1. Batch-size : 32, training-testing ratio : 80/20, dropout layer : 50%, epochs : 100, optimizer : Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_6"

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Layer (type)	Output Shape	Param #
conv1d_18 (Conv1D)	(None, 36, 64)	384
conv1d_19 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_6 (MaxPooling 1D)	(None, 16, 64)	0
dropout_36 (Dropout)	(None, 16, 64)	0
conv1d_20 (Conv1D)	(None, 12, 64)	20544
dropout_37 (Dropout)	(None, 12, 64)	0
flatten_6 (Flatten)	(None, 768)	0
dense_30 (Dense)	(None, 100)	76900
activation_30 (Activation)	(None, 100)	0

dropout_38 (Dropout) (None, 100) 0

dense_31 (Dense) (None, 200) 20200

activation_31 (Activation) (None, 200) 0

dropout_39 (Dropout) (None, 200) 0

dense_32 (Dense) (None, 100) 20100

activation_32 (Activation) (None, 100) 0

dropout_40 (Dropout) (None, 100) 0

dense_33 (Dense) (None, 200) 20200

activation_33 (Activation) (None, 200) 0

dropout_41 (Dropout) (None, 200) 0

dense_34 (Dense) (None, 6) 1206

activation_34 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

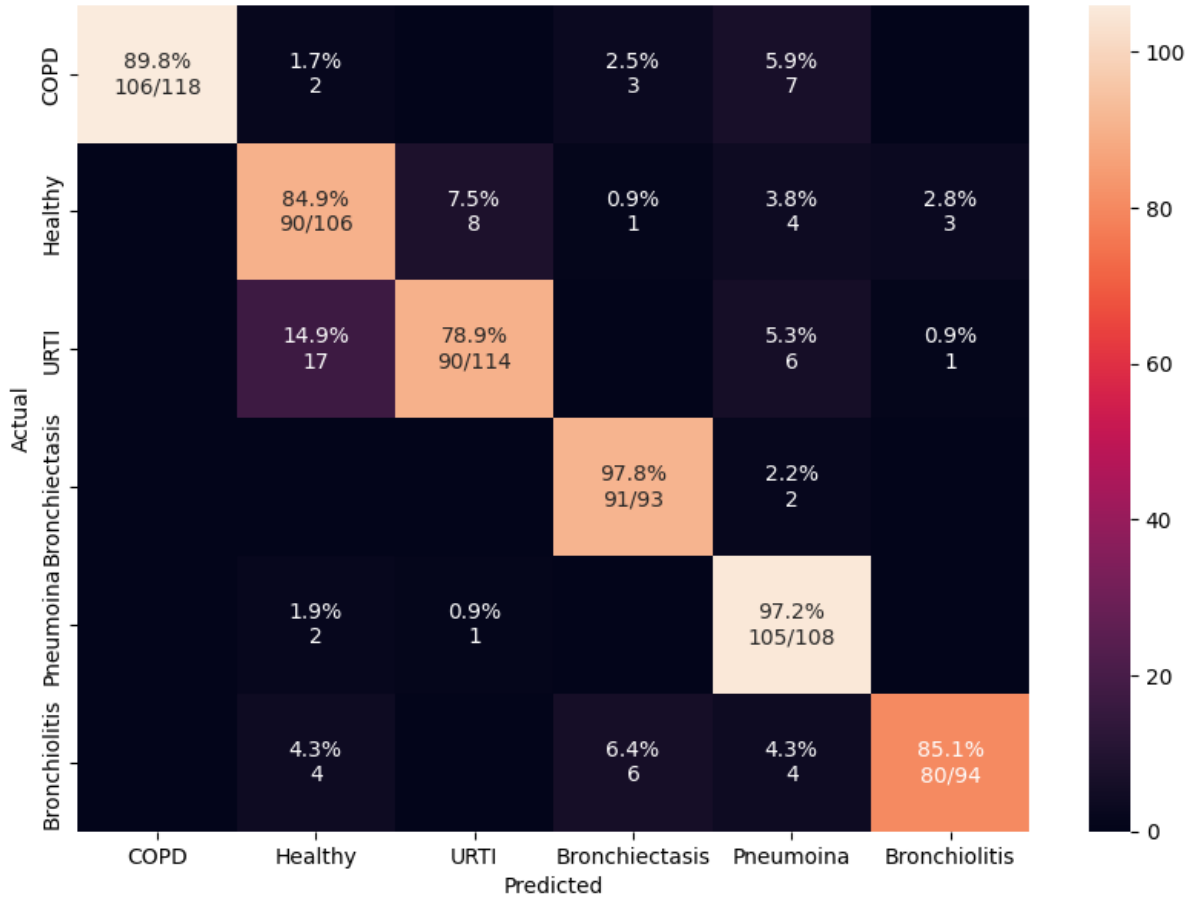
Non-trainable params: 0

Training Accuracy: 0.9165678024291992

Testing Accuracy: 0.9146919250488281

Training loss: 0.22044555842876434

Testing loss: 0.23948818445205688



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.898305	0.898305	1.000000	0.946429	118
1	Healthy	0.952562	0.849057	0.849057	0.782609	0.814480	106
2	URTI	0.982659	0.789474	0.789474	0.909091	0.845070	114
3	Bronchiectasis	0.981481	0.978495	0.978495	0.900990	0.938144	93
4	Pneumoina	0.956190	0.972222	0.972222	0.820312	0.889831	108
5	Bronchiolitis	0.992579	0.851064	0.851064	0.952381	0.898876	94

2. Batch-size : 16, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer : RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_12"

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Layer (type) Output Shape Param #

==========

conv1d_36 (Conv1D) (None, 36, 64) 384

conv1d_37 (Conv1D) (None, 32, 64) 20544

max_pooling1d_12 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_72 (Dropout) (None, 16, 64) 0

flatten_12 (Flatten) (None, 1024) 0

dense_60 (Dense) (None, 100) 102500

activation_60 (Activation) (None, 100) 0

dropout_73 (Dropout) (None, 100) 0

dense_61 (Dense) (None, 200) 20200

activation_61 (Activation) (None, 200) 0

dropout_74 (Dropout) (None, 200) 0

dense_62 (Dense) (None, 100) 20100

activation_62 (Activation) (None, 100) 0

dropout_75 (Dropout) (None, 100) 0

dense_63 (Dense) (None, 200) 20200

activation_63 (Activation) (None, 200) 0

dropout_76 (Dropout) (None, 200) 0

dense_64 (Dense) (None, 6) 1206

activation_64 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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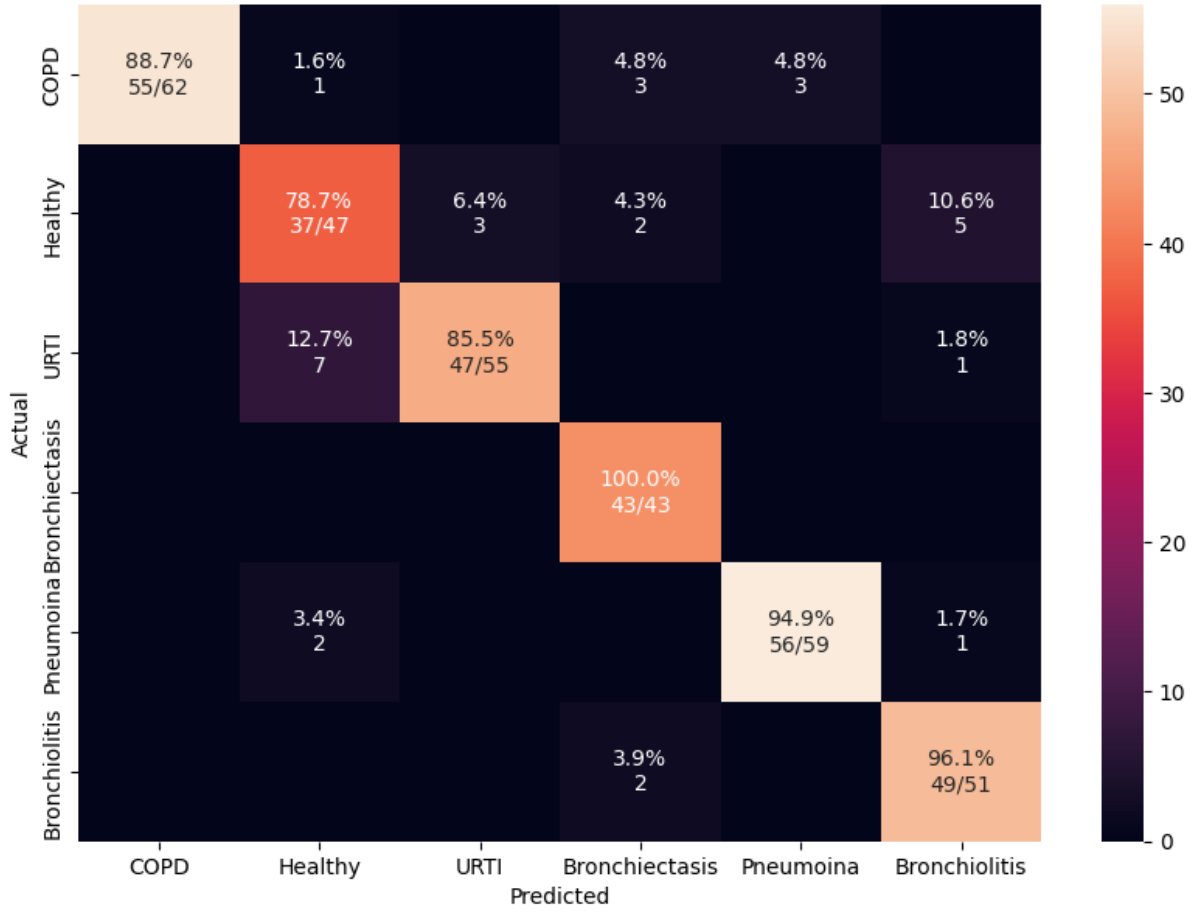
Training Accuracy: 0.9247803092002869

Testing Accuracy: 0.9053627848625183

Training loss: 0.18335101008415222

Testing loss: 0.24090658128261566



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.887097	0.887097	1.000000	0.940171	62
1	Healthy	0.962963	0.787234	0.787234	0.787234	0.787234	47
2	URTI	0.988550	0.854545	0.854545	0.940000	0.895238	55
3	Bronchiectasis	0.974453	1.000000	1.000000	0.860000	0.924731	43
4	Pneumoina	0.988372	0.949153	0.949153	0.949153	0.949153	59
5	Bronchiolitis	0.973684	0.960784	0.960784	0.875000	0.915888	51

3. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer : RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_20"

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Layer (type) Output Shape Param #

==========

conv1d_52 (Conv1D) (None, 36, 64) 384

conv1d_53 (Conv1D) (None, 32, 64) 20544

max_pooling1d_20 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_112 (Dropout) (None, 16, 64) 0

flatten_20 (Flatten) (None, 1024) 0

dense_100 (Dense) (None, 100) 102500

activation_100 (Activation) (None, 100) 0

dropout_113 (Dropout)	(None, 100)	0
dense_101 (Dense)	(None, 200)	20200
activation_101 (Activation)	(None, 200)	0
dropout_114 (Dropout)	(None, 200)	0
dense_102 (Dense)	(None, 100)	20100
activation_102 (Activation)	(None, 100)	0
dropout_115 (Dropout)	(None, 100)	0
dense_103 (Dense)	(None, 200)	20200
activation_103 (Activation)	(None, 200)	0
dropout_116 (Dropout)	(None, 200)	0
dense_104 (Dense)	(None, 6)	1206
activation_104 (Activation)	(None, 6)	0

==========

Total params: 185,134

Trainable params: 185,134

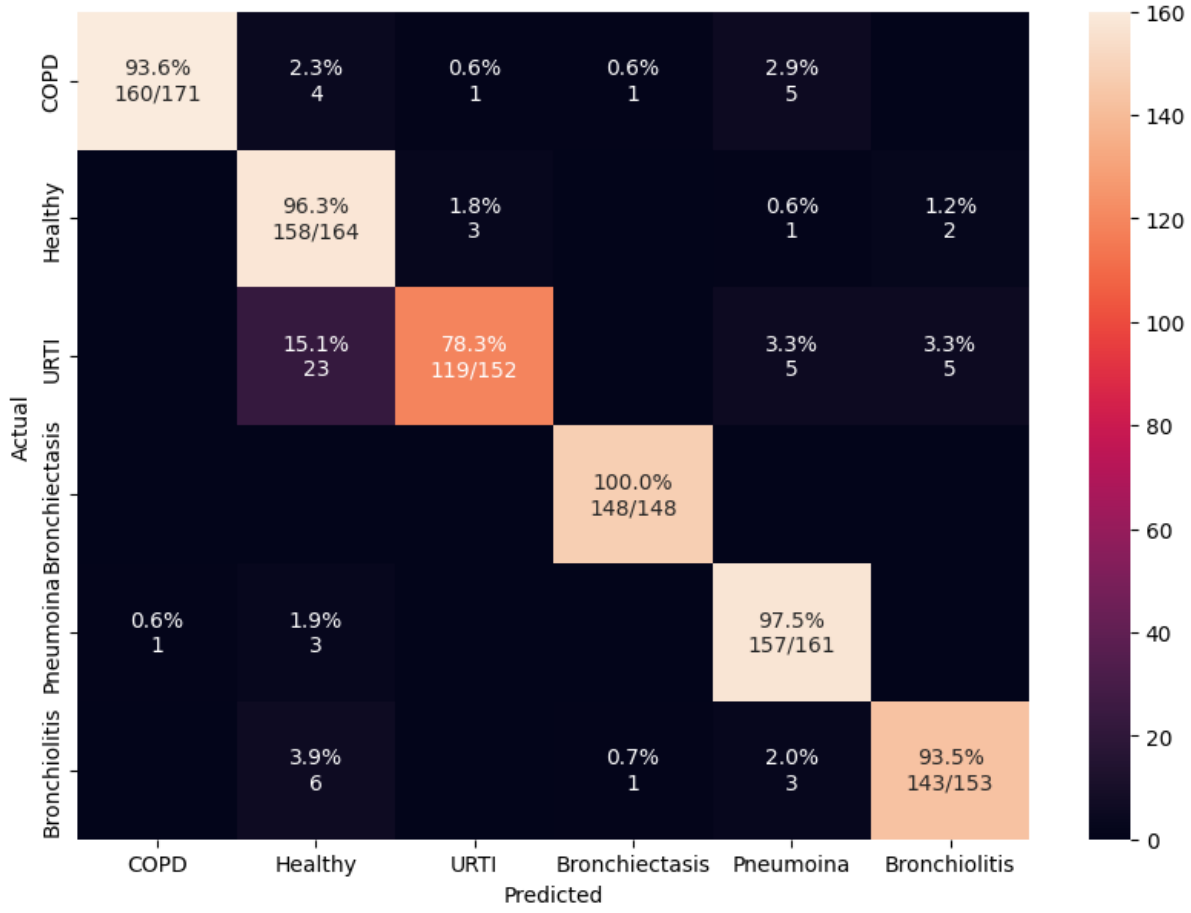
Non-trainable params: 0

Training Accuracy: 0.9304112195968628

Testing Accuracy: 0.9325605630874634

Training loss: 0.18556363880634308

Testing loss: 0.2899514436721802



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.935673	0.935673	0.993789	0.963855	171
1	Healthy	0.954140	0.963415	0.963415	0.814433	0.882682	164
2	URTI	0.994981	0.782895	0.782895	0.967480	0.865455	152
3	Bronchiectasis	0.997503	1.000000	1.000000	0.986667	0.993289	148
4	Pneumoina	0.982234	0.975155	0.975155	0.918129	0.945783	161
5	Bronchiolitis	0.991206	0.934641	0.934641	0.953333	0.943894	153

4. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer : Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential"

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Layer (type) Output Shape Param #

==========

conv1d (Conv1D) (None, 36, 64) 384

conv1d_1 (Conv1D) (None, 32, 64) 20544

max_pooling1d (MaxPooling1D (None, 16, 64) 0

)

dropout (Dropout) (None, 16, 64) 0

conv1d_2 (Conv1D) (None, 12, 64) 20544

dropout_1 (Dropout) (None, 12, 64) 0

flatten (Flatten)	(None, 768)	0
dense (Dense)	(None, 100)	76900
activation (Activation)	(None, 100)	0
dropout_2 (Dropout)	(None, 100)	0
dense_1 (Dense)	(None, 200)	20200
activation_1 (Activation)	(None, 200)	0
dropout_3 (Dropout)	(None, 200)	0
dense_2 (Dense)	(None, 100)	20100
activation_2 (Activation)	(None, 100)	0
dropout_4 (Dropout)	(None, 100)	0
dense_3 (Dense)	(None, 200)	20200
activation_3 (Activation)	(None, 200)	0
dropout_5 (Dropout)	(None, 200)	0

dense_4 (Dense) (None, 6) 1206

activation_4 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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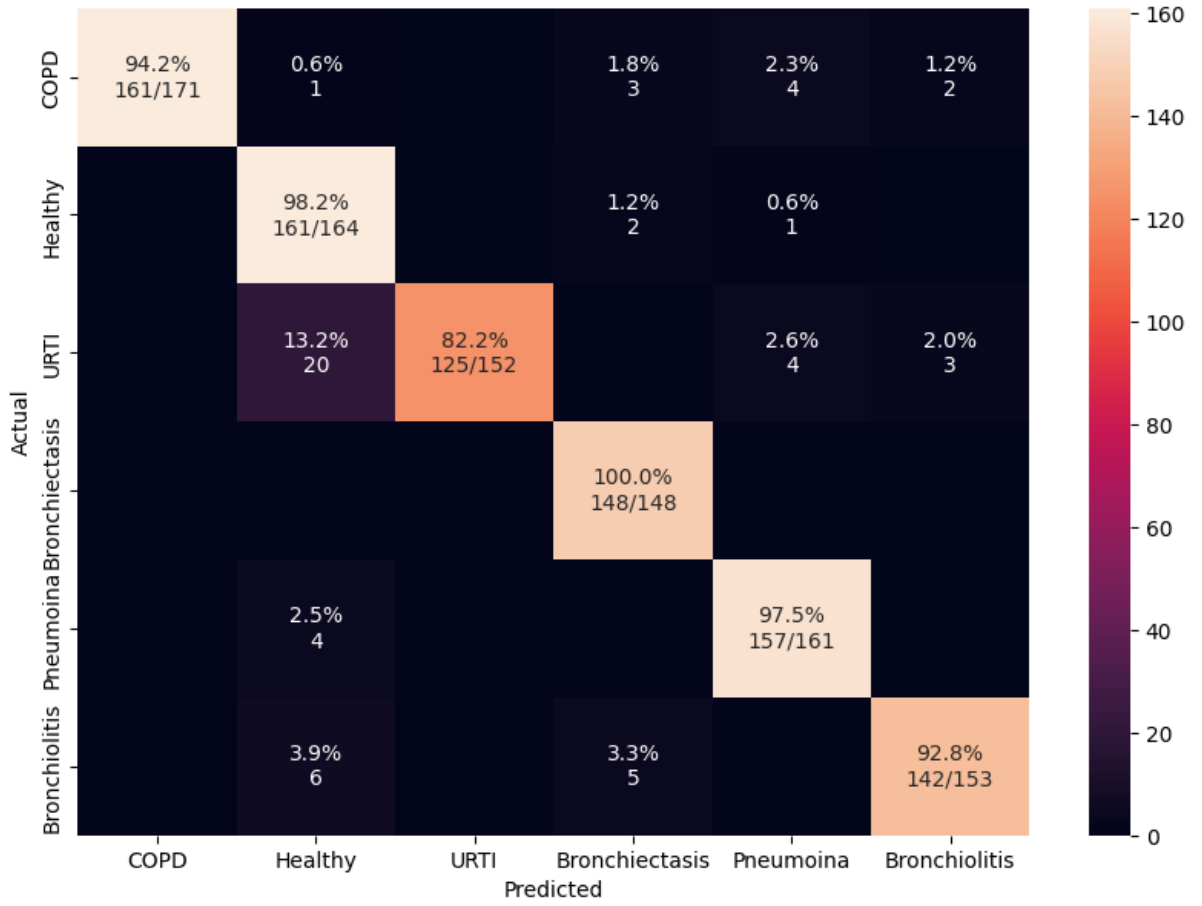
Training Accuracy: 0.9421599507331848

Testing Accuracy: 0.9420442581176758

Training loss: 0.13641732931137085

Testing loss: 0.17634497582912445



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.941520	0.941520	1.000000	0.969880	171
1	Healthy	0.960510	0.981707	0.981707	0.838542	0.904494	164
2	URTI	1.000000	0.822368	0.822368	1.000000	0.902527	152
3	Bronchiectasis	0.987516	1.000000	1.000000	0.936709	0.967320	148
4	Pneumoina	0.988579	0.975155	0.975155	0.945783	0.960245	161
5	Bronchiolitis	0.993719	0.928105	0.928105	0.965986	0.946667	153

