AI Model Evaluation Report

Insulator Defect Detection System (CLID)

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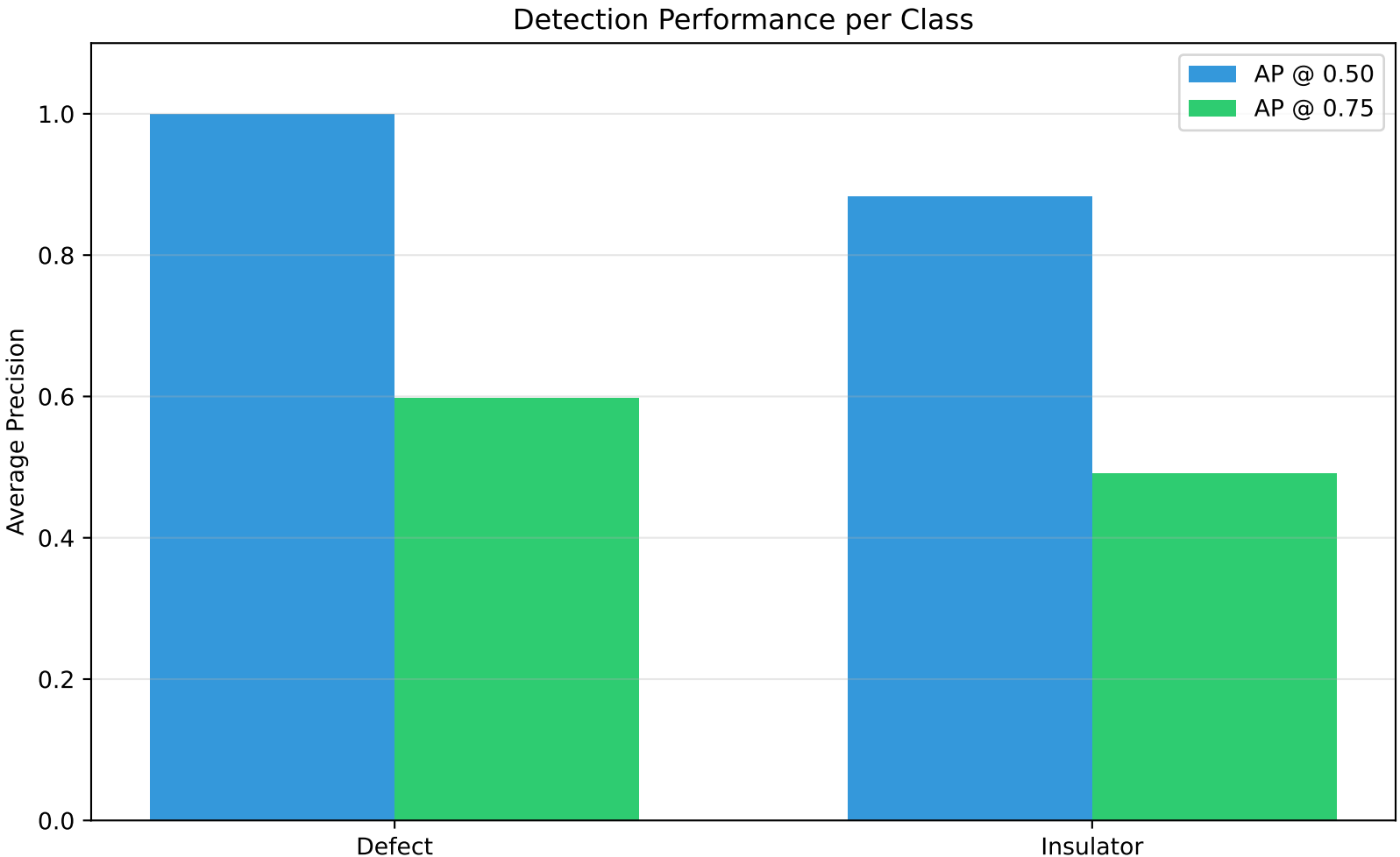
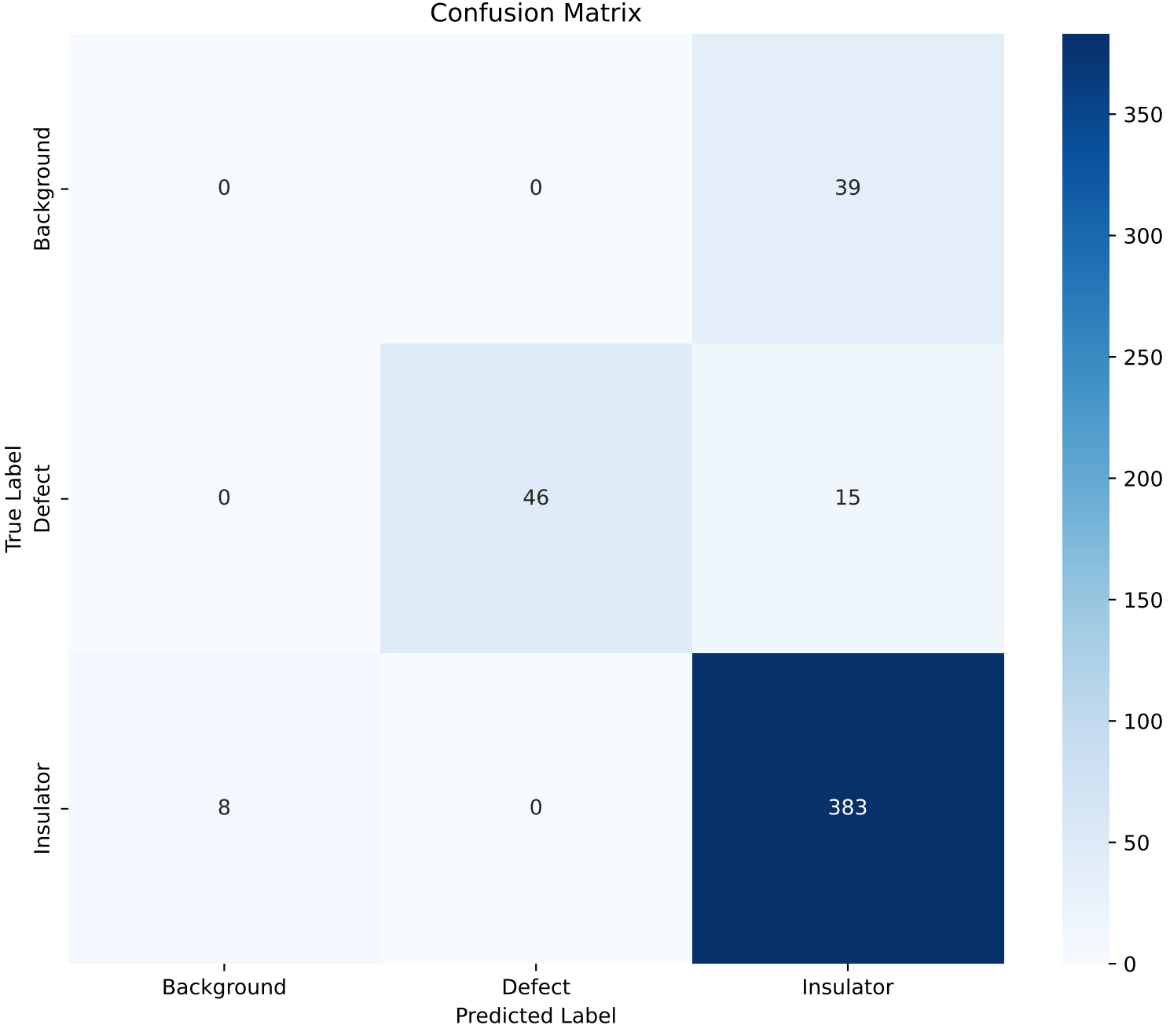
Date:                2025-12-22 15:19
Model Architecture: RetinaNet (ResNet50-FPN-V2)
Training Dataset:   IDD-CPLID (Aerial)
Total Parameters:   36,373,375

Real-World Performance Metrics
