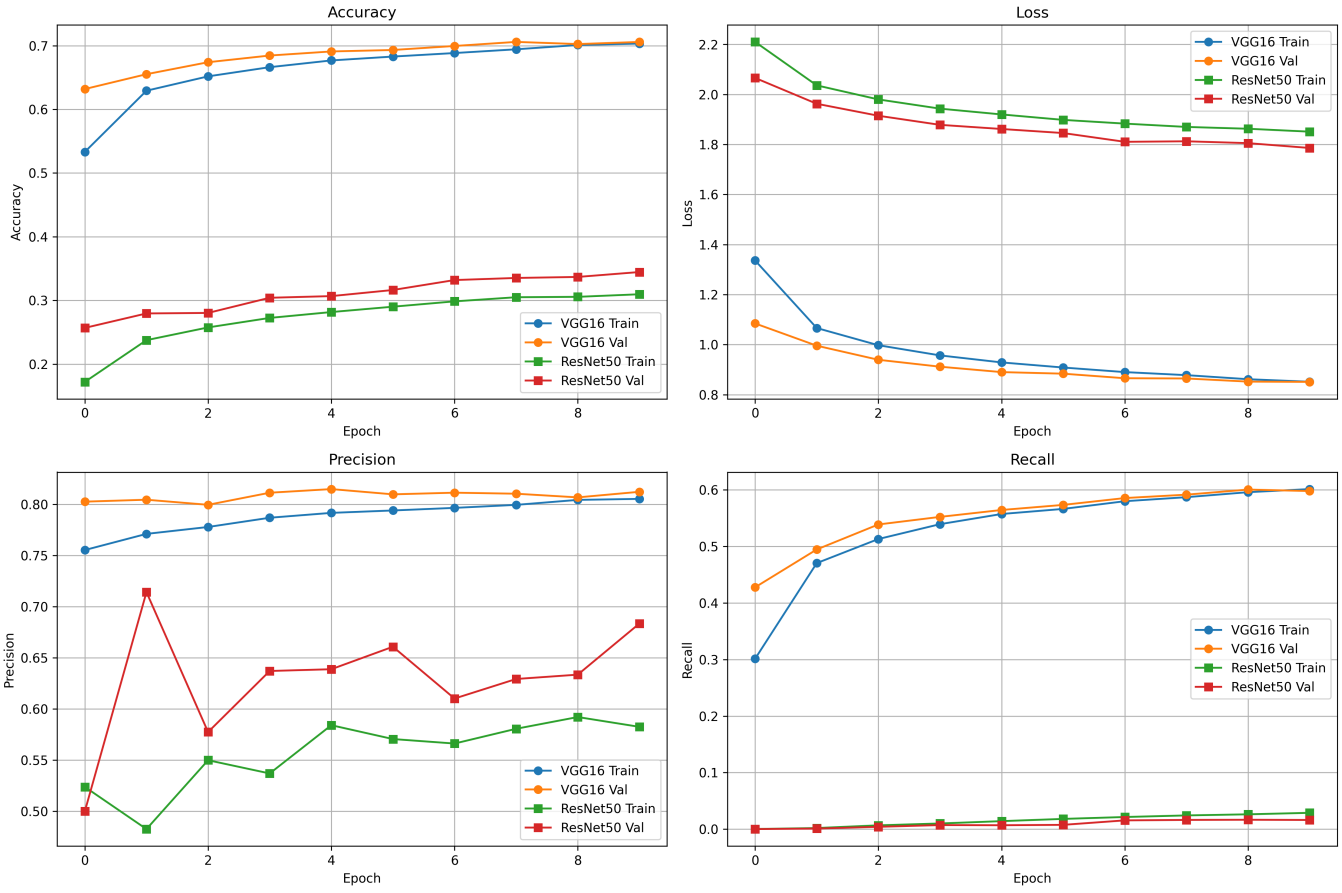
VGG16 vs ResNet50 Comparison on CIFAR-10

