

Appendix A: MACHINE LEARNING ADDITIONAL METRICS

Table 1: Complete Additional ML Metrics Using 8 Training Images

8 Images					
Accuracy Table		Datasets			AVERAGES
ML Algorithm		WD	RBAL	BD	
SVC	Precision	83%	83%	83%	83%
	Recall	100%	100%	100%	100%
	F1	91%	91%	91%	91%
LDA	Precision	67%	58%	63%	63%
	Recall	100%	100%	100%	100%
	F1	80%	74%	77%	77%
KNN	Precision	71%	54%	54%	60%
	Recall	100%	100%	100%	100%
	F1	83%	70%	70%	74%
DT	Precision	63%	71%	63%	66%
	Recall	100%	100%	100%	100%
	F1	77%	83%	77%	79%
LR	Precision	63%	63%	63%	63%
	Recall	100%	100%	100%	100%
	F1	77%	77%	77%	77%
AVERAGES	Precision	69%	66%	65%	67%
	Recall	100%	100%	100%	100%
	F1	82%	79%	78%	80%

Table 2: Complete Additional ML Metrics Using 11 Training Images

11 Images					
Accuracy Table		Datasets			AVERAGES
ML Algorithm		WD	RBAL	BD	
SVC	Precision	96%	92%	88%	92%
	Recall	100%	100%	100%	100%
	F1	97%	96%	93%	95%
LDA	Precision	71%	71%	63%	68%
	Recall	100%	100%	100%	100%
	F1	83%	83%	77%	81%
KNN	Precision	83%	67%	67%	72%
	Recall	100%	100%	100%	100%
	F1	91%	80%	80%	84%
DT	Precision	71%	79%	54%	68%
	Recall	100%	100%	100%	100%
	F1	83%	88%	70%	80%
LR	Precision	71%	71%	63%	68%
	Recall	100%	100%	100%	100%
	F1	83%	83%	77%	81%
AVERAGES	Precision	78%	76%	67%	74%
	Recall	100%	100%	100%	100%
	F1	87%	86%	79%	84%

Table 3: Complete Additional ML Metrics Using 22 Training Images

22 Images					
Accuracy Table		Datasets			AVERAGES
ML Algorithm		WD	RBAL	BD	
SVC	Precision	96%	96%	92%	95%
	Recall	100%	100%	100%	100%
	F1	98%	98%	96%	97%
LDA	Precision	71%	71%	63%	68%
	Recall	100%	100%	100%	100%
	F1	83%	83%	77%	81%
KNN	Precision	83%	71%	63%	72%
	Recall	100%	100%	100%	100%
	F1	91%	83%	77%	84%
DT	Precision	75%	79%	67%	74%
	Recall	100%	100%	100%	100%
	F1	86%	88%	80%	85%
LR	Precision	71%	79%	58%	69%
	Recall	100%	100%	100%	100%
	F1	83%	88%	74%	82%
AVERAGES	Precision	79%	79%	69%	76%
	Recall	100%	100%	100%	100%
	F1	88%	88%	81%	86%

Appendix B: DEEP LEARNING ACCURACY AND LOSS

Table 4: Complete AlexNet Accuracy and Loss Using 8 Training Images

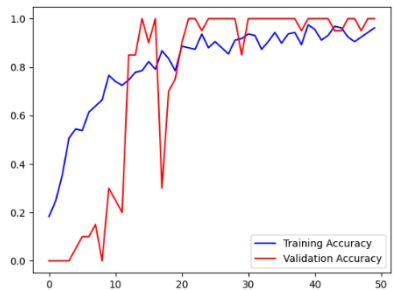
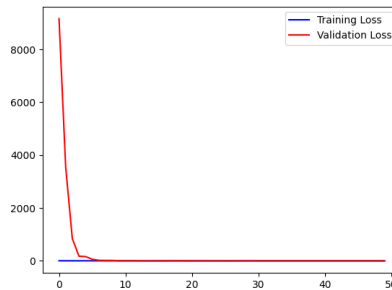
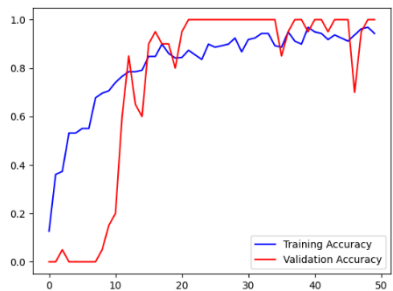
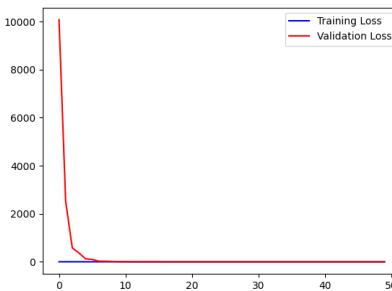
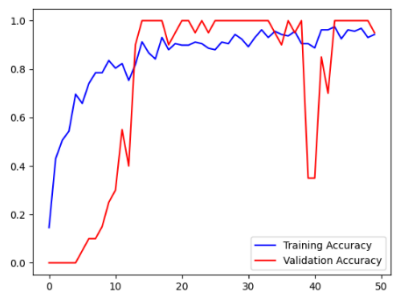
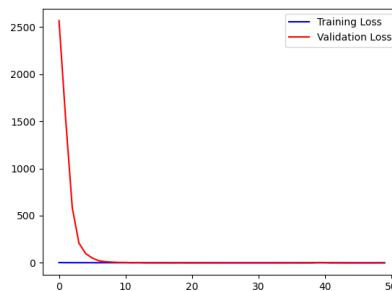
AlexNet 8 Image Training	
Accuracy	Loss
WD	
	
