

Table 1: AlexNet on BUSI

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	90.21	92.51	86.76	85.80	90.40	88.48	91.75	81.57	75.05	88.68
	002	88.48	92.51	85.03	85.80	90.60	89.83	92.13	81.00	76.01	90.21
	004	86.95	91.94	84.07	85.22	91.55	90.02	92.32	80.61	76.01	89.64
	006	84.45	91.55	83.69	84.45	90.40	88.48	92.13	80.42	76.58	90.02
	008	81.38	90.98	80.61	83.30	90.60	86.37	91.55	78.89	76.78	89.06
	010	80.42	89.06	79.65	81.96	89.06	85.41	90.40	77.35	77.74	88.87
F1 Score	000	86.89	89.37	82.26	81.22	85.96	81.13	87.68	71.26	66.15	82.90
	002	85.29	89.66	80.69	81.68	86.58	84.18	88.89	71.63	67.36	85.71
	004	83.81	89.06	79.81	81.53	88.17	84.80	89.47	71.55	67.36	85.25
	006	81.38	88.78	79.91	80.85	86.56	83.15	89.35	71.82	68.23	85.71
	008	78.59	88.10	76.89	80.18	87.14	81.07	88.72	70.27	68.57	84.88
	010	77.63	86.00	76.13	78.92	85.27	80.21	87.44	68.95	69.63	84.57
Sensitivity	000	82.84	90.11	78.43	76.56	89.47	96.99	93.29	79.87	63.82	89.38
	002	78.03	88.02	74.43	75.34	87.78	94.00	89.13	76.22	65.15	88.95
	004	74.89	85.93	72.57	73.28	87.70	92.36	87.18	74.71	65.15	86.19
	006	70.80	84.06	71.01	71.85	86.10	86.55	86.00	73.45	65.83	87.15
	008	66.42	82.86	66.67	69.29	84.69	80.00	84.39	70.27	66.00	83.33
	010	65.31	78.83	65.25	67.43	81.68	77.39	81.69	67.18	67.51	83.25
Specificity	000	94.95	93.81	92.11	91.99	90.86	85.57	91.04	82.26	81.99	88.37
	002	96.31	95.14	92.72	93.38	92.08	88.14	93.77	83.19	82.66	90.83
	004	96.85	95.65	92.88	94.81	93.71	89.01	95.40	83.48	82.66	91.47
	006	97.05	96.50	94.35	95.05	92.81	89.43	95.95	84.01	83.23	91.52
	008	97.23	96.46	93.68	96.63	94.15	90.03	96.20	83.63	83.49	92.40
	010	96.80	96.66	93.89	96.54	93.73	90.37	96.43	83.44	83.95	92.12

Table 2: ResNet-18 on BUSI

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	96.35	88.48	95.59	95.20	91.55	94.82	94.82	94.24	85.60	92.90
	002	96.16	88.87	96.35	95.39	94.24	95.59	95.01	94.24	88.10	94.63
	004	96.16	87.72	96.74	95.39	96.16	95.20	94.82	95.01	89.64	95.39
	006	95.78	88.10	95.59	95.20	97.70	95.97	95.01	95.01	90.21	95.01
	008	94.63	88.68	95.59	94.05	97.70	96.55	93.47	94.63	90.60	95.01
	010	95.20	88.29	95.39	93.86	97.12	97.31	93.86	95.39	91.17	94.43
F1 Score	000	94.91	83.15	93.56	93.44	86.67	92.26	92.68	91.57	82.60	90.63
	002	94.62	84.49	94.77	93.81	91.48	93.52	92.93	91.62	85.10	92.63
	004	94.57	83.07	95.37	93.78	94.44	93.07	92.72	92.74	86.76	93.58
	006	93.96	84.02	93.70	93.54	96.74	94.18	92.97	92.70	87.28	93.01
	008	92.22	85.06	93.70	92.15	96.74	95.03	90.86	92.13	87.78	92.97
	010	93.00	84.71	93.41	91.92	95.91	96.15	91.44	93.33	88.21	92.05
Sensitivity	000	94.15	86.55	97.09	90.82	98.62	98.17	92.93	95.32	72.36	85.24
	002	94.12	83.60	96.63	89.66	96.41	97.65	93.44	94.80	76.62	90.26
	004	95.08	81.35	96.15	90.05	97.14	95.45	92.47	95.95	79.37	92.59
	006	95.53	80.30	95.00	89.60	97.27	96.59	92.97	96.49	81.02	92.51
	008	94.86	80.00	95.00	86.67	97.27	97.18	90.37	95.91	81.48	92.97
	010	96.51	78.97	94.97	86.26	96.70	97.77	90.48	96.00	83.90	93.33
Specificity	000	97.60	89.43	94.84	97.85	88.83	93.28	95.85	93.71	97.45	98.07
	002	97.31	91.87	96.21	99.06	93.22	94.59	95.86	93.97	97.24	97.24
	004	96.75	91.46	97.05	98.75	95.66	95.07	96.12	94.54	97.32	96.99
	006	95.91	93.08	95.89	98.75	97.93	95.65	96.13	94.29	96.72	96.41
	008	94.51	94.53	95.89	99.04	97.93	96.22	95.21	94.00	97.05	96.13
	010	94.56	94.79	95.61	99.03	97.35	97.08	95.78	95.09	95.89	95.01