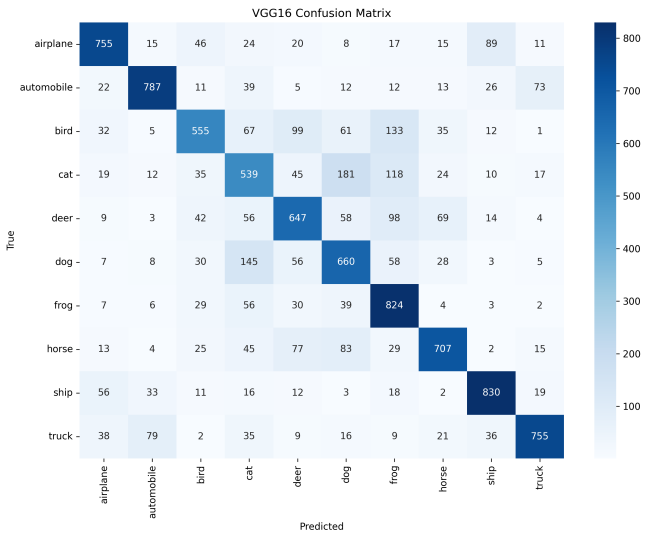
Performance Summary

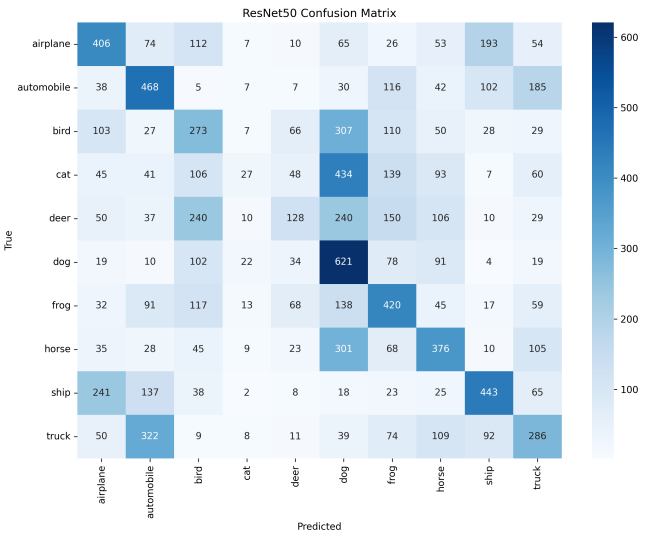
Metric	VGG16	ResNet50
Accuracy	0.7059	0.3446
Precision	0.0000	0.0000
Recall	0.0000	0.0000
Training Time	372.16 sec	297.74 sec
Inference Time	155.99 ms	102.08 ms
Total Parameters	14.98M	24.64M
Trainable Parameters	0.27M	1.05M