------------------------------------------------------
Inference Latency:          40.56 ms per image
Throughput (FPS):           24.65 frames/sec
Computational Cost:         128.57 GFLOPs (approx)

Overall Accuracy Metrics (Validation Set)
------------------------------------------------------
Mean Average Precision (mAP@50):            0.9415
Mean Average Precision (mAP@75):            0.5448

Class-wise Breakdown (AP@50)
------------------------------------------------------
Defect          : 0.9995
Insulator       : 0.8836
```

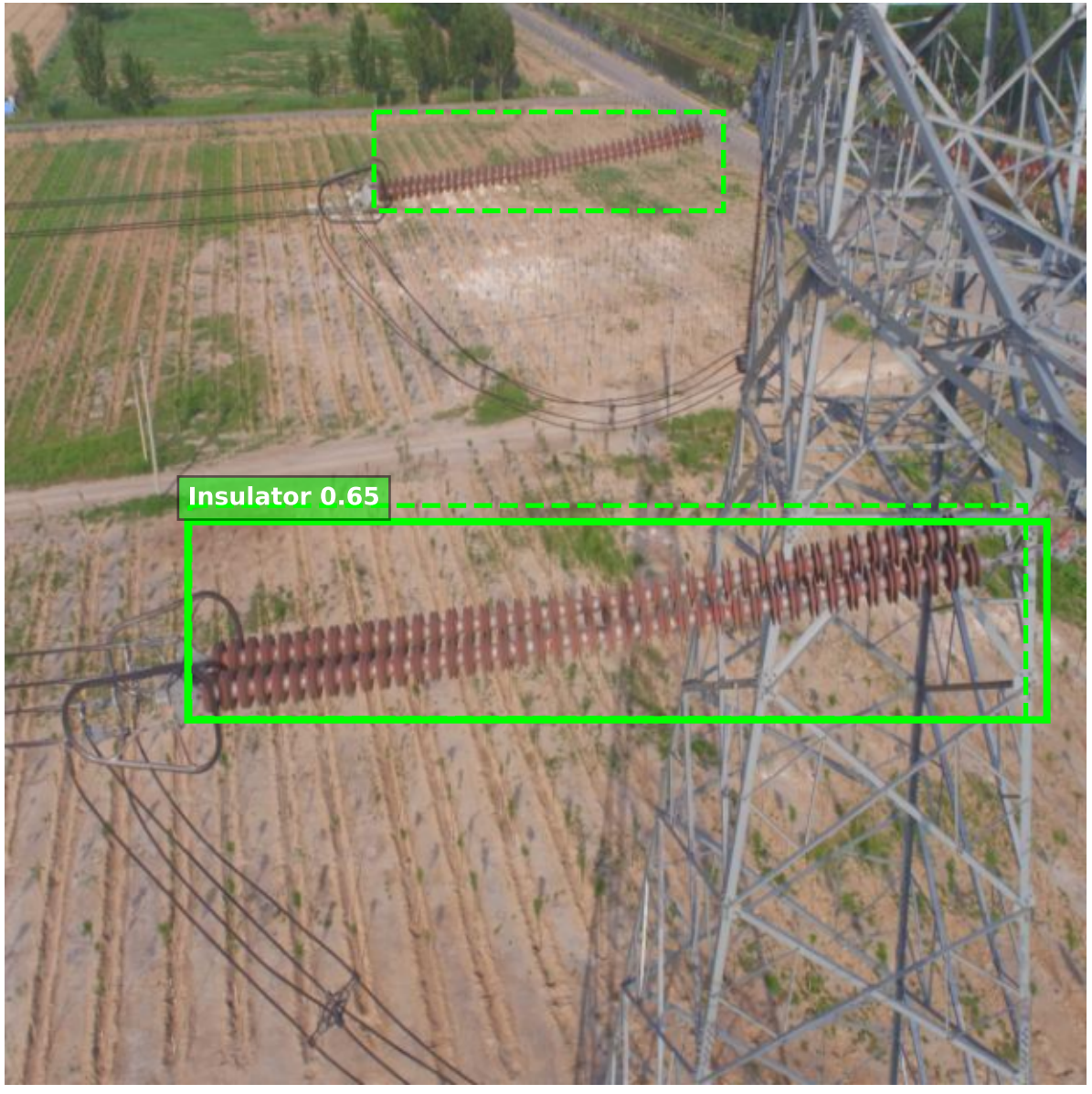

Detection Performance per Class
AP @ 0.50
AP @ 0.75
Average Precision
1.0
0.8
0.6
0.4
0.2
0.0
Defect
Insulator


Confusion Matrix
Background
Defect
Insulator