RBAL	
	
BD	
	

Table 5: Complete VGG16 Accuracy and Loss 8 Image


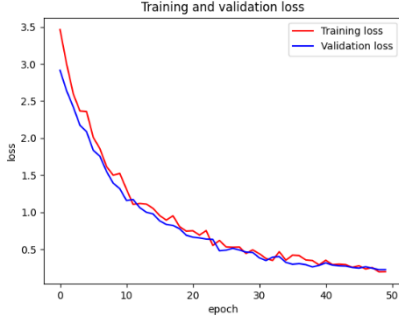
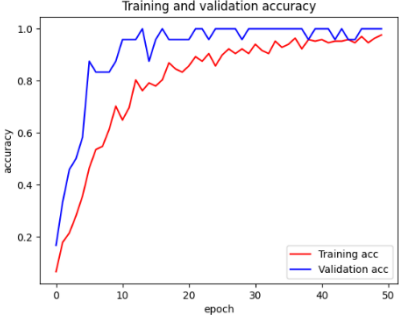
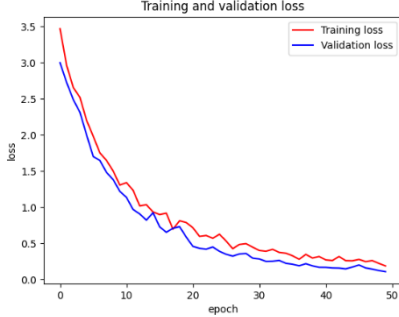

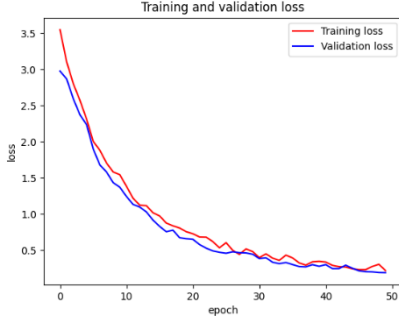
VGG16 8 Image Training	
Accuracy	Loss
WD	
	
