Hyperparameter Tuning

Grid Search

Classification

Accuracy Values | OASIS-2

ResNet-18

LR	Epochs: 10	20	50	100
2.00E-04	0.75102	0.76745	0.78775	0.81632
2.00E-05	0.70612	0.7102	0.72244	0.71836

EfficientNet-B3

LR	Epochs: 10	20	50	100
2.00E-04	0.67755	0.7551	0.75918	0.77551
2.00E-05	0.70659	0.70204	0.72653	0.7551

ResNeXt-50

LR	Epochs: 10	20	50	100
2.00E-04	0.77142	0.83265	0.85306	0.84489
2.00E-05	0.72653	0.70612	0.7102	0.70612

3D ResNet-18

LR	Epochs: 10	20	50	100
2.00E-04	0.6122	0.53061	0.66938	0.59591
2.00E-05	0.70612	0.70804	0.68979	0.6853

Best Model: ResNeXt-50, **Best Hyper parameters:** 50 epochs, 2e-4 LR

Domain Adaptation (ADDA)

Accuracy Values | Source: OASIS-2, Target: OASIS-1

Model: ResNeXt-50, Critic LR: 1e-5, Target LR: 1e-6

Epochs: 10	20	30	50	100
0.75	0.80125	0.78874	0.775	0.76625

Final Results

Supervised Binary Classification on Source (OASIS-2)

Model	ResNeXt-50
AUC	0.91157
Accuracy	0.84897
Sensitivity/Recall	0.88489
Specificity	0.80188
Precision	0.85416
F1	0.86925

Domain Adaptation | Source: OASIS-2, Target: OASIS-1

Model	ResNeXt-50
Accuracy without DA	0.74624
Accuracy ADDA	0.83124
Sensitivity/Recall	0.82926
Specificity	0.83783
Precision	0.94444
F1	0.88311

Anomaly Detection (AUC)

Model	OASIS-1	OASIS-2
Adversarial Autoencoder	0.60727	0.71692
Variational Autoencoder	0.67645	0.68715

Domain Adaptation | Source: OASIS-2, Target: OASIS-1 (AUC)

Model	Without DA	ADDA (For Supervised Anomaly Detection)	ADDA (For Unsupervised Anomaly Detection)
Adversarial Autoencoder	0.78162	0.81097	0.73742
Variational Autoencoder	0.77341		

Data Generation (EMD)

OASIS-1

Model	Generated Samples	Reconstructed Samples
Adversarial Autoencoder	64.21179	63.64729
Variational Autoencoder	66.7877	66.27392

OASIS-2

Model	Generated Samples	Reconstructed Samples
Adversarial Autoencoder	27.04159	28.40938
Variational Autoencoder	25.15828	23.93365