5. Batch-size : 16, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer :RMSProp, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_8"

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Layer (type) Output Shape Param #

==========

conv1d_22 (Conv1D) (None, 36, 64) 384

conv1d_23 (Conv1D) (None, 32, 64) 20544

max_pooling1d_8 (MaxPooling (None, 16, 64) 0
1D)

dropout_46 (Dropout) (None, 16, 64) 0

flatten_8 (Flatten) (None, 1024) 0

dense_40 (Dense) (None, 100) 102500

activation_40 (Activation) (None, 100) 0

dropout_47 (Dropout) (None, 100) 0

dense_41 (Dense) (None, 200) 20200

activation_41 (Activation) (None, 200) 0

dropout_48 (Dropout) (None, 200) 0

dense_42 (Dense) (None, 100) 20100

activation_42 (Activation) (None, 100) 0

dropout_49 (Dropout) (None, 100) 0

dense_43 (Dense) (None, 200) 20200

activation_43 (Activation) (None, 200) 0

dropout_50 (Dropout) (None, 200) 0

dense_44 (Dense) (None, 6) 1206

activation_44 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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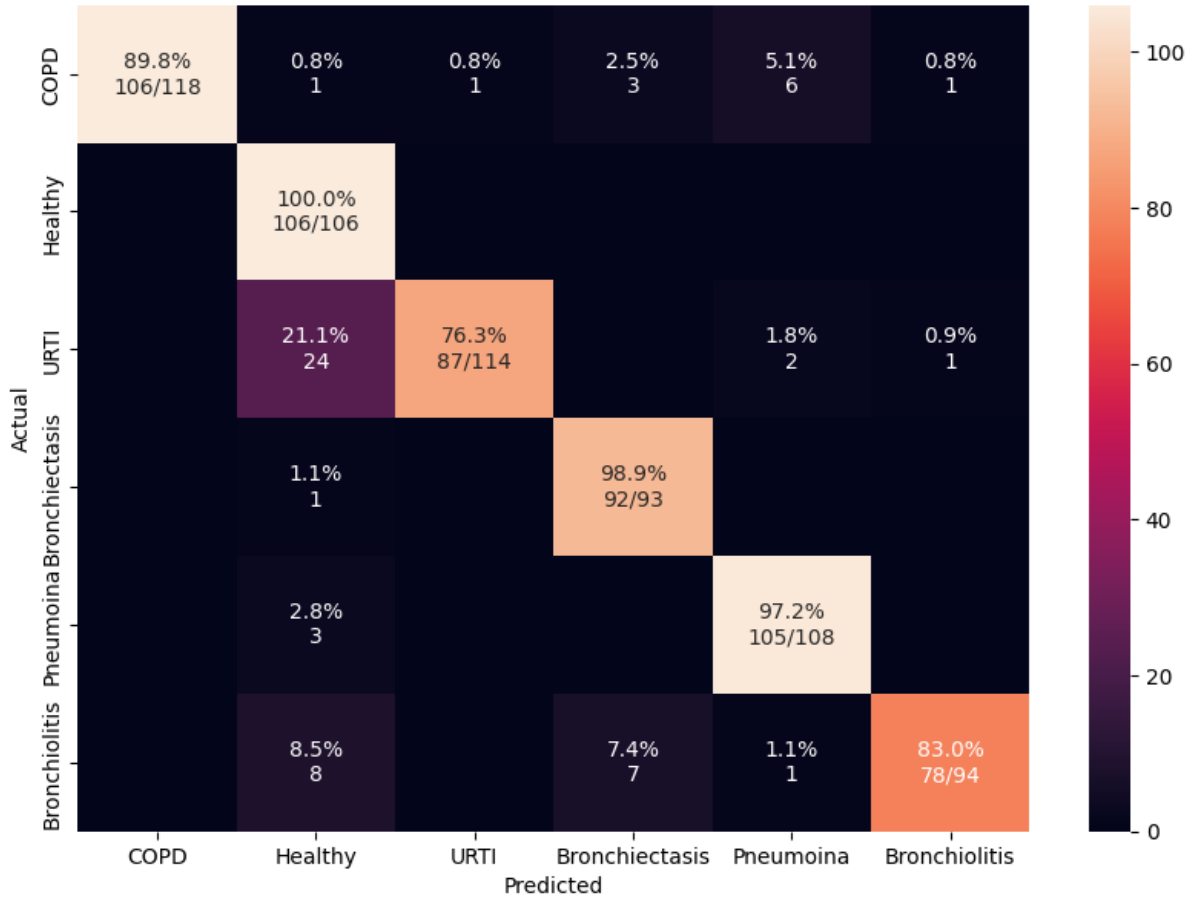
Training Accuracy: 0.9039145708084106

Testing Accuracy: 0.9067930579185486

Training loss: 0.25569912791252136

Testing loss: 0.27527672052383423



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.898305	0.898305	1.000000	0.946429	118
1	Healthy	0.929791	1.000000	1.000000	0.741259	0.851406	106
2	URTI	0.998073	0.763158	0.763158	0.988636	0.861386	114
3	Bronchiectasis	0.981481	0.989247	0.989247	0.901961	0.943590	93
4	Pneumoina	0.982857	0.972222	0.972222	0.921053	0.945946	108
5	Bronchiolitis	0.996289	0.829787	0.829787	0.975000	0.896552	94

6. Batch-size : 16, training-testing ratio : 80/20, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_14"

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Layer (type) Output Shape Param #

==========

conv1d_36 (Conv1D) (None, 36, 64) 384

conv1d_37 (Conv1D) (None, 32, 64) 20544

max_pooling1d_14 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_78 (Dropout) (None, 16, 64) 0

conv1d_38 (Conv1D) (None, 12, 64) 20544

dropout_79 (Dropout) (None, 12, 64) 0

flatten_14 (Flatten) (None, 768) 0

dense_70 (Dense) (None, 100) 76900

activation_70 (Activation) (None, 100) 0

dropout_80 (Dropout) (None, 100) 0

dense_71 (Dense) (None, 200) 20200

activation_71 (Activation) (None, 200) 0

dropout_81 (Dropout) (None, 200) 0

dense_72 (Dense)	(None, 100)	20100
activation_72 (Activation)	(None, 100)	0
dropout_82 (Dropout)	(None, 100)	0
dense_73 (Dense)	(None, 200)	20200
activation_73 (Activation)	(None, 200)	0
dropout_83 (Dropout)	(None, 200)	0
dense_74 (Dense)	(None, 6)	1206
activation_74 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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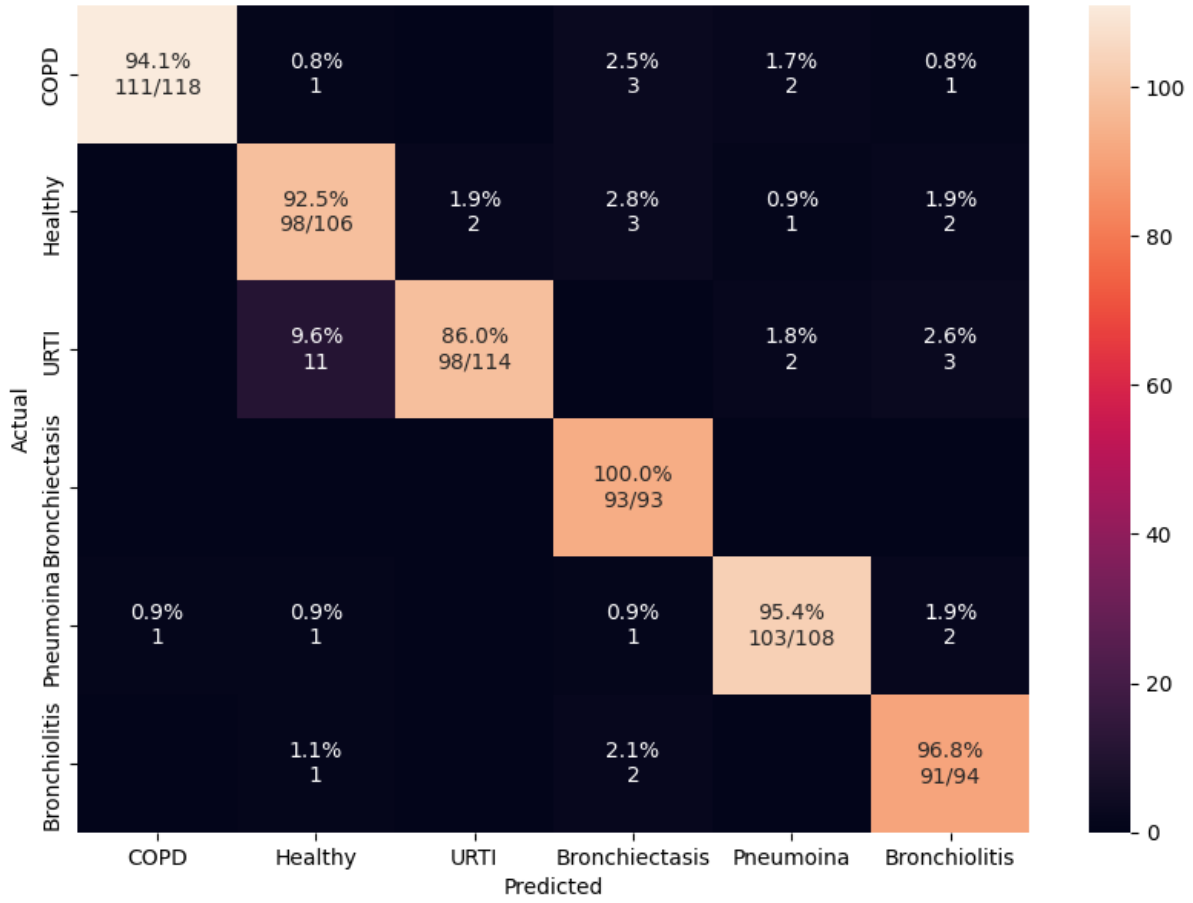
Training Accuracy: 0.9561091065406799

Testing Accuracy: 0.9383886456489563

Training loss: 0.12483733892440796

Testing loss: 0.20157139003276825



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998058	0.940678	0.940678	0.991071	0.965217	118
1	Healthy	0.973435	0.924528	0.924528	0.875000	0.899083	106
2	URTI	0.996146	0.859649	0.859649	0.980000	0.915888	114
3	Bronchiectasis	0.983333	1.000000	1.000000	0.911765	0.953846	93
4	Pneumoina	0.990476	0.953704	0.953704	0.953704	0.953704	108
5	Bronchiolitis	0.985158	0.968085	0.968085	0.919192	0.943005	94