Table 3: ResNet-50 on BUSI

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	93.67	96.55	87.52	94.24	95.78	82.53	94.43	93.67	91.55	90.60
	002	93.86	96.74	85.99	94.24	96.16	83.69	93.86	93.28	90.98	91.94
	004	95.01	96.74	86.18	94.24	96.35	84.64	93.47	92.51	91.17	90.60
	006	95.39	95.78	84.07	95.01	96.55	86.18	93.28	93.86	91.55	90.60
	008	95.20	95.59	82.92	92.51	96.93	86.95	93.47	92.32	91.55	88.87
	010	95.39	94.63	81.38	93.28	95.78	86.18	92.90	92.71	92.13	89.64
F1 Score	000	90.70	95.03	84.78	92.06	93.79	77.31	92.27	91.06	88.17	87.72
	002	91.01	95.32	83.30	92.15	94.51	79.12	91.40	90.51	87.33	89.45
	004	92.70	95.39	83.56	92.23	94.85	80.68	90.81	89.54	87.57	87.78
	006	93.30	94.18	81.51	93.26	95.16	82.69	90.62	91.35	88.04	87.84
	008	93.04	93.93	80.27	90.13	95.68	83.73	90.91	89.30	88.11	85.99
	010	93.30	92.71	79.05	91.18	94.12	83.02	90.08	89.67	88.77	86.76
Sensitivity	000	94.71	97.18	74.79	90.16	98.22	71.76	91.05	91.30	87.70	81.78
	002	94.74	97.19	72.22	89.34	96.09	72.52	90.91	90.76	87.10	83.57
	004	96.49	95.65	72.33	88.56	95.11	72.93	90.81	88.83	87.57	81.48
	006	96.53	92.23	69.32	89.55	94.65	74.46	89.89	91.35	88.52	81.19
	008	95.98	91.75	68.05	84.76	95.68	75.11	89.95	88.36	88.11	77.73
	010	96.53	89.45	65.83	85.38	93.12	73.64	89.36	90.16	90.00	79.37
Specificity	000	93.16	96.22	98.57	96.65	94.60	90.16	96.37	94.96	93.71	96.74
	002	93.43	96.50	98.88	97.22	96.20	91.97	95.51	94.66	93.13	97.73
	004	94.29	97.33	99.25	97.81	97.03	93.84	94.94	94.59	93.15	97.05
	006	94.83	97.87	99.22	98.44	97.60	95.52	95.20	95.24	93.20	97.36
	008	94.81	97.86	98.43	97.75	97.62	96.53	95.48	94.58	93.45	97.60
	010	94.83	97.83	99.18	98.71	97.29	96.81	94.89	94.08	93.26	97.32