RBAL	
	
BD	
	

Table 6: Complete ResNet50 Accuracy and Loss Using 8 Training Images

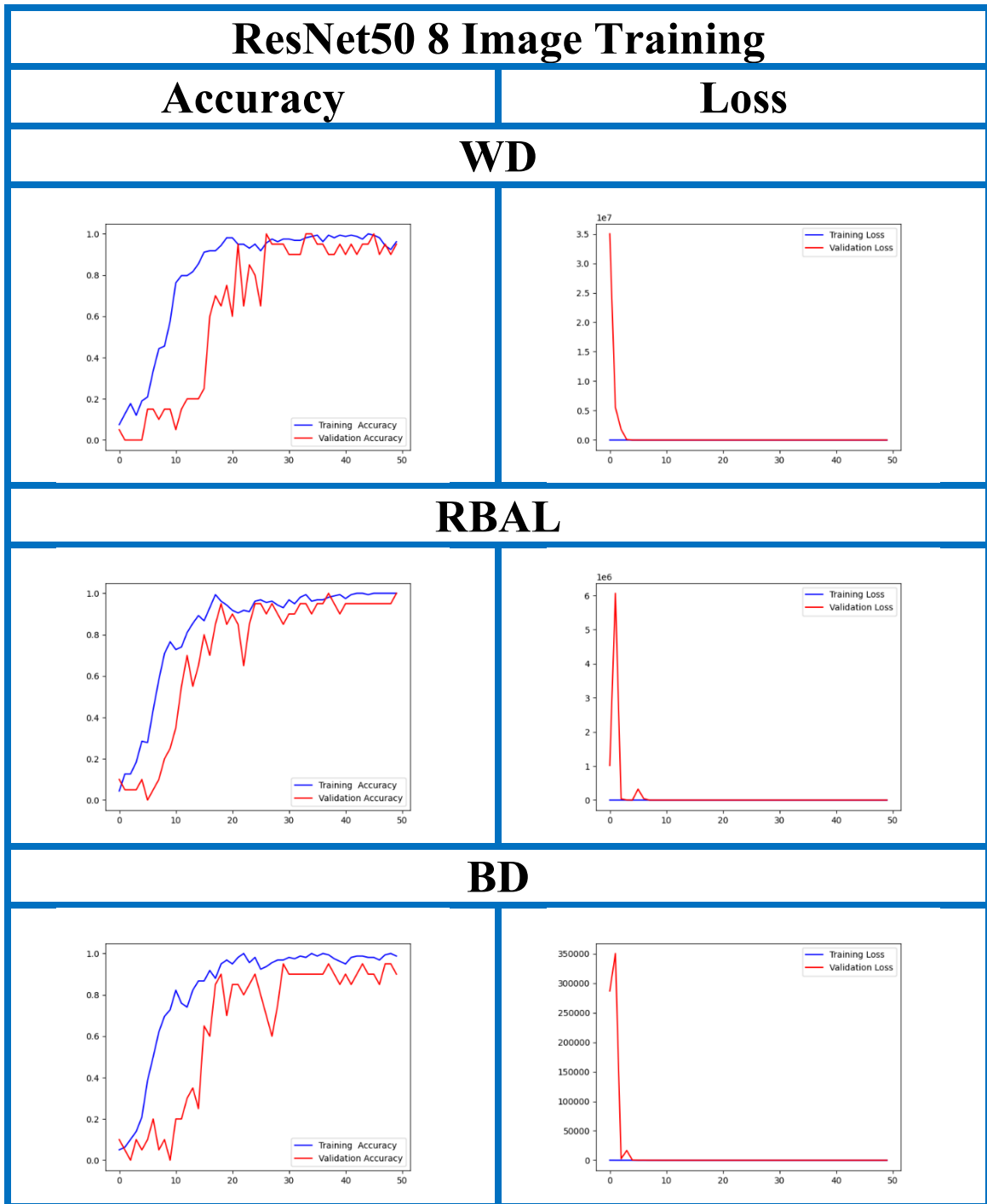


Table 7: Complete AlexNet Accuracy and Loss Using 11 Training Images

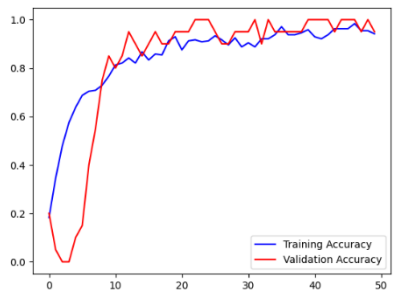
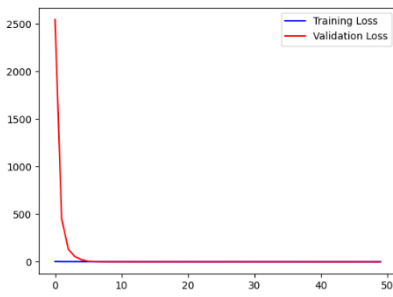

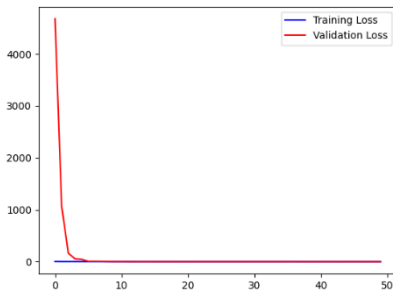
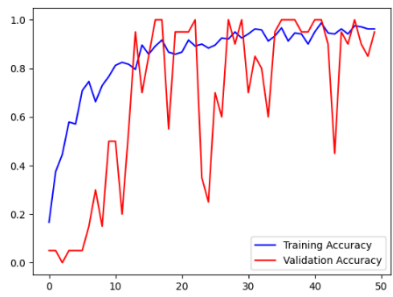
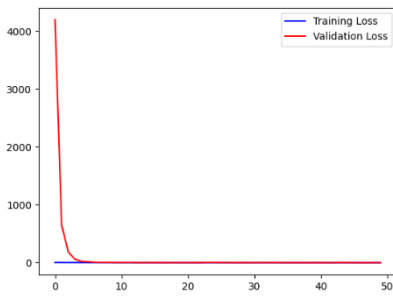
AlexNet 11 Image Training	
Accuracy	Loss
WD	
	