7. Batch-size : 8, training-testing ratio : 80/20, dropout layer : 30%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_18"

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Layer (type) Output Shape Param #

conv1d_48 (Conv1D)	(None, 36, 64)	384
conv1d_49 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_18 (MaxPoolin g1D)	(None, 16, 64)	0
dropout_102 (Dropout)	(None, 16, 64)	0
flatten_18 (Flatten)	(None, 1024)	0
dense_90 (Dense)	(None, 100)	102500
activation_90 (Activation)	(None, 100)	0
dropout_103 (Dropout)	(None, 100)	0
dense_91 (Dense)	(None, 200)	20200
activation_91 (Activation)	(None, 200)	0
dropout_104 (Dropout)	(None, 200)	0
dense_92 (Dense)	(None, 100)	20100

activation_92 (Activation) (None, 100) 0

dropout_105 (Dropout) (None, 100) 0

dense_93 (Dense) (None, 200) 20200

activation_93 (Activation) (None, 200) 0

dropout_106 (Dropout) (None, 200) 0

dense_94 (Dense) (None, 6) 1206

activation_94 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

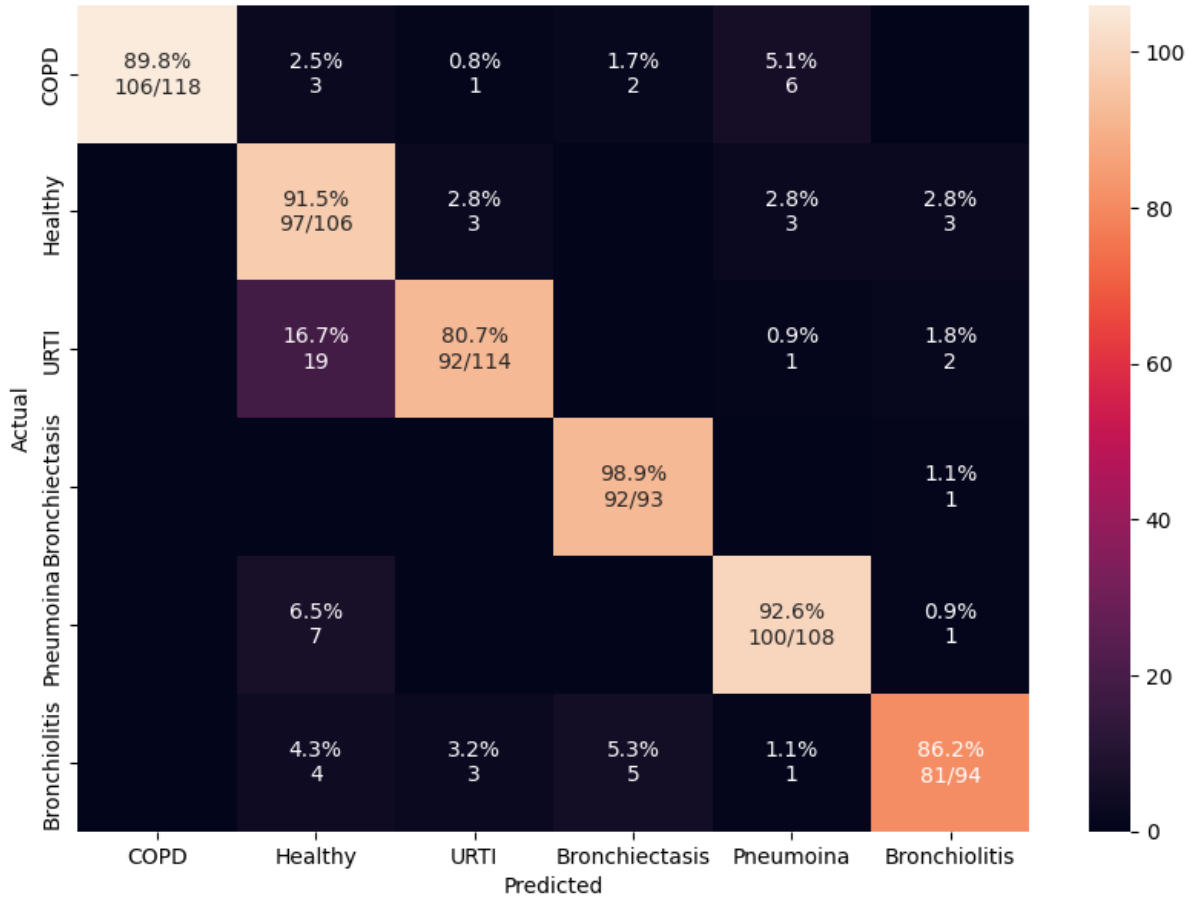
Non-trainable params: 0

Training Accuracy: 0.9134045243263245

Testing Accuracy: 0.8973143696784973

Training loss: 0.21545195579528809

Testing loss: 0.2959476411342621



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.898305	0.898305	1.000000	0.946429	118
1	Healthy	0.937381	0.915094	0.915094	0.746154	0.822034	106
2	URTI	0.986513	0.807018	0.807018	0.929293	0.863850	114
3	Bronchiectasis	0.987037	0.989247	0.989247	0.929293	0.958333	93
4	Pneumoina	0.979048	0.925926	0.925926	0.900901	0.913242	108
5	Bronchiolitis	0.987013	0.861702	0.861702	0.920455	0.890110	94

8. Batch-size : 8, training-testing ratio : 80/20, dropout layer : 30%, epochs : 100, optimizer :adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_24"

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Layer (type) Output Shape Param #

==========

conv1d_60 (Conv1D)	(None, 36, 64)	384
conv1d_61 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_24 (MaxPooling1D)	(None, 16, 64)	0
dropout_132 (Dropout)	(None, 16, 64)	0
conv1d_62 (Conv1D)	(None, 12, 64)	20544
dropout_133 (Dropout)	(None, 12, 64)	0
flatten_24 (Flatten)	(None, 768)	0
dense_120 (Dense)	(None, 100)	76900
activation_120 (Activation)	(None, 100)	0
dropout_134 (Dropout)	(None, 100)	0
dense_121 (Dense)	(None, 200)	20200
activation_121 (Activation)	(None, 200)	0
dropout_135 (Dropout)	(None, 200)	0

dense_122 (Dense)	(None, 100)	20100
activation_122 (Activation)	(None, 100)	0
dropout_136 (Dropout)	(None, 100)	0
dense_123 (Dense)	(None, 200)	20200
activation_123 (Activation)	(None, 200)	0
dropout_137 (Dropout)	(None, 200)	0
dense_124 (Dense)	(None, 6)	1206
activation_124 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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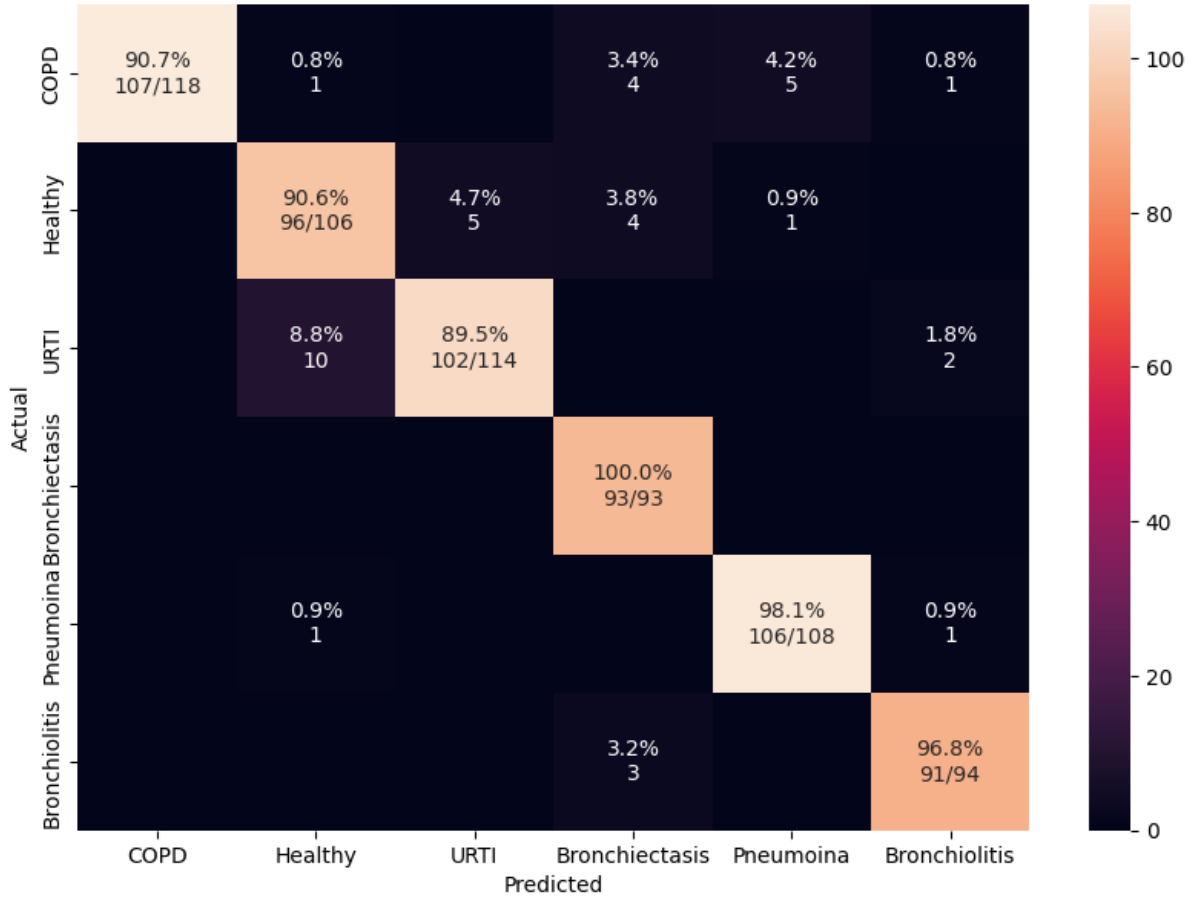
Training Accuracy: 0.9561091065406799

Testing Accuracy: 0.9399684071540833

Training loss: 0.11962633579969406

Testing loss: 0.18634524941444397



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.906780	0.906780	1.000000	0.951111	118
1	Healthy	0.977230	0.905660	0.905660	0.888889	0.897196	106
2	URTI	0.990366	0.894737	0.894737	0.953271	0.923077	114
3	Bronchiectasis	0.979630	1.000000	1.000000	0.894231	0.944162	93
4	Pneumoina	0.988571	0.981481	0.981481	0.946429	0.963636	108
5	Bronchiolitis	0.992579	0.968085	0.968085	0.957895	0.962963	94