Table 4: VGG16 on BUSI

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	96.16	93.09	90.40	77.74	71.98	85.60	85.60	90.40	86.95	91.17
	002	94.82	93.86	92.90	80.42	80.42	85.99	84.26	91.94	87.52	91.75
	004	93.67	91.94	94.24	81.77	84.64	88.48	82.53	91.55	87.91	90.60
	006	92.32	90.98	91.94	83.69	85.80	89.06	81.00	90.79	86.76	90.79
	008	91.17	88.87	92.51	83.49	84.84	86.95	79.27	89.25	86.18	88.87
	010	89.83	88.29	91.94	85.03	83.49	90.02	77.93	88.68	86.37	87.52
F1 Score	000	94.65	90.22	86.19	54.69	35.96	81.20	80.52	87.50	82.38	87.83
	002	92.88	91.44	89.97	63.04	65.07	81.33	80.19	89.34	82.94	88.65
	004	91.43	89.12	92.11	66.90	75.46	84.46	78.98	88.72	83.55	87.07
	006	89.80	88.16	89.29	71.76	78.98	85.50	77.75	88.00	82.26	87.50
	008	88.44	85.50	90.03	72.61	78.71	83.00	76.82	86.21	81.44	84.97
	010	86.85	85.01	89.29	76.36	78.17	86.93	75.27	85.57	81.75	83.54
Sensitivity	000	93.65	90.71	88.14	98.59	95.35	75.70	77.50	81.40	79.10	86.01
	002	90.72	90.48	90.22	95.60	88.79	77.18	72.49	84.21	80.61	86.60
	004	88.00	85.57	89.74	94.12	87.23	81.09	68.95	84.39	80.81	85.05
	006	85.02	82.55	84.54	93.10	83.23	80.77	66.54	81.86	78.43	84.42
	008	82.63	79.53	85.44	88.37	78.49	77.21	63.70	79.19	77.83	81.59
	010	80.28	77.93	84.54	86.90	73.68	81.22	62.50	78.12	77.94	78.57
Specificity	000	97.59	94.38	91.57	74.44	69.87	92.51	90.65	96.73	91.88	94.21
	002	97.25	95.78	94.36	77.21	78.26	91.75	93.49	97.12	91.69	94.80
	004	97.20	95.94	96.93	78.76	83.68	93.12	94.87	96.20	92.26	93.88
	006	97.13	96.76	96.82	80.99	87.01	94.57	95.40	97.06	92.11	94.72
	008	97.08	95.42	97.14	81.89	88.36	93.79	97.50	96.67	91.51	93.44
	010	96.70	95.99	96.82	84.31	90.06	96.10	95.85	96.63	91.80	93.57

Table 5: AlexNet on MT_small

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	87.77	84.78	86.41	85.33	87.23	75.54	81.52	75.27	74.73	85.33
	002	89.95	89.13	87.77	90.49	90.49	83.42	90.22	76.36	75.82	86.41
	004	88.04	88.04	87.23	91.03	88.86	81.52	90.76	75.82	74.18	86.68
	006	86.96	88.32	87.23	90.49	89.95	81.52	91.03	73.64	71.47	86.14
	008	85.60	89.67	87.23	89.13	84.78	77.45	89.67	73.37	71.20	82.34
	010	84.51	88.59	85.33	86.41	84.24	76.63	89.95	71.20	70.11	82.88
F1 Score	000	86.24	81.70	85.03	83.33	85.27	67.15	76.71	70.36	73.50	83.12
	002	89.75	88.02	87.53	90.20	89.49	80.00	89.47	72.20	73.11	84.94
	004	88.30	87.21	87.12	91.06	87.83	77.78	90.45	70.63	70.03	84.83
	006	87.63	87.89	87.33	90.96	88.96	78.06	91.15	67.12	65.12	84.31
	008	86.72	89.44	87.53	89.95	82.72	72.79	89.95	66.67	63.95	79.23
	010	86.06	88.71	86.08	87.75	81.88	71.71	90.39	62.41	61.54	80.13
Sensitivity	000	95.92	99.21	92.21	93.75	97.84	97.87	100.0	85.04	75.44	95.00
	002	89.50	95.45	87.29	90.96	97.39	97.60	94.44	84.96	80.13	92.76
	004	84.69	91.46	85.95	88.89	94.27	94.44	91.48	86.99	81.02	95.80
	006	81.73	89.14	84.82	85.02	96.13	93.08	88.08	86.09	80.99	94.48
	008	79.00	89.44	83.76	82.11	93.06	88.80	85.86	85.96	82.46	93.23
	010	76.86	85.94	80.29	78.51	93.57	87.90	84.88	86.27	83.02	92.70
Specificity	000	82.35	77.27	82.24	79.91	80.79	67.88	73.44	70.12	74.11	79.39
	002	90.37	84.58	88.24	90.05	85.58	76.13	86.89	71.49	72.81	81.94
	004	91.86	85.29	88.52	93.30	84.83	74.79	90.10	70.20	70.13	80.89
	006	93.75	87.56	89.83	97.52	85.45	75.21	94.29	67.98	66.80	80.72
	008	95.30	89.89	91.23	99.33	79.46	71.60	94.12	67.72	66.14	76.17
	010	97.12	91.48	91.88	99.29	78.51	70.90	96.32	65.41	64.89	77.06

