Assignment # 3

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Overall you have to report 5 models with different layers, hypertune the parameters. Also explain what you observed with these models while training.

CNN Model :

lr = 0.01

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Test Accuracy: 0.9498
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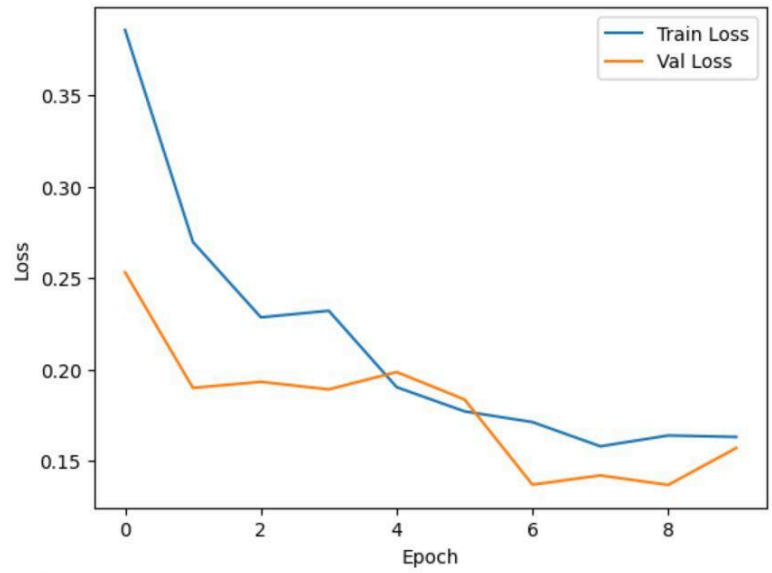
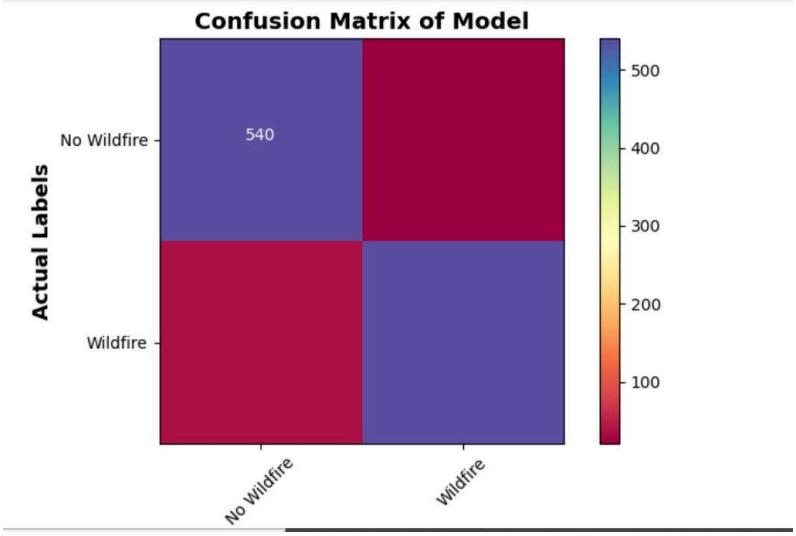
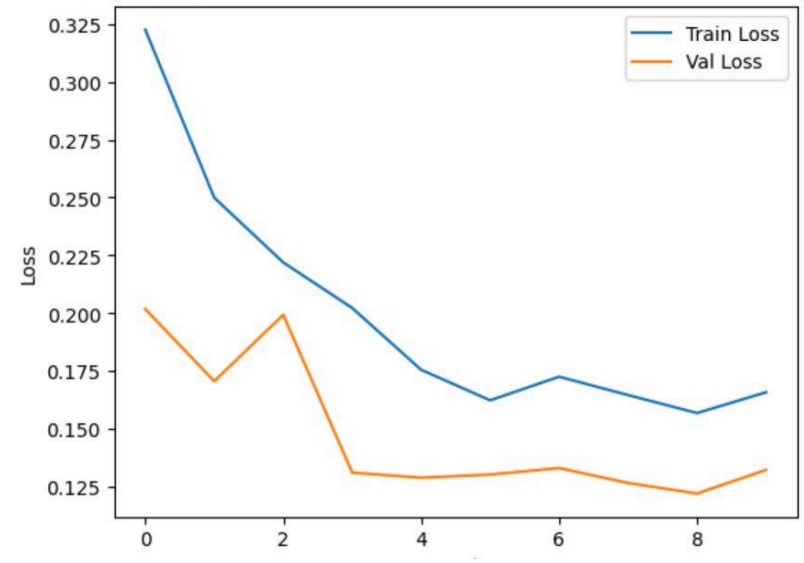
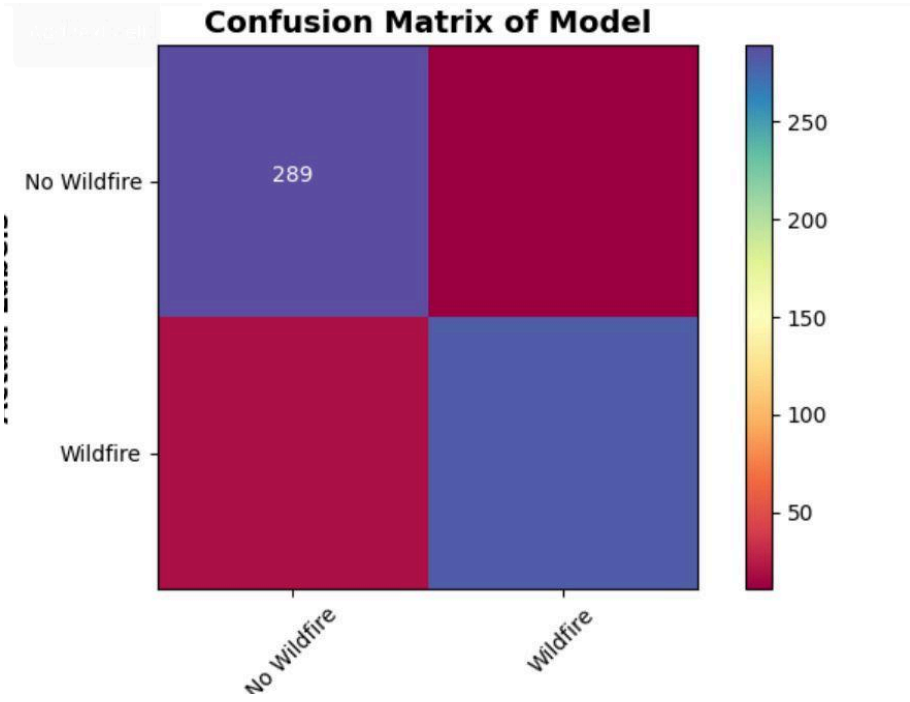