RBAL	
	
BD	
	

Table 8: Complete VGG16 Accuracy and Loss Using 11 Training Images

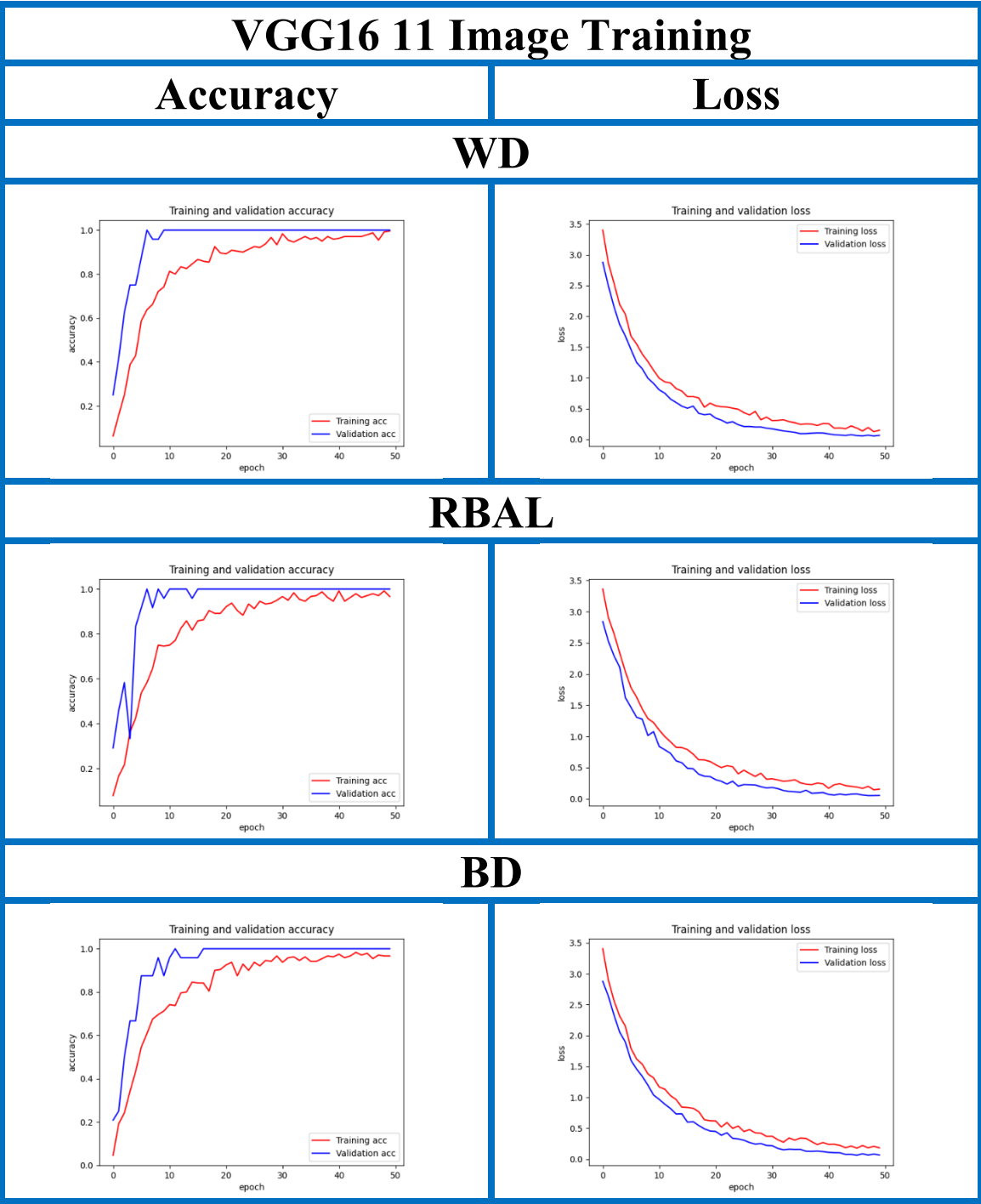


Table 9: Complete ResNet50 Accuracy and Loss Using 11 Training Images

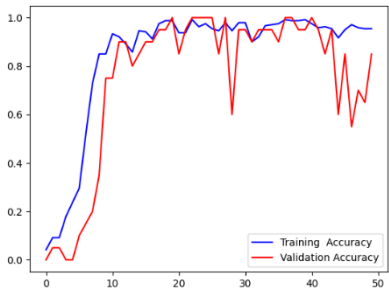
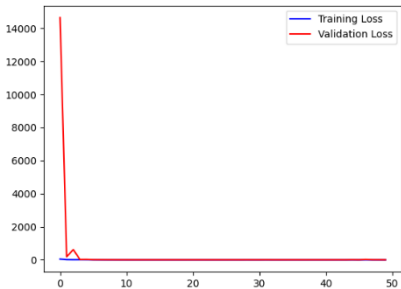
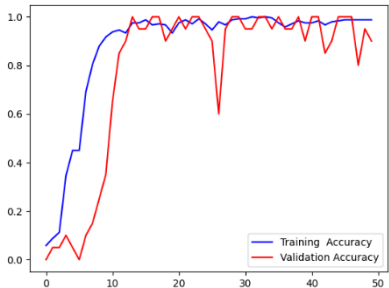
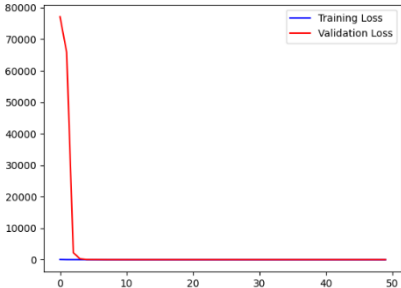
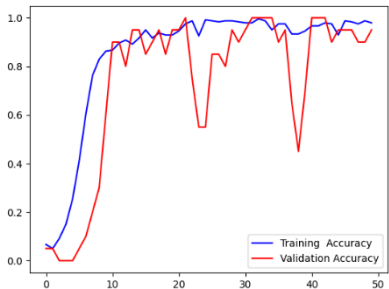
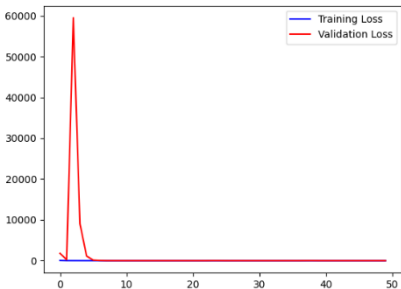
ResNet50 11 Image Training	
Accuracy	Loss
WD	
	