Table 6: ResNet-18 on MT_small

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	95.92	84.51	85.05	93.48	69.02	88.86	91.30	89.13	92.93	94.84
	002	90.22	83.97	93.21	97.55	88.04	92.93	90.22	89.67	91.58	92.12
	004	80.16	82.61	85.05	96.20	86.41	90.22	88.04	86.68	84.78	91.30
	006	74.46	78.80	81.25	95.38	85.60	86.96	85.05	82.88	79.62	88.59
	008	70.65	75.27	77.17	95.38	85.60	85.33	83.97	78.53	75.00	88.32
	010	69.02	71.47	75.82	94.02	82.34	82.34	81.52	74.46	76.63	87.50
F1 Score	000	95.75	81.31	81.97	93.02	53.66	87.23	90.42	87.73	92.66	94.88
	002	89.02	81.15	92.67	97.51	86.25	92.35	89.22	88.41	90.86	91.34
	004	74.91	79.22	82.43	96.13	84.18	89.29	86.50	84.54	81.94	90.59
	006	64.93	72.92	76.45	95.32	82.85	85.54	82.65	79.21	75.25	87.50
	008	57.81	66.91	70.42	95.34	82.74	83.33	81.15	72.28	68.71	87.68
	010	55.12	59.77	68.55	93.99	78.26	80.00	78.34	64.93	71.52	86.93
Sensitivity	000	97.69	99.20	100.0	97.56	100.0	99.29	98.05	97.95	94.25	92.15
	002	98.65	95.49	98.14	97.24	98.57	98.12	96.75	97.97	96.86	98.71
	004	98.20	95.31	96.99	95.60	97.79	96.15	96.58	97.81	97.69	96.25
	006	98.86	97.22	99.12	94.54	99.22	93.42	95.62	97.56	92.68	94.23
	008	97.37	96.84	96.15	94.05	100.0	93.75	95.49	98.10	88.60	90.53
	010	94.59	96.30	94.17	92.47	98.32	89.66	91.79	98.86	88.52	88.95
Specificity	000	94.36	76.95	77.37	90.20	62.25	82.38	86.45	83.33	91.75	97.74
	002	84.55	77.45	89.37	97.86	81.58	88.94	85.51	84.09	87.56	87.32
	004	72.37	75.83	78.30	96.77	79.74	85.85	82.43	80.09	77.73	87.50
	006	66.79	71.15	73.33	96.22	78.24	82.41	78.79	75.51	73.06	84.43
	008	63.70	67.77	69.70	96.72	78.01	79.91	77.45	70.72	68.90	86.43
	010	62.59	64.46	68.68	95.60	74.70	77.58	75.64	66.79	70.73	86.22