9. Batch-size : 32, training-testing ratio : 80/20, dropout layer : 40%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_34"

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Layer (type)	Output Shape	Param #
conv1d_86 (Conv1D)	(None, 36, 64)	384
conv1d_87 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_34 (MaxPooling1D)	(None, 16, 64)	0
dropout_188 (Dropout)	(None, 16, 64)	0
flatten_34 (Flatten)	(None, 1024)	0
dense_170 (Dense)	(None, 100)	102500
activation_170 (Activation)	(None, 100)	0
dropout_189 (Dropout)	(None, 100)	0
dense_171 (Dense)	(None, 200)	20200
activation_171 (Activation)	(None, 200)	0
dropout_190 (Dropout)	(None, 200)	0
dense_172 (Dense)	(None, 100)	20100

activation_172 (Activation) (None, 100) 0

dropout_191 (Dropout) (None, 100) 0

dense_173 (Dense) (None, 200) 20200

activation_173 (Activation) (None, 200) 0

dropout_192 (Dropout) (None, 200) 0

dense_174 (Dense) (None, 6) 1206

activation_174 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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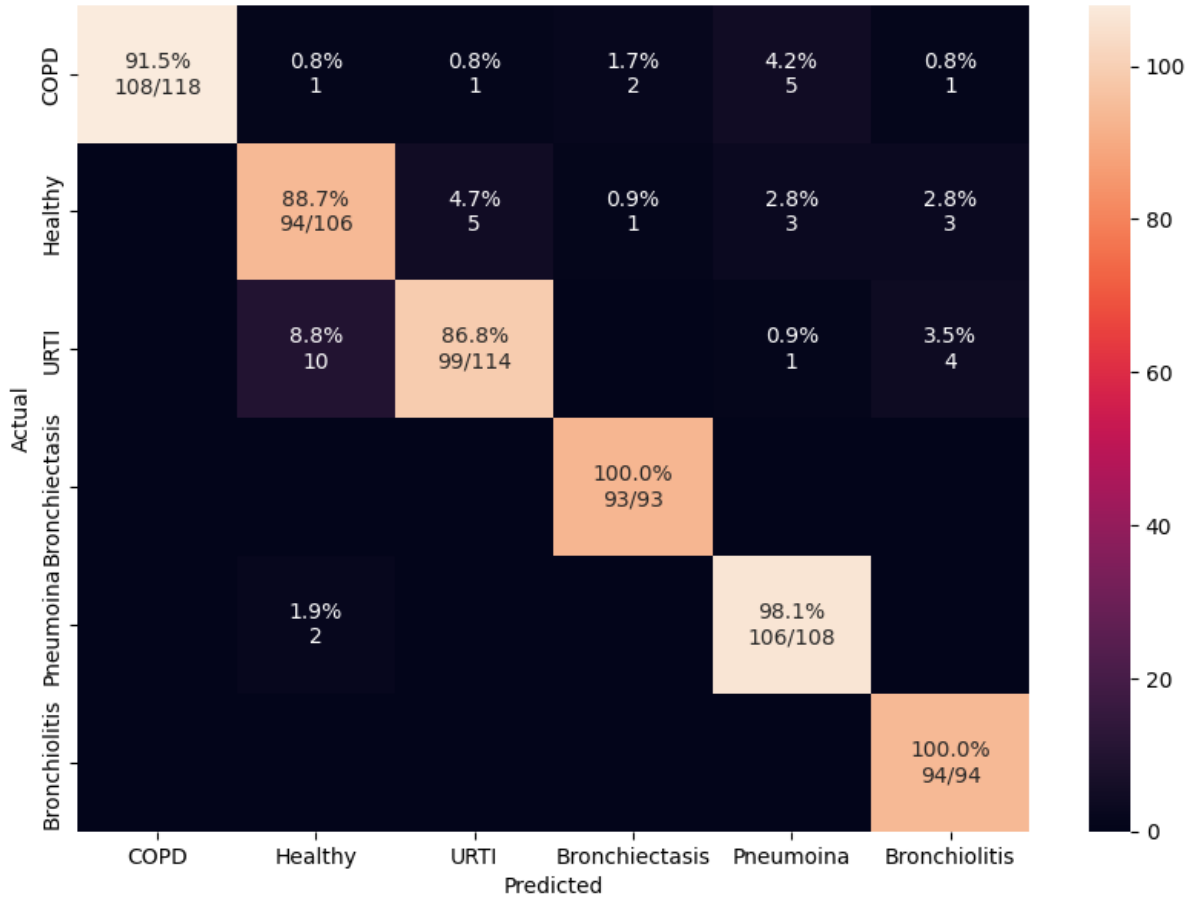
Training Accuracy: 0.9438513517379761

Testing Accuracy: 0.9383886456489563

Training loss: 0.1726582646369934

Testing loss: 0.23184074461460114



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.915254	0.915254	1.000000	0.955752	118
1	Healthy	0.975332	0.886792	0.886792	0.878505	0.882629	106
2	URTI	0.988439	0.868421	0.868421	0.942857	0.904110	114
3	Bronchiectasis	0.994444	1.000000	1.000000	0.968750	0.984127	93
4	Pneumoina	0.982857	0.981481	0.981481	0.921739	0.950673	108
5	Bronchiolitis	0.985158	1.000000	1.000000	0.921569	0.959184	94

10. Batch-size : 32, training-testing ratio : 80/20, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_38"

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Layer (type) Output Shape Param #

==========

conv1d_96 (Conv1D) (None, 36, 64) 384

conv1d_97 (Conv1D) (None, 32, 64) 20544

max_pooling1d_38 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_210 (Dropout) (None, 16, 64) 0

conv1d_98 (Conv1D) (None, 12, 64) 20544

dropout_211 (Dropout) (None, 12, 64) 0

flatten_38 (Flatten) (None, 768) 0

dense_190 (Dense) (None, 100) 76900

activation_190 (Activation) (None, 100) 0

dropout_212 (Dropout) (None, 100) 0

dense_191 (Dense) (None, 200) 20200

activation_191 (Activation) (None, 200) 0

dropout_213 (Dropout) (None, 200) 0

dense_192 (Dense) (None, 100) 20100

activation_192 (Activation) (None, 100) 0

dropout_214 (Dropout) (None, 100) 0

dense_193 (Dense) (None, 200) 20200

activation_193 (Activation) (None, 200) 0

dropout_215 (Dropout) (None, 200) 0

dense_194 (Dense) (None, 6) 1206

activation_194 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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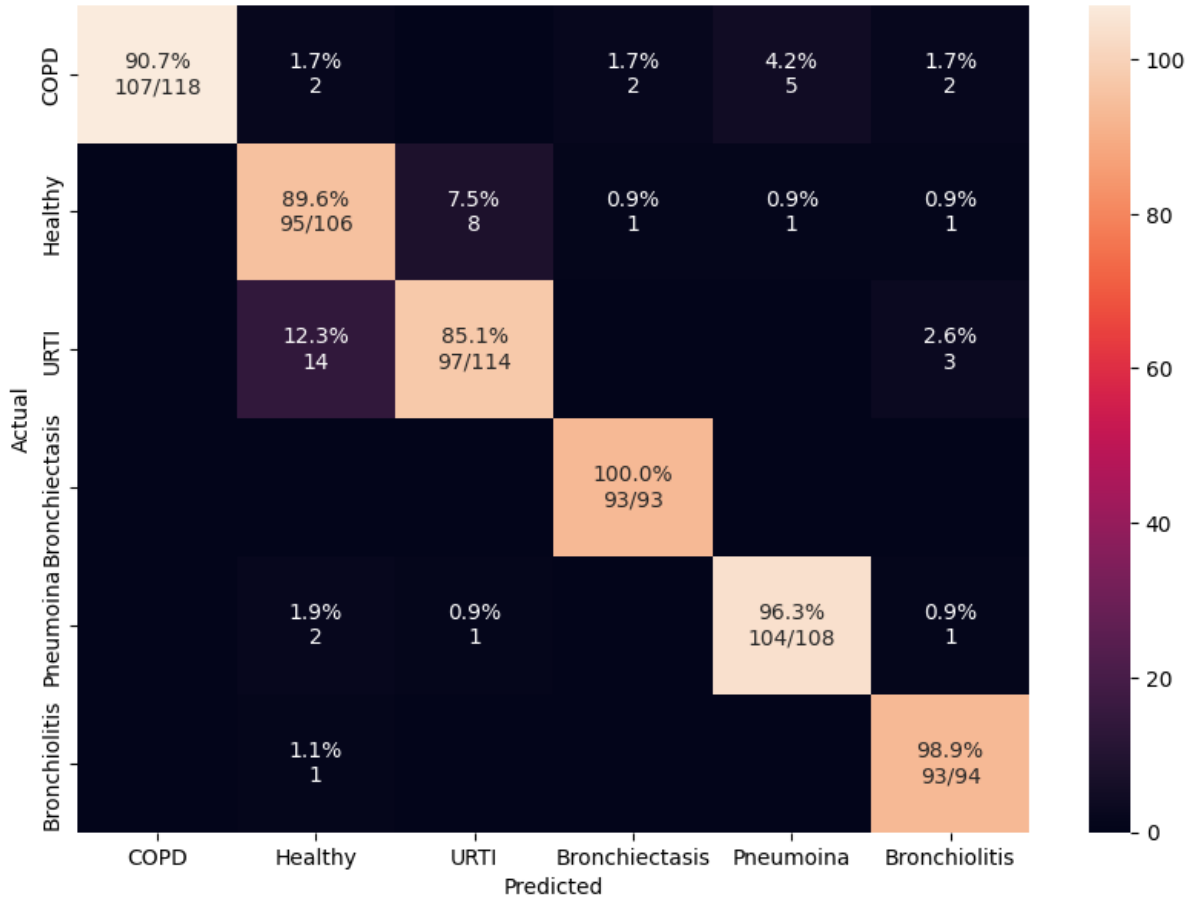
Training Accuracy: 0.9406880140304565

Testing Accuracy: 0.930489718914032

Training loss: 0.18676301836967468

Testing loss: 0.2116502821445465



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.906780	0.906780	1.000000	0.951111	118
1	Healthy	0.963947	0.896226	0.896226	0.833333	0.863636	106
2	URTI	0.982659	0.850877	0.850877	0.915094	0.881818	114
3	Bronchiectasis	0.994444	1.000000	1.000000	0.968750	0.984127	93
4	Pneumoina	0.988571	0.962963	0.962963	0.945455	0.954128	108
5	Bronchiolitis	0.987013	0.989362	0.989362	0.930000	0.958763	94