RBAL	
	
BD	
	

Table 10: Complete AlexNet Accuracy and Loss Using 22 Training Images

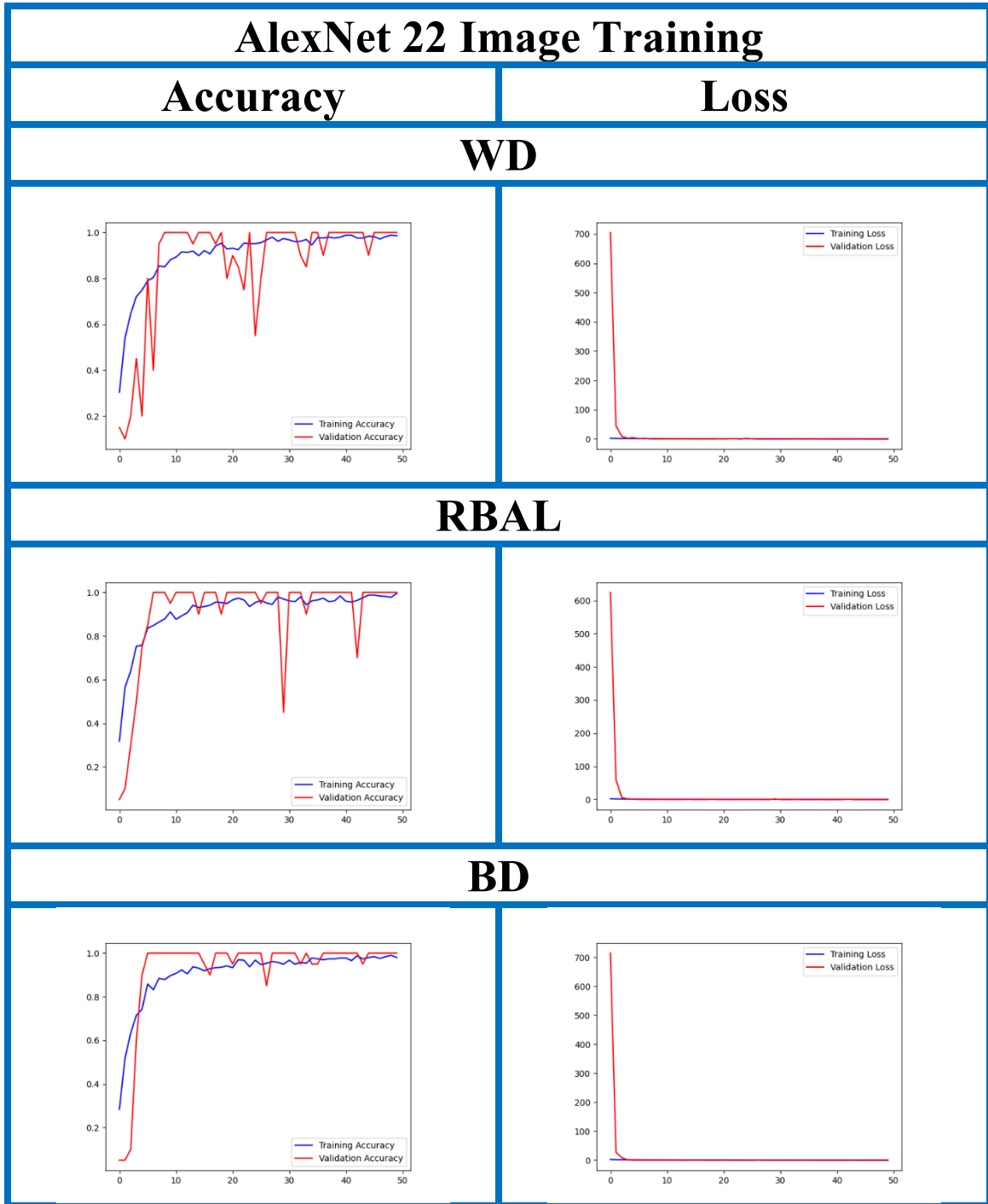


Table 11: Complete VGG16 Accuracy and Loss Using 22 Training Images


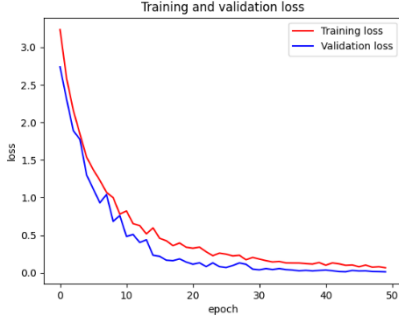
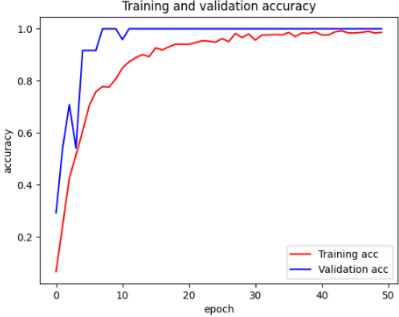
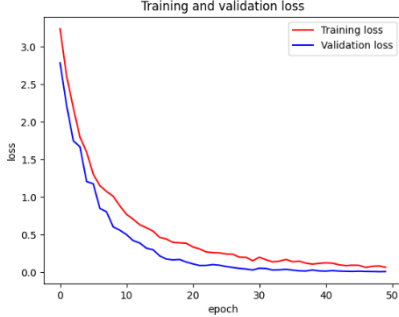