Table 7: ResNet-50 on MT_small

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	90.49	87.50	88.04	87.50	85.60	63.04	91.30	89.67	91.85	93.48
	002	90.76	88.32	89.95	90.76	91.58	83.97	89.95	90.49	91.03	91.58
	004	85.60	86.68	90.22	91.58	90.22	90.22	88.04	89.95	88.86	92.12
	006	76.36	80.16	88.04	90.22	89.40	89.95	83.15	89.13	86.96	90.22
	008	70.92	76.63	89.40	91.58	84.78	87.50	80.98	88.32	86.41	88.86
	010	65.22	76.09	88.04	90.49	84.78	88.04	73.64	86.68	86.41	88.59
F1 Score	000	89.36	85.62	86.34	85.53	82.85	39.29	90.59	88.62	91.12	93.14
	002	89.76	86.69	89.15	89.70	90.86	82.80	88.75	89.74	90.03	91.36
	004	82.85	84.54	90.27	90.86	89.22	89.77	86.34	89.15	87.31	91.92
	006	68.13	75.09	88.30	89.35	88.07	90.08	79.61	88.10	84.91	90.11
	008	57.71	69.29	89.71	91.01	82.17	87.96	76.19	87.24	84.28	88.52
	010	45.30	69.44	88.60	89.91	81.94	88.72	64.47	85.11	84.57	88.07
Sensitivity	000	98.66	97.86	97.89	98.55	99.22	100.0	96.25	96.10	97.47	95.88
	002	98.03	97.90	94.41	98.67	96.86	87.12	97.99	95.03	98.68	91.62
	004	99.22	97.81	87.89	96.86	96.75	91.86	97.89	94.41	98.60	92.18
	006	100.0	97.35	84.69	95.57	97.96	87.05	97.58	94.87	97.83	89.13
	008	100.0	97.00	85.43	95.15	96.27	83.17	98.25	93.63	97.10	89.27
	010	98.15	92.59	83.01	93.41	97.69	82.38	94.62	93.96	95.14	90.12
Specificity	000	84.93	81.14	81.86	80.87	78.24	58.02	87.50	85.05	87.62	91.41
	002	85.65	82.22	86.47	85.32	87.56	81.46	84.47	86.96	85.71	91.53
	004	78.24	80.09	92.70	87.56	85.51	88.78	81.86	86.47	82.67	92.06
	006	68.36	72.55	91.86	86.19	83.71	93.14	75.82	84.91	80.43	91.30
	008	63.73	69.03	94.08	88.67	78.21	92.77	73.23	84.36	80.00	88.48
	010	59.55	69.23	94.44	88.06	77.73	95.57	66.55	81.74	80.80	87.24

Table 8: VGG16 on MT_small

Metric	Set	Stage I						Stage II			
		RtO	RtN					mix			
			002	004	006	008	010	204040	255025	333333	404020
Accuracy	000	91.30	90.49	91.85	68.48	56.79	88.32	85.33	92.39	88.32	91.85
	002	91.58	92.66	93.75	73.10	77.99	89.95	89.40	91.58	88.32	90.49
	004	91.30	91.85	94.02	76.36	83.70	92.12	89.95	90.49	90.22	92.93
	006	92.12	90.22	93.48	75.27	82.34	92.12	88.59	89.13	89.67	92.66
	008	91.03	90.76	91.85	77.17	81.52	92.39	87.77	88.04	87.50	89.67
	010	88.86	89.95	92.12	74.73	80.16	91.03	87.77	87.50	89.67	91.30
F1 Score	000	90.53	89.86	91.07	52.46	20.90	87.39	83.44	92.00	87.39	91.57
	002	90.91	92.26	93.41	62.36	72.16	89.34	89.20	91.32	87.46	90.03
	004	90.86	91.62	93.92	68.59	81.93	91.88	90.08	90.25	89.71	92.70
	006	91.78	90.16	93.48	67.38	81.99	92.10	89.18	89.01	89.39	92.52
	008	90.65	90.76	92.02	70.00	81.52	92.47	88.55	88.17	87.01	89.27
	010	88.83	90.08	92.31	67.14	81.33	91.25	88.72	87.70	89.62	91.26
Sensitivity	000	96.84	93.94	98.08	100.0	100.0	92.55	93.15	94.71	92.55	92.61
	002	96.27	95.27	96.45	98.80	94.59	92.81	88.95	92.09	92.02	92.40
	004	93.53	92.13	93.41	97.94	89.47	92.66	87.05	90.50	92.35	93.75
	006	93.64	88.71	91.49	94.95	81.77	90.37	83.17	88.04	89.89	92.27
	008	92.49	88.83	88.27	98.00	79.79	89.58	81.69	85.42	88.51	90.80
	010	87.17	87.05	88.32	92.23	75.36	87.31	80.82	84.54	88.17	89.78
Specificity	000	87.14	87.68	87.26	61.84	54.18	85.02	80.18	90.40	85.02	91.15
	002	87.92	90.45	91.46	65.61	70.82	87.56	89.84	91.10	85.37	88.83
	004	89.39	91.58	94.62	68.63	79.63	91.62	93.14	90.48	88.38	92.19
	006	90.77	91.76	95.56	68.03	82.89	93.92	95.62	90.22	89.47	93.05
	008	89.74	92.78	95.93	69.40	83.33	95.45	96.13	90.91	86.60	88.66
	010	90.61	93.14	96.49	67.92	86.62	95.32	97.99	90.80	91.21	92.86