Training History

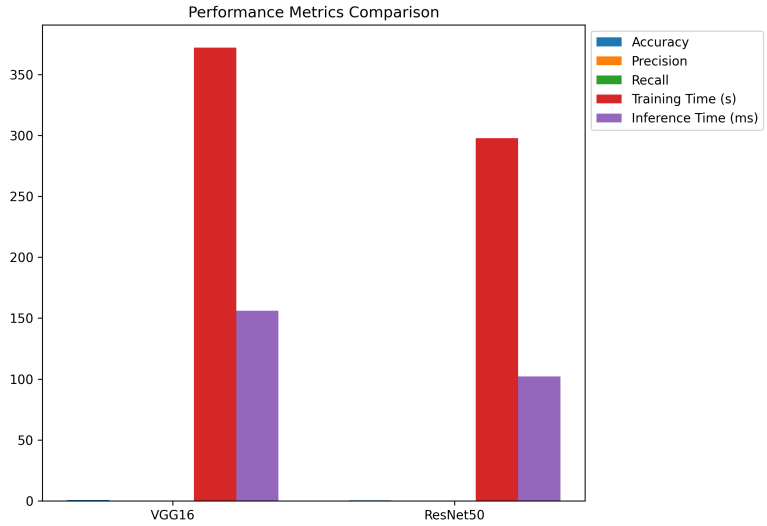


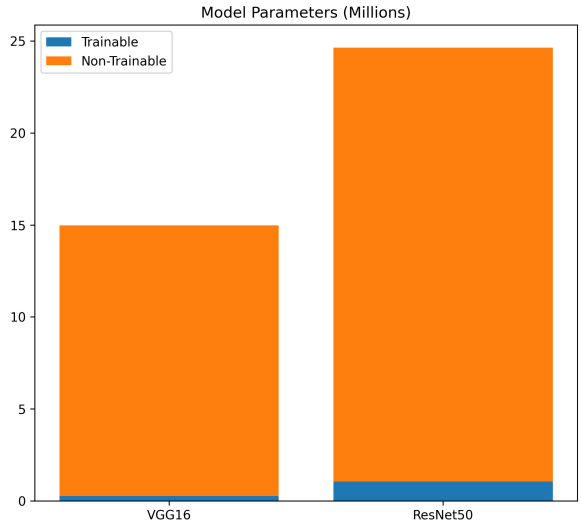
Confusion Matrices



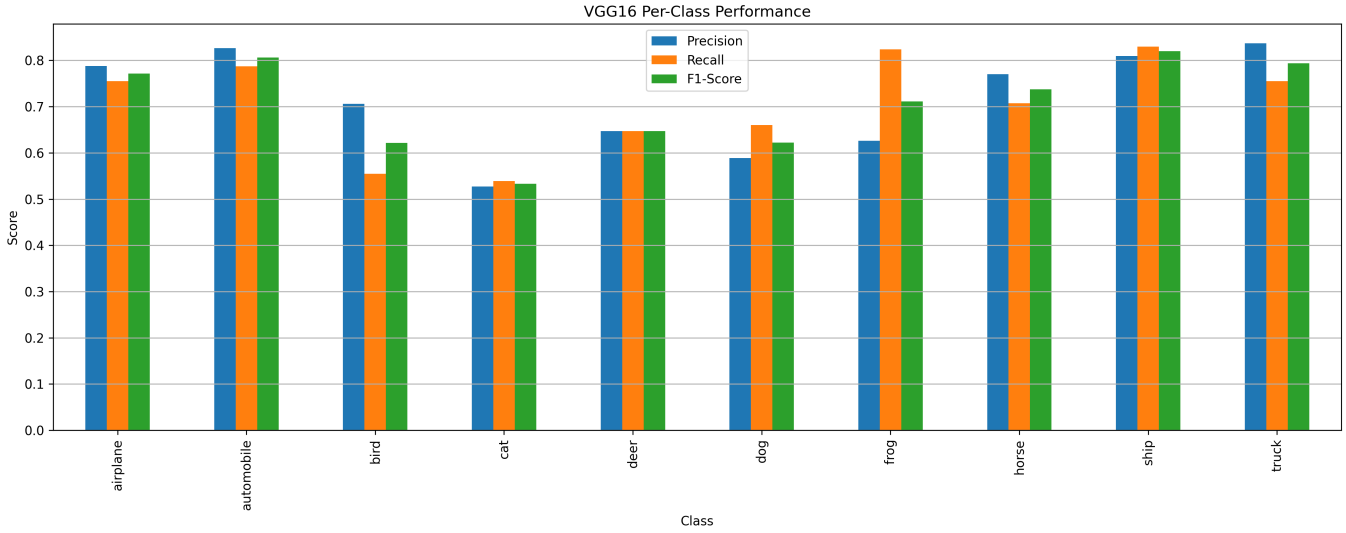


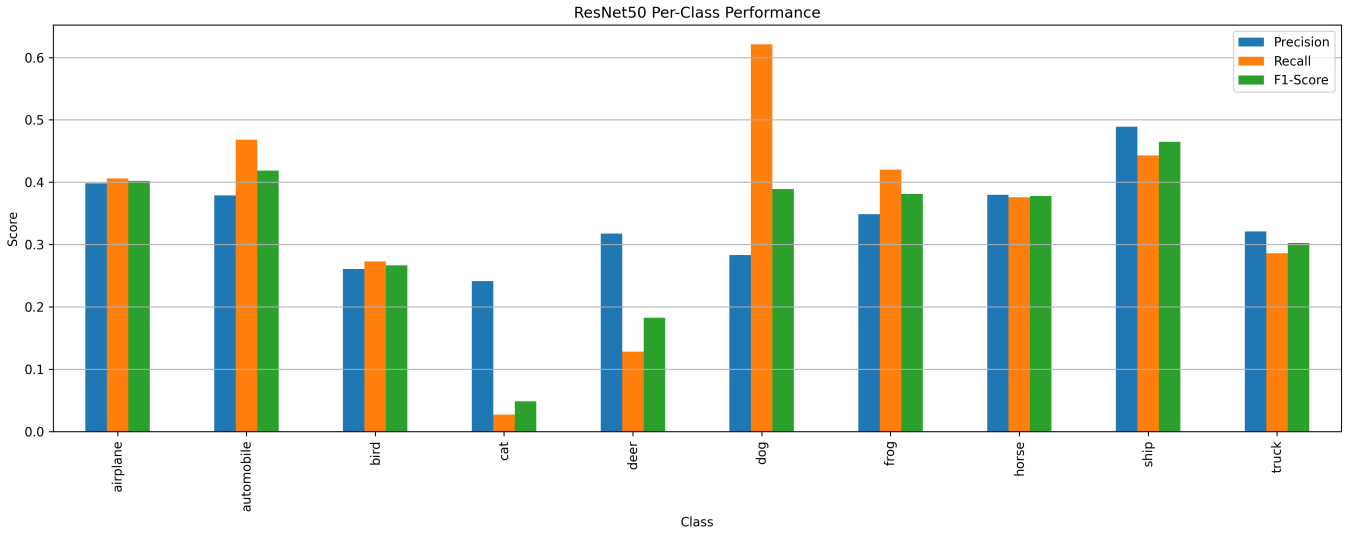
Performance Comparison





Per-Class Performance





Conclusion

Based on the experiments conducted, VGG16 achieved better accuracy with a difference of 0.3613.

VGG16 Summary:
- Accuracy: 0.7059
- Training Time: 372.16 seconds
- Inference Time: 155.99 ms
- Total Parameters: 14.98 million

ResNet50 Summary:
- Accuracy: 0.3446
- Training Time: 297.74 seconds
- Inference Time: 102.08 ms
- Total Parameters: 24.64 million

Key Observations:
1. VGG16 showed better overall performance on the CIFAR-10 dataset.
2. ResNet50 has more parameters but may converge faster due to its skip connections.
3. VGG16 has a simpler architecture but may require more training time to achieve comparable results.

The models were trained for 10 epochs with a batch size of 64 on images resized to (128, 128).