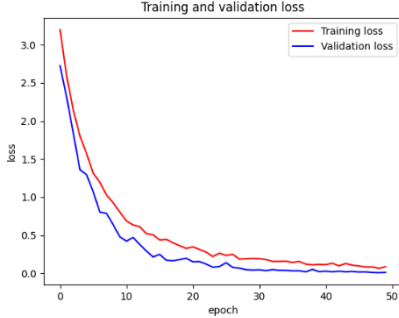
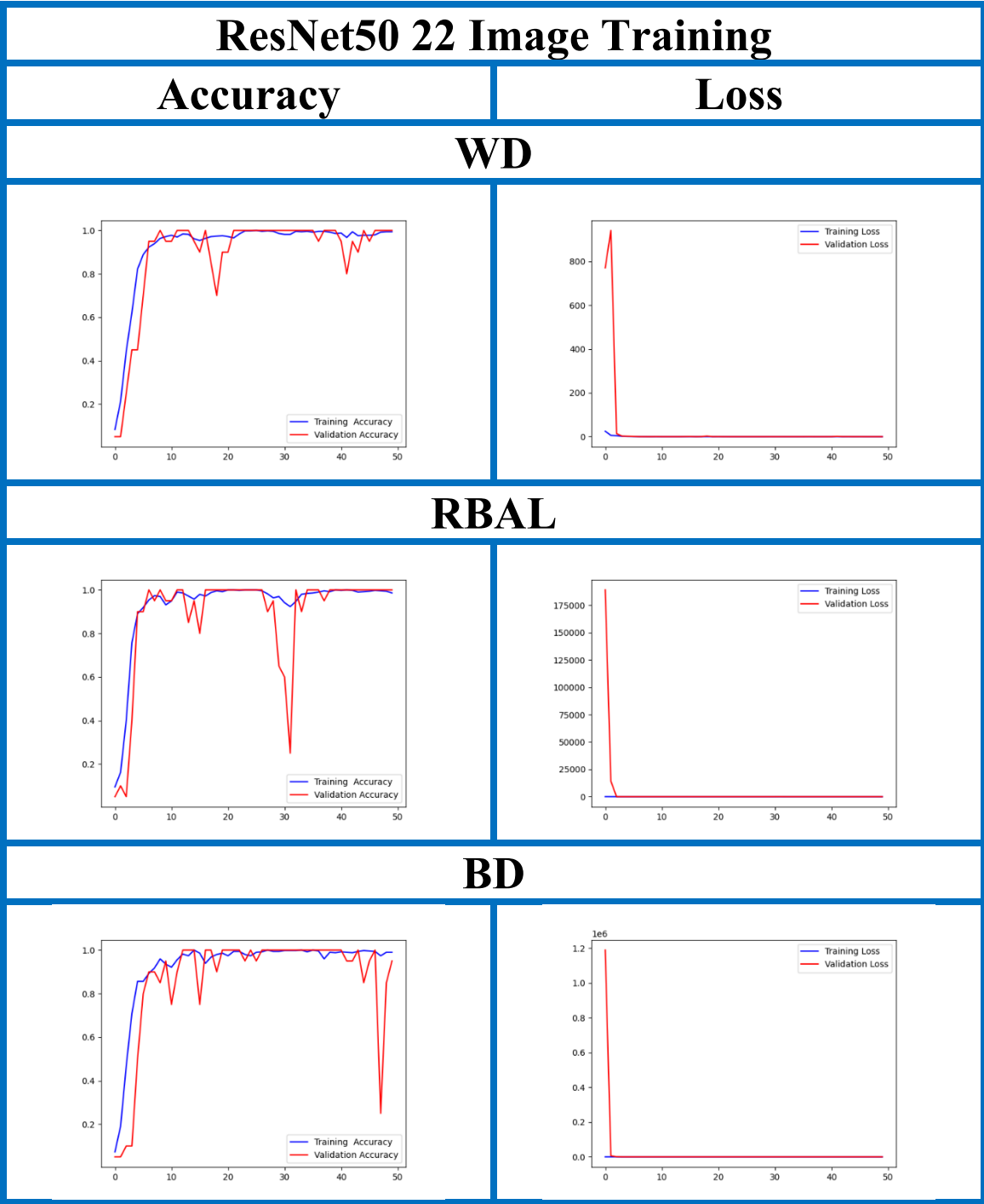
VGG16 22 Image Training	
Accuracy	Loss
WD	
	