11. Batch-size : 32, training-testing ratio : 90/10, dropout layer : 50%, epochs : 100, optimizer :Adam , Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_42"

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Layer (type) Output Shape Param #

==========

conv1d_108 (Conv1D) (None, 36, 64) 384

conv1d_109 (Conv1D) (None, 32, 64) 20544

max_pooling1d_42 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_234 (Dropout) (None, 16, 64) 0

conv1d_110 (Conv1D) (None, 12, 64) 20544

dropout_235 (Dropout) (None, 12, 64) 0

flatten_42 (Flatten) (None, 768) 0

dense_210 (Dense) (None, 100) 76900

activation_210 (Activation) (None, 100) 0

dropout_236 (Dropout) (None, 100) 0

dense_211 (Dense) (None, 200) 20200

activation_211 (Activation) (None, 200) 0

dropout_237 (Dropout) (None, 200) 0

dense_212 (Dense) (None, 100) 20100

activation_212 (Activation) (None, 100) 0

dropout_238 (Dropout) (None, 100) 0

dense_213 (Dense) (None, 200) 20200

activation_213 (Activation) (None, 200) 0

dropout_239 (Dropout) (None, 200) 0

dense_214 (Dense) (None, 6) 1206

activation_214 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

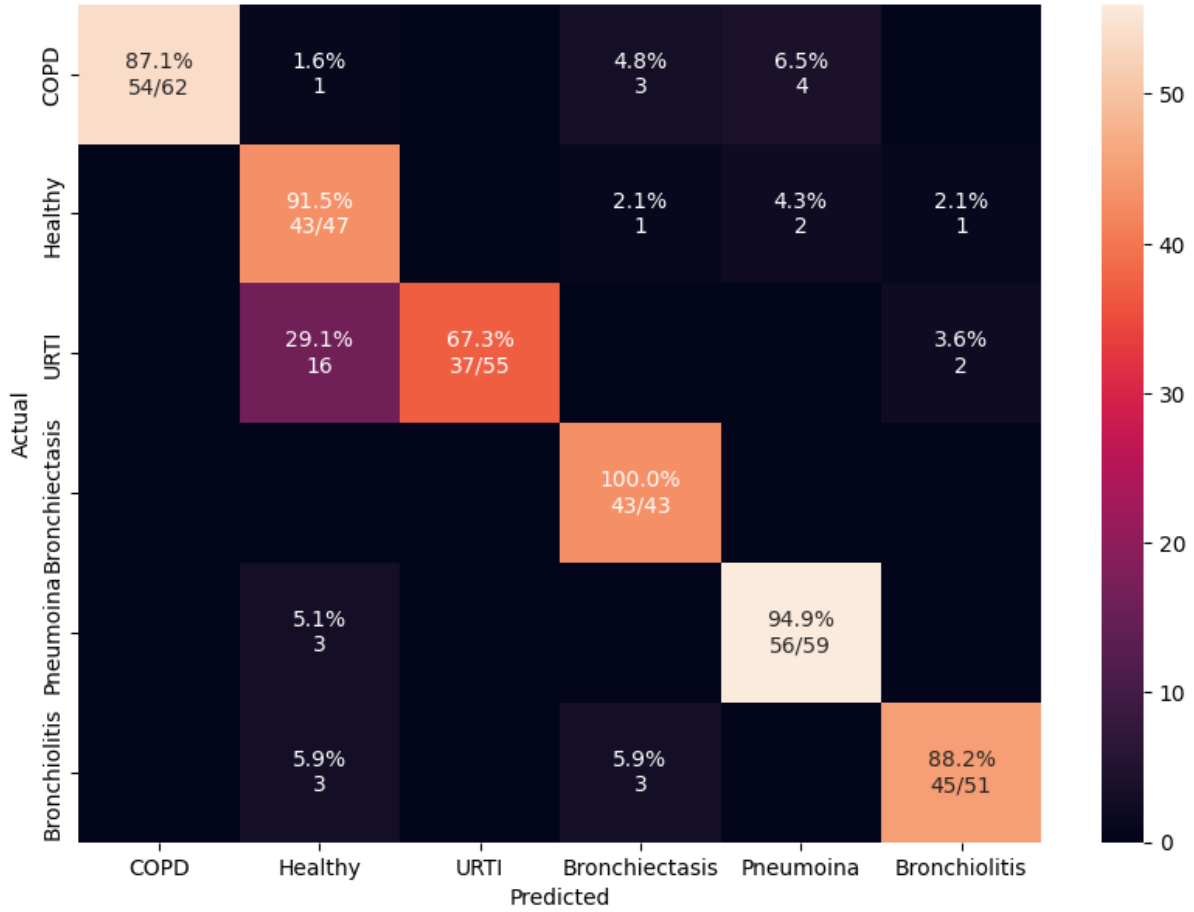
Non-trainable params: 0

Training Accuracy: 0.8794376254081726

Testing Accuracy: 0.8769716024398804

Training loss: 0.30924925208091736

Testing loss: 0.33829009532928467



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.870968	0.870968	1.000000	0.931034	62
1	Healthy	0.914815	0.914894	0.914894	0.651515	0.761062	47
2	URTI	1.000000	0.672727	0.672727	1.000000	0.804348	55
3	Bronchiectasis	0.974453	1.000000	1.000000	0.860000	0.924731	43
4	Pneumoina	0.976744	0.949153	0.949153	0.903226	0.925620	59
5	Bronchiolitis	0.988722	0.882353	0.882353	0.937500	0.909091	51

12. Batch-size : 8, training-testing ratio : 90/10, dropout layer : 30%, epochs : 100, optimizer :Adam , Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_52"

Layer (type)	Output Shape	Param #
conv1d_138 (Conv1D)	(None, 36, 64)	384
conv1d_139 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_52 (MaxPooling1D)	(None, 16, 64)	0
dropout_294 (Dropout)	(None, 16, 64)	0
conv1d_140 (Conv1D)	(None, 12, 64)	20544
dropout_295 (Dropout)	(None, 12, 64)	0
flatten_52 (Flatten)	(None, 768)	0
dense_260 (Dense)	(None, 100)	76900
activation_260 (Activation)	(None, 100)	0
dropout_296 (Dropout)	(None, 100)	0
dense_261 (Dense)	(None, 200)	20200

activation_261 (Activation) (None, 200) 0

dropout_297 (Dropout) (None, 200) 0

dense_262 (Dense) (None, 100) 20100

activation_262 (Activation) (None, 100) 0

dropout_298 (Dropout) (None, 100) 0

dense_263 (Dense) (None, 200) 20200

activation_263 (Activation) (None, 200) 0

dropout_299 (Dropout) (None, 200) 0

dense_264 (Dense) (None, 6) 1206

activation_264 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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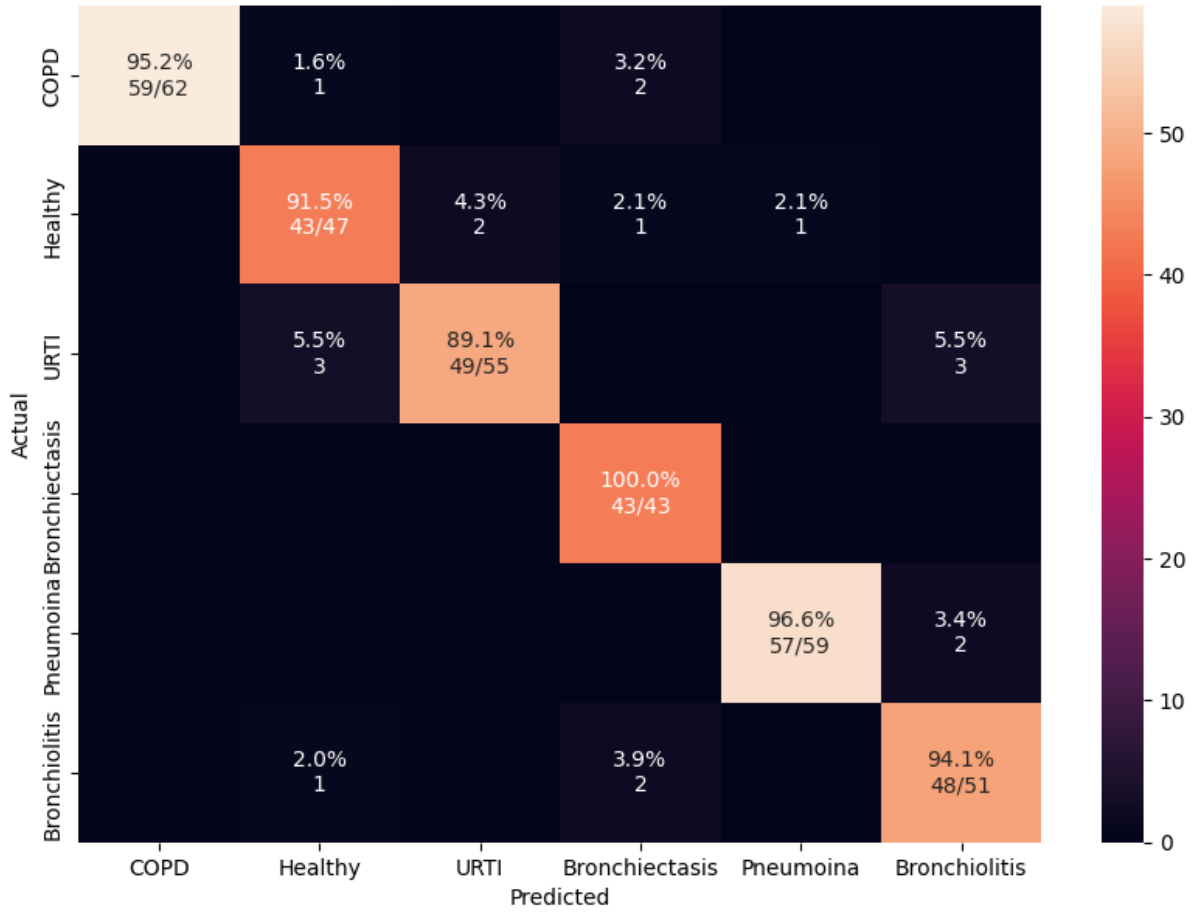
Training Accuracy: 0.9514938592910767