Confusion Matrix of Model
Actual Labels
No Wildfire
Wildfire
540
No Wildfire
Wildfire
500
400
300
200
100

lr = 0.001

Test Accuracy: 0.9500



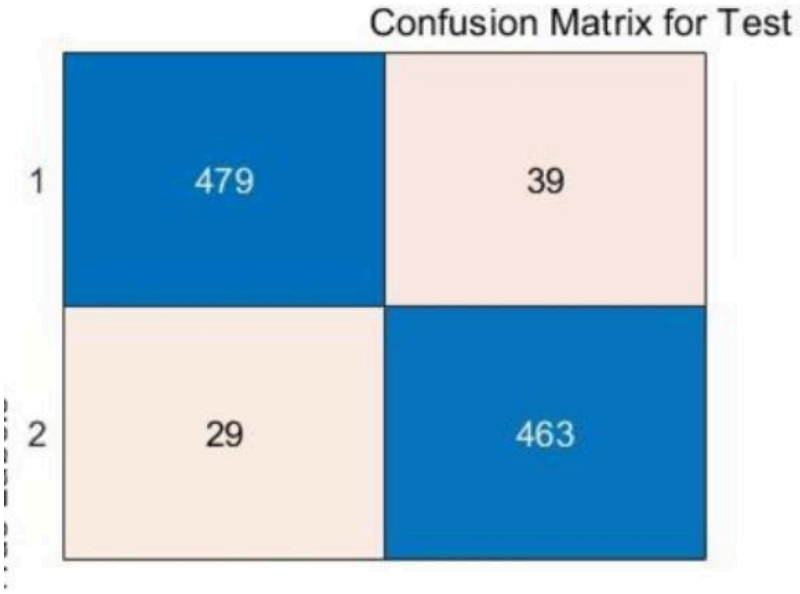


Results :

Lr = 0.01 is typically considered high and can lead to faster convergence but may risk overshooting. Suitable for larger datasets while lr = 0.001 is typically considered low and can give more precise results.

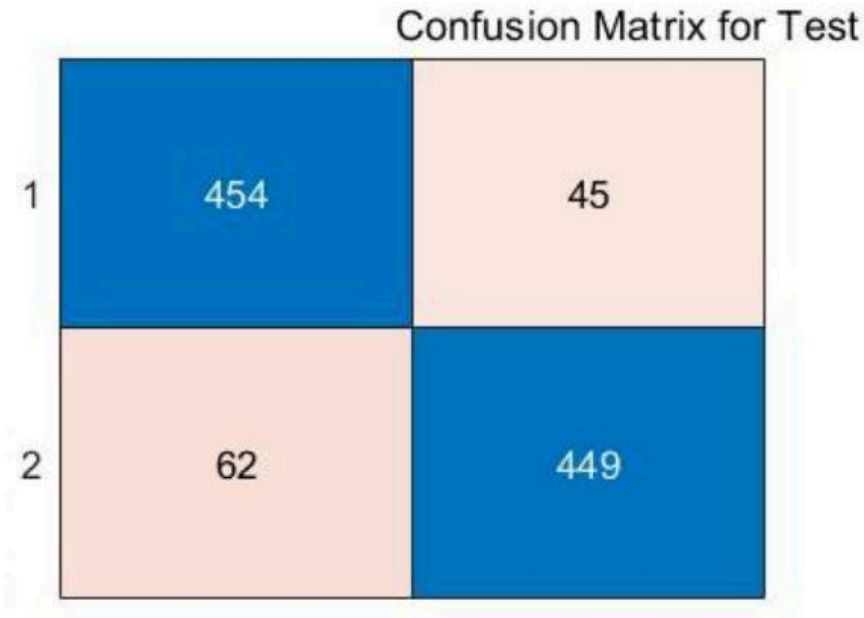
As, we can see that lr = 0.01 gives test accuracy of 0.9498 and lr = 0.001 can give test accuracy of 0.95.