RBAL	
	
BD	
	

Table 12: Complete ResNet50 Accuracy and Loss Using 22 Training Images



Appendix C: DEEP LEARNING CONFUSION MATRICES

Table 13: Complete DL Confusion Matrices Using 8 Training Images

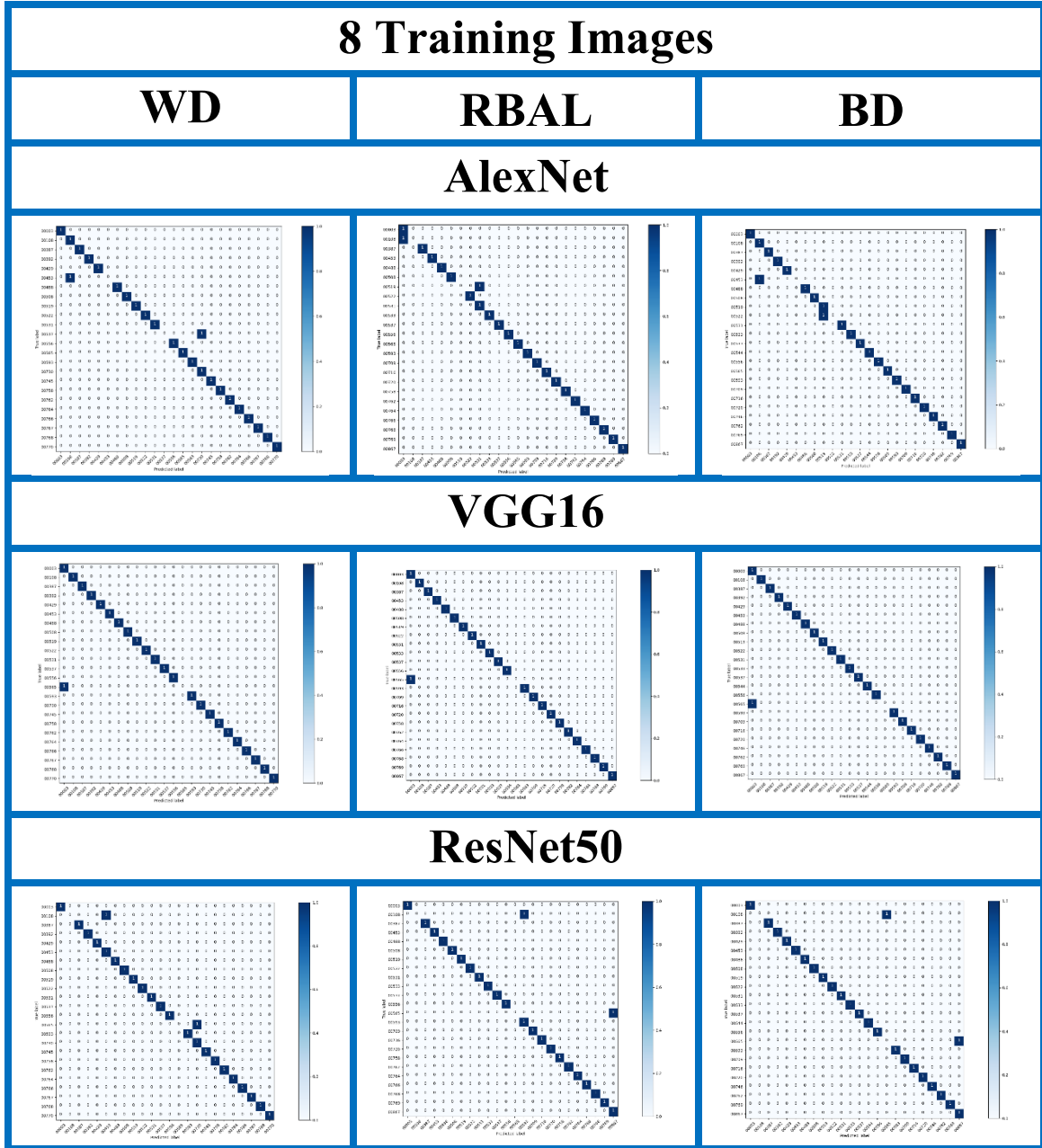


Table 14: Complete DL Confusion Matrices Using 11 Training Images

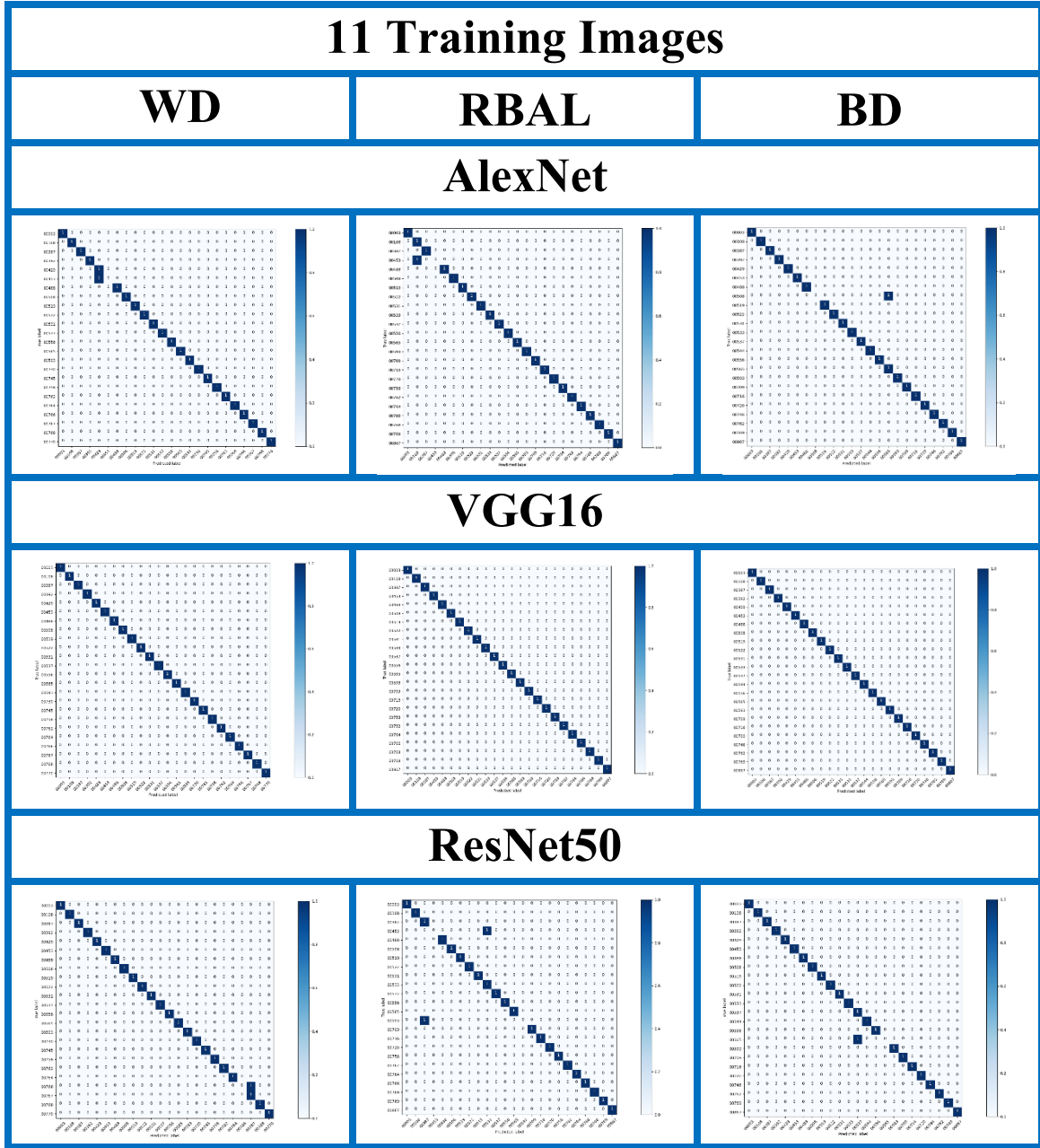
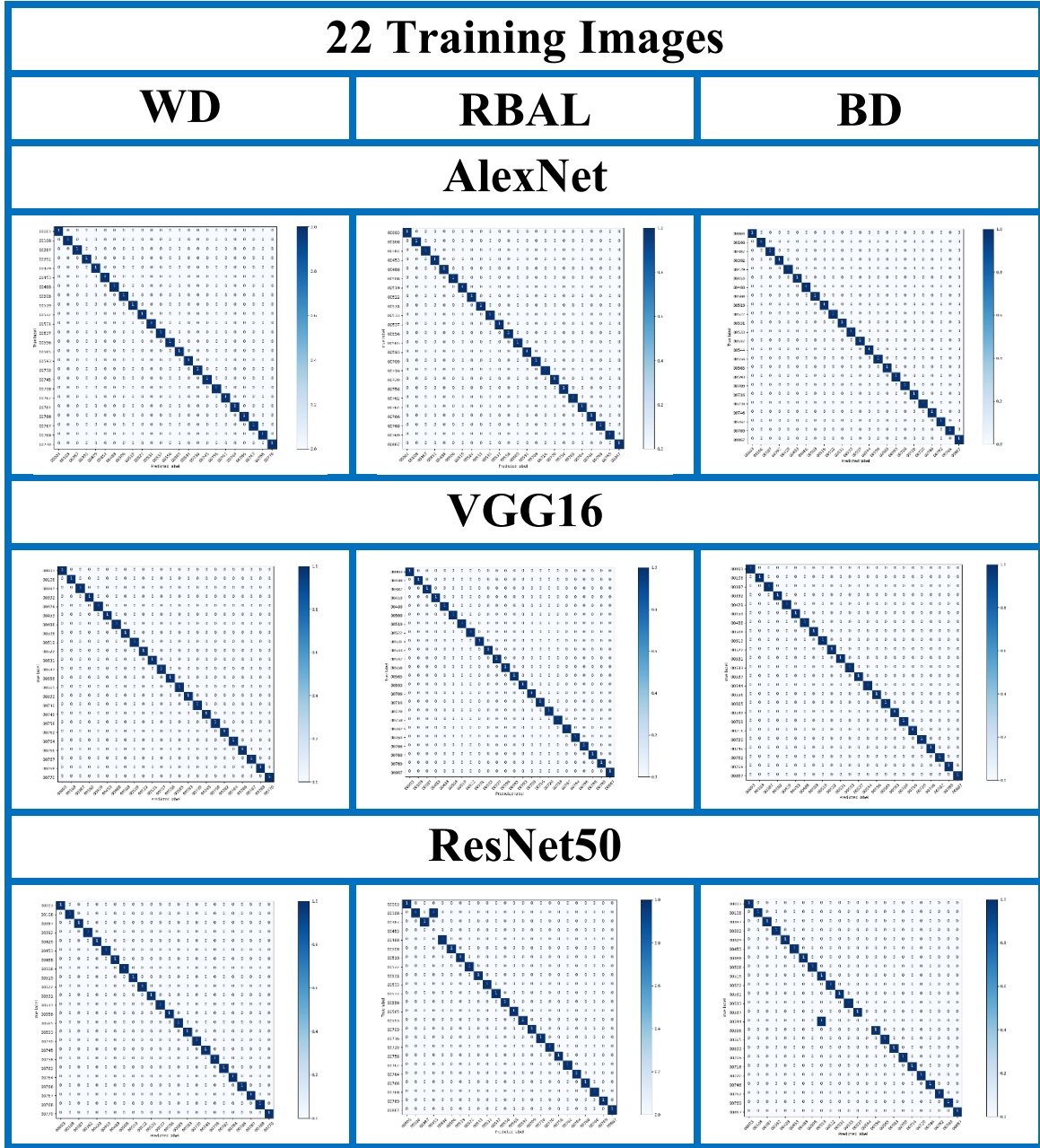


