster R-CNN Object Detection



0: 480x640 8 cars, 108.7ms
 Speed: 3.8ms preprocess, 108.7ms inference, 1.5ms postprocess per image at shape (1, 3, 480, 640)

Fashion MNIST Sample



YOLO Detection on Fashion MNIST

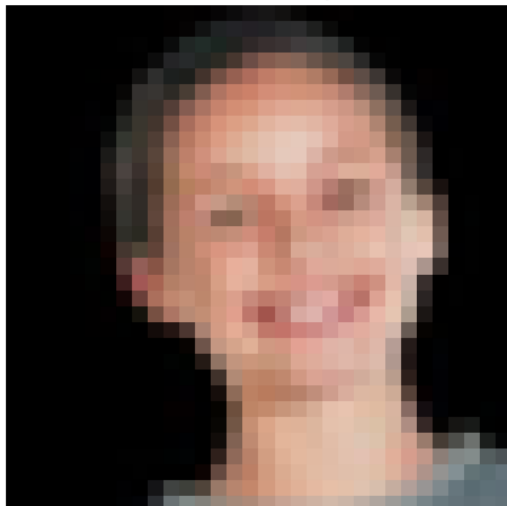


```
2025-04-26 18:33:22.732041: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical
results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable 'TF_ENABLE_ONEDNN_OPTS=0'.
2025-04-26 18:33:23.359581: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical
results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable 'TF_ENABLE_ONEDNN_OPTS=0'.
```

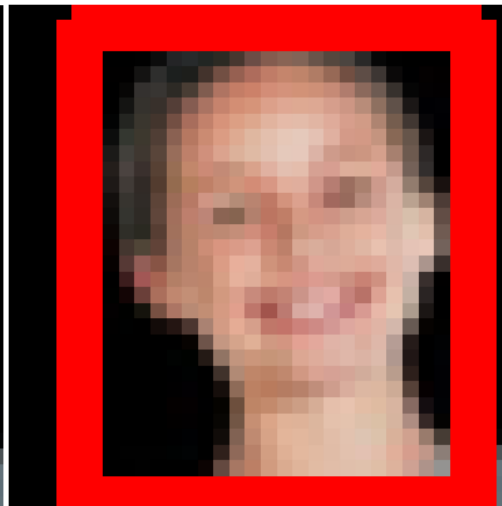
Running YOLO on Fashion MNIST image...

```
image 1/1 C:\Users\cchan\OneDrive\Documents\COLLEGE\SEMESTERS\Semester 6\340 1\lab\fashion_sample.png: 640x640 (no detections), 115.6ms
Speed: 2.8ms preprocess, 115.6ms inference, 1.2ms postprocess per image at shape (1, 3, 640, 640)
```

CIFAR-100 Sample



Faster R-CNN Detection on CIFAR-100



```
2025-04-26 18:35:44.828116: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical
results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable 'TF_ENABLE_ONEDNN_OPTS=0'.
2025-04-26 18:35:45.917612: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical
results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable 'TF_ENABLE_ONEDNN_OPTS=0'.
```

Running Faster R-CNN on CIFAR-100...

```
C:\Users\cchan\AppData\Roaming\Python\Python312\site-packages\torchvision\models\_utils.py:208: UserWarning: The parameter 'pretrained' is
deprecated since 0.13 and may be removed in the future, please use 'weights' instead.
```

```
warnings.warn(
C:\Users\cchan\AppData\Roaming\Python\Python312\site-packages\torchvision\models\_utils.py:223: UserWarning: Arguments other than a weight
enum or 'None' for 'weights' are deprecated since 0.13 and may be removed in the future. The current behavior is equivalent to passing
'weights=FasterRCNN_ResNet50_FPN_Weights.COCO_V1'. You can also use 'weights=FasterRCNN_ResNet50_FPN_Weights.DEFAULT' to get the most up-
to-date weights.
```

```
warnings.warn(msg)
```