ResNet Model :



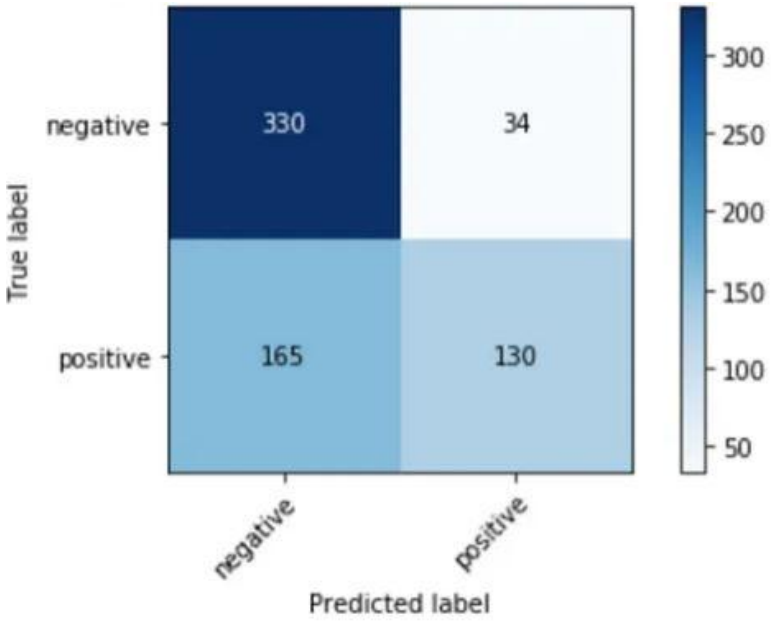
- It addresses the gradient problem, enabling training of networks very deeply.
- It is suitable for tasks requiring deep feature extraction.
- It has a high computational cost compared to shallower networks.

Customized VGG :



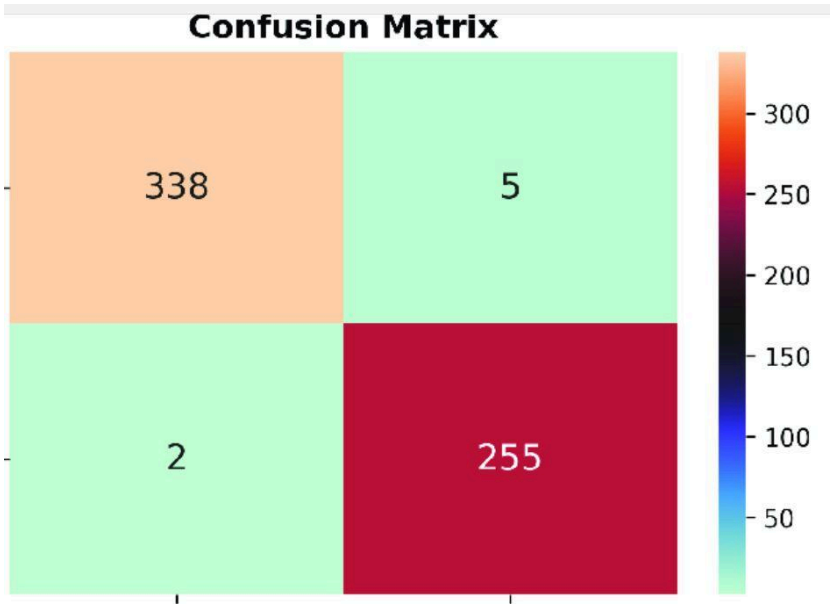
- It employs a deeper network with smaller filter sizes.
- It is suitable for tasks requiring hierarchical feature extraction.
- It requires more data and computational resources compared to shallower networks.

DenseNet Model :



- It encourages feature reuse and reduces parameters through dense connections.
- It is efficient use of parameters, leading to better parameter utilization.
- It may require more memory due to dense connections but can lead to better performance.

EfficientNet Model :



- It achieves state-of-the-art performance with fewer parameters compared to traditional models.
- It is efficient use of computational resources, suitable for resource-constrained environments.