Table 15: Complete DL Confusion Matrices Using 22 Training Images



Appendix D: DEEP LEARNING ADDITIONAL METRICS

Table 16: Complete Additional DL Metrics Using 8 Training Images

8 Images					
Accuracy Table		Datasets			AVERAGES
DL Algorithm		WD	RBAL	BD	
AlexNet	Precision	92%	92%	92%	92%
	Recall	92%	92%	92%	92%
	F1	92%	92%	92%	92%
VGG16	Precision	100%	100%	100%	100%
	Recall	96%	96%	96%	96%
	F1	98%	98%	98%	98%
Resnet50	Precision	100%	100%	100%	100%
	Recall	92%	92%	92%	92%
	F1	96%	96%	96%	96%
AVERAGES	Precision	97%	97%	97%	97%
	Recall	93%	93%	93%	93%
	F1	95%	95%	95%	95%

Table 17: Complete Additional DL Metrics Using 11 Training Images

11 Images					
Accuracy Table		Datasets			AVERAGES
DL Algorithm		WD	RBAL	BD	
AlexNet	Precision	96%	96%	96%	96%
	Recall	96%	96%	96%	96%
	F1	96%	96%	96%	96%
VGG16	Precision	100%	100%	100%	100%
	Recall	100%	100%	100%	100%
	F1	100%	100%	100%	100%
Resnet50	Precision	96%	100%	100%	99%
	Recall	96%	92%	96%	95%
	F1	96%	96%	98%	97%
AVERAGES	Precision	97%	99%	99%	98%
	Recall	97%	96%	97%	97%
	F1	97%	97%	98%	98%

Table 18: Complete Additional DL Metrics Using 22 Training Images

22 Images					
Accuracy Table		Datasets			AVERAGES
DL Algorithm		WD	RBAL	BD	
AlexNet	Precision	100%	100%	100%	100%
	Recall	100%	100%	100%	100%
	F1	100%	100%	100%	100%
VGG16	Precision	100%	100%	100%	100%
	Recall	100%	100%	100%	100%
	F1	100%	100%	100%	100%
Resnet50	Precision	100%	100%	100%	100%
	Recall	100%	96%	96%	97%
	F1	100%	98%	98%	99%
AVERAGES	Precision	100%	100%	100%	100%
	Recall	100%	99%	99%	99%
	F1	100%	99%	99%	100%