True Label
0
0
39
0
46
15
8
0
383
Background
Defect
Insulator
Predicted Label
350
300
250
200
150
100
50
0

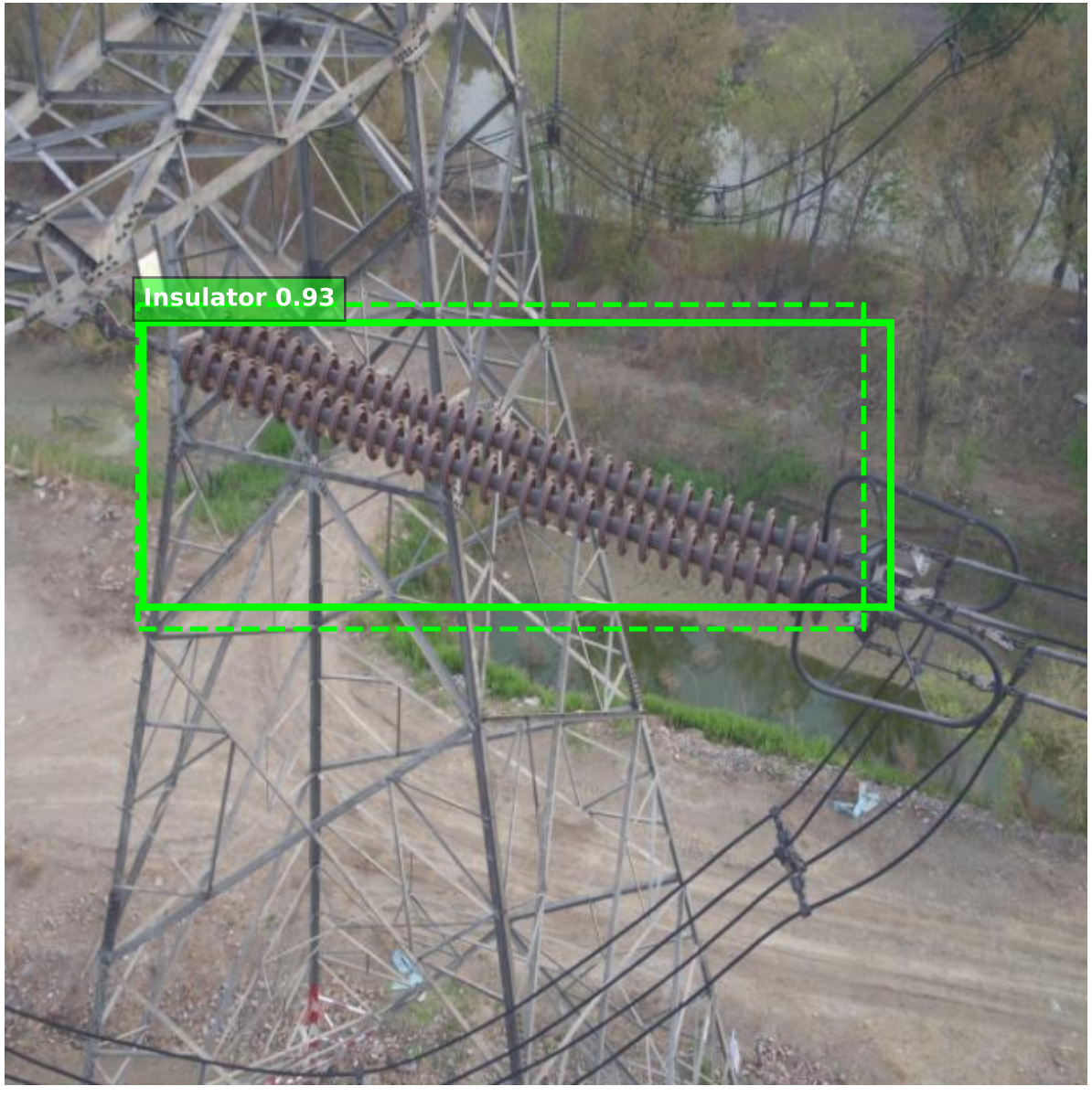
Validation Sample 179 (Dashed=GT, Solid=Pred)

Validation Sample 145 (Dashed=GT, Solid=Pred)

Validation Sample 107 (Dashed=GT, Solid=Pred)



Validation Sample 93 (Dashed=GT, Solid=Pred)



Validation Sample 33 (Dashed=GT, Solid=Pred)