Testing Accuracy: 0.9432176947593689

Training loss: 0.12887805700302124

Testing loss: 0.17303842306137085



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.951613	0.951613	1.000000	0.975207	62
1	Healthy	0.981481	0.914894	0.914894	0.895833	0.905263	47
2	URTI	0.992366	0.890909	0.890909	0.960784	0.924528	55
3	Bronchiectasis	0.981752	1.000000	1.000000	0.895833	0.945055	43
4	Pneumoina	0.996124	0.966102	0.966102	0.982759	0.974359	59
5	Bronchiolitis	0.981203	0.941176	0.941176	0.905660	0.923077	51

13. Batch-size : 8, training-testing ratio : 90/10, dropout layer : 30%, epochs : 100, optimizer :RMSprop , Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_54"

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Layer (type)	Output Shape	Param #
conv1d_144 (Conv1D)	(None, 36, 64)	384
conv1d_145 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_54 (MaxPoolin g1D)	(None, 16, 64)	0
dropout_306 (Dropout)	(None, 16, 64)	0
flatten_54 (Flatten)	(None, 1024)	0
dense_270 (Dense)	(None, 100)	102500
activation_270 (Activation)	(None, 100)	0
dropout_307 (Dropout)	(None, 100)	0
dense_271 (Dense)	(None, 200)	20200
activation_271 (Activation)	(None, 200)	0
dropout_308 (Dropout)	(None, 200)	0

dense_272 (Dense)	(None, 100)	20100
activation_272 (Activation)	(None, 100)	0
dropout_309 (Dropout)	(None, 100)	0
dense_273 (Dense)	(None, 200)	20200
activation_273 (Activation)	(None, 200)	0
dropout_310 (Dropout)	(None, 200)	0
dense_274 (Dense)	(None, 6)	1206
activation_274 (Activation)	(None, 6)	0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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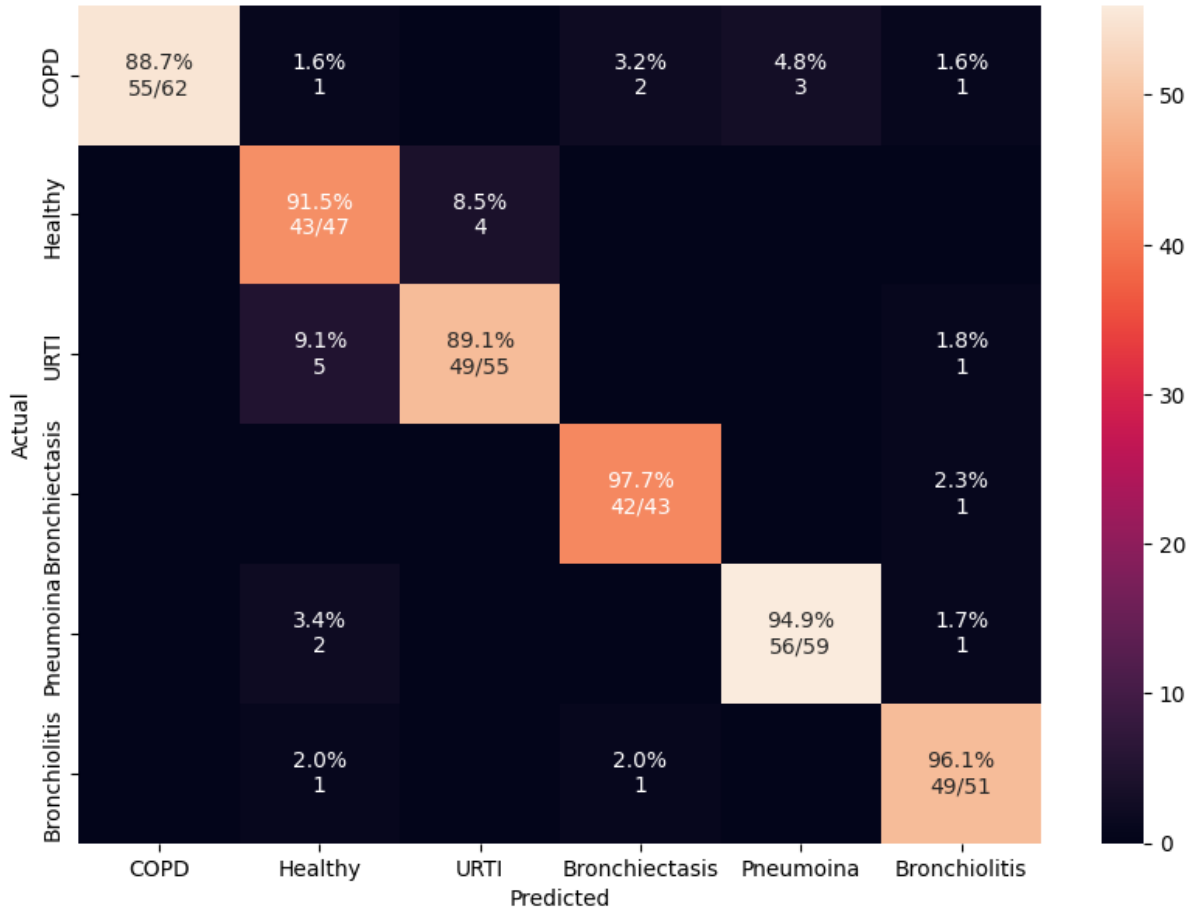
Training Accuracy: 0.926537811756134

Testing Accuracy: 0.9274448156356812

Training loss: 0.20858386158943176

Testing loss: 0.2351873815059662



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.887097	0.887097	1.000000	0.940171	62
1	Healthy	0.966667	0.914894	0.914894	0.826923	0.868687	47
2	URTI	0.984733	0.890909	0.890909	0.924528	0.907407	55
3	Bronchiectasis	0.989051	0.976744	0.976744	0.933333	0.954545	43
4	Pneumoina	0.988372	0.949153	0.949153	0.949153	0.949153	59
5	Bronchiolitis	0.984962	0.960784	0.960784	0.924528	0.942308	51

14. Batch-size : 32, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :Adam , Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_4"

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Layer (type)	Output Shape	Param #
conv1d_12 (Conv1D)	(None, 36, 64)	384
conv1d_13 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_4 (MaxPooling 1D)	(None, 16, 64)	0
dropout_24 (Dropout)	(None, 16, 64)	0
conv1d_14 (Conv1D)	(None, 12, 64)	20544
dropout_25 (Dropout)	(None, 12, 64)	0
flatten_4 (Flatten)	(None, 768)	0
dense_20 (Dense)	(None, 100)	76900
activation_20 (Activation)	(None, 100)	0
dropout_26 (Dropout)	(None, 100)	0
dense_21 (Dense)	(None, 200)	20200
activation_21 (Activation)	(None, 200)	0

dropout_27 (Dropout)	(None, 200)	0
dense_22 (Dense)	(None, 100)	20100
activation_22 (Activation)	(None, 100)	0
dropout_28 (Dropout)	(None, 100)	0
dense_23 (Dense)	(None, 200)	20200
activation_23 (Activation)	(None, 200)	0
dropout_29 (Dropout)	(None, 200)	0
dense_24 (Dense)	(None, 6)	1206
activation_24 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

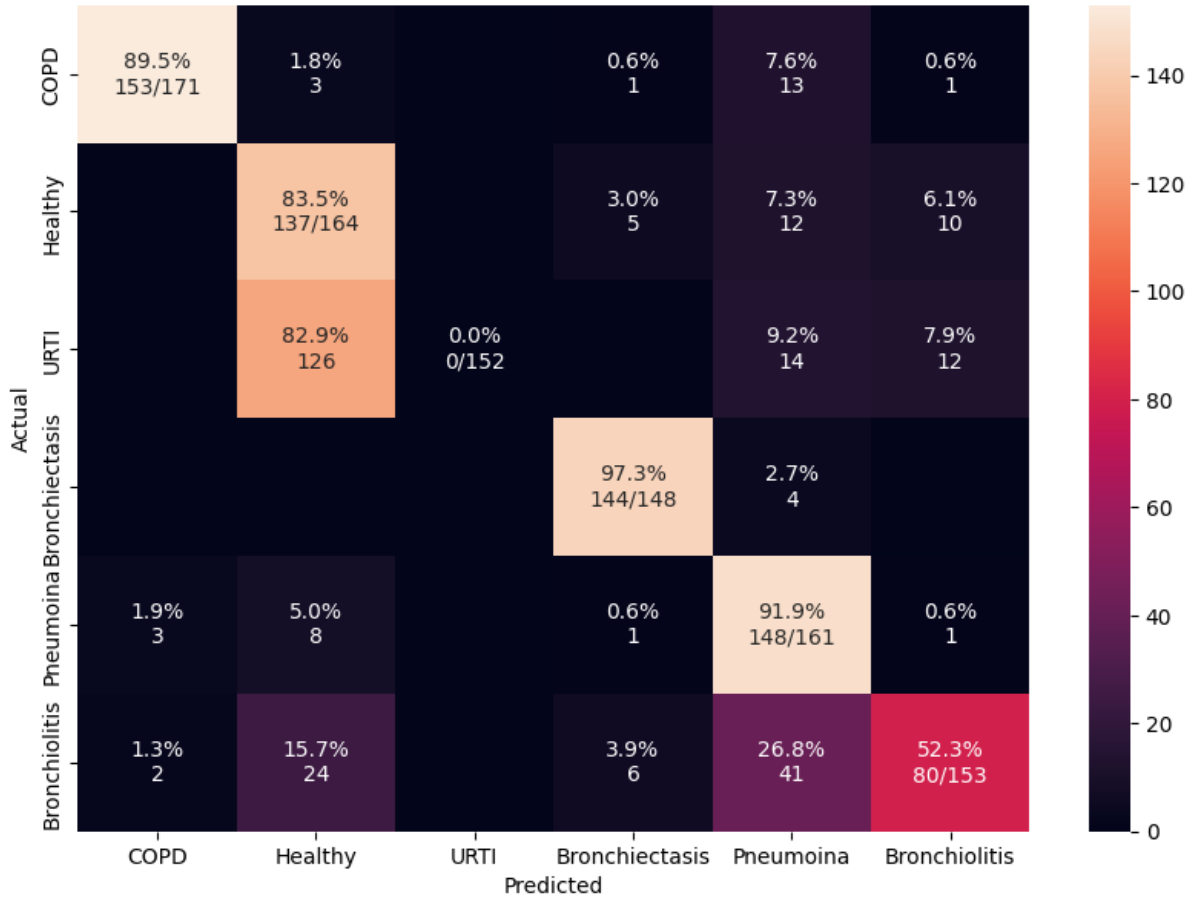
_____

Training Accuracy: 0.6985991597175598

Testing Accuracy: 0.6975764036178589

Training loss: 0.7015374898910522

Testing loss: 0.7145811915397644



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.993573	0.894737	0.894737	0.968354	0.930091	171
1	Healthy	0.794904	0.835366	0.835366	0.459732	0.593074	164
2	URTI	1.000000	0.000000	0.000000	0.000000	0.000000	152
3	Bronchiectasis	0.983770	0.972973	0.972973	0.917197	0.944262	148
4	Pneumoina	0.893401	0.919255	0.919255	0.637931	0.753181	161
5	Bronchiolitis	0.969849	0.522876	0.522876	0.769231	0.622568	153

15. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 40%, epochs : 100, optimizer :RMSprop , Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_8"

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Layer (type)	Output Shape	Param #
conv1d_24 (Conv1D)	(None, 36, 64)	384
conv1d_25 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_8 (MaxPooling 1D)	(None, 16, 64)	0
dropout_48 (Dropout)	(None, 16, 64)	0
conv1d_26 (Conv1D)	(None, 12, 64)	20544
dropout_49 (Dropout)	(None, 12, 64)	0
flatten_8 (Flatten)	(None, 768)	0
dense_40 (Dense)	(None, 100)	76900
activation_40 (Activation)	(None, 100)	0
dropout_50 (Dropout)	(None, 100)	0
dense_41 (Dense)	(None, 200)	20200

activation_41 (Activation) (None, 200) 0

dropout_51 (Dropout) (None, 200) 0

dense_42 (Dense) (None, 100) 20100

activation_42 (Activation) (None, 100) 0

dropout_52 (Dropout) (None, 100) 0

dense_43 (Dense) (None, 200) 20200

activation_43 (Activation) (None, 200) 0

dropout_53 (Dropout) (None, 200) 0

dense_44 (Dense) (None, 6) 1206

activation_44 (Activation) (None, 6) 0

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Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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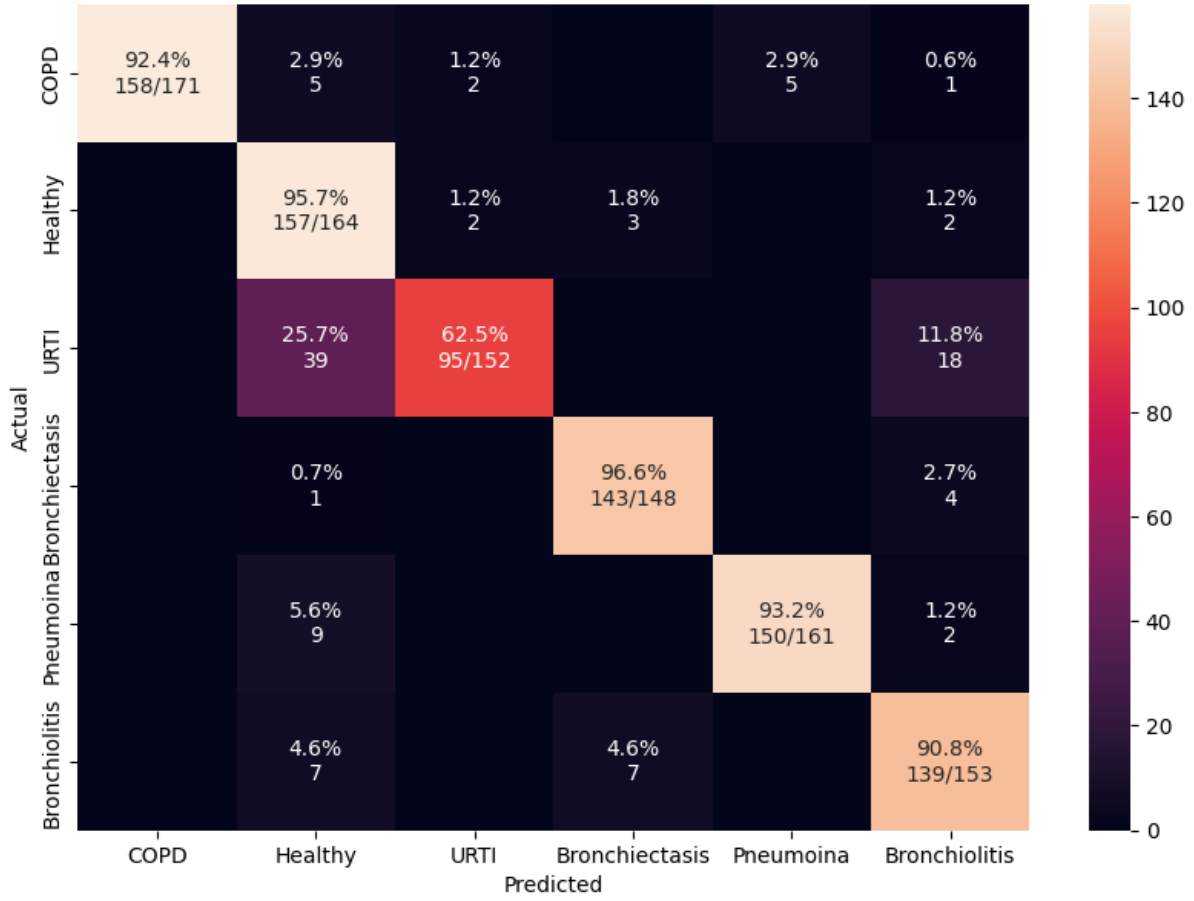
Training Accuracy: 0.890194296836853

Testing Accuracy: 0.8872497081756592

Training loss: 0.3041096329689026

Testing loss: 0.3299618661403656



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.923977	0.923977	1.000000	0.960486	171
1	Healthy	0.922293	0.957317	0.957317	0.720183	0.821990	164
2	URTI	0.994981	0.625000	0.625000	0.959596	0.756972	152
3	Bronchiectasis	0.987516	0.966216	0.966216	0.934641	0.950166	148
4	Pneumoina	0.993655	0.931677	0.931677	0.967742	0.949367	161
5	Bronchiolitis	0.966080	0.908497	0.908497	0.837349	0.871473	153

16. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_16"

Layer (type)	Output Shape	Param #
conv1d_48 (Conv1D)	(None, 36, 64)	384
conv1d_49 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_16 (MaxPoolin g1D)	(None, 16, 64)	0
dropout_96 (Dropout)	(None, 16, 64)	0
conv1d_50 (Conv1D)	(None, 12, 64)	20544
dropout_97 (Dropout)	(None, 12, 64)	0
flatten_16 (Flatten)	(None, 768)	0
dense_80 (Dense)	(None, 100)	76900
activation_80 (Activation)	(None, 100)	0
dropout_98 (Dropout)	(None, 100)	0
dense_81 (Dense)	(None, 200)	20200

activation_81 (Activation) (None, 200) 0

dropout_99 (Dropout) (None, 200) 0

dense_82 (Dense) (None, 100) 20100

activation_82 (Activation) (None, 100) 0

dropout_100 (Dropout) (None, 100) 0

dense_83 (Dense) (None, 200) 20200

activation_83 (Activation) (None, 200) 0

dropout_101 (Dropout) (None, 200) 0

dense_84 (Dense) (None, 6) 1206

activation_84 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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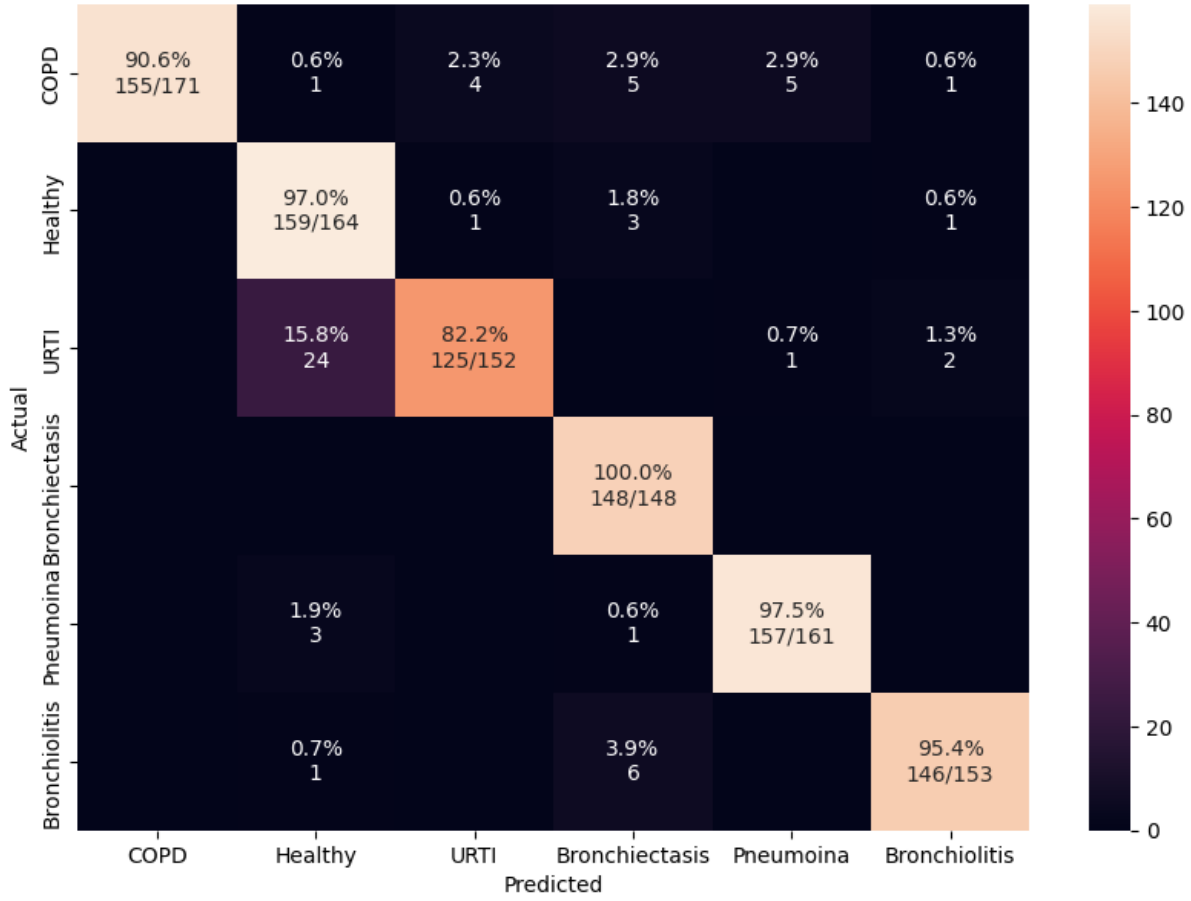
Training Accuracy: 0.9412562251091003

Testing Accuracy: 0.937829315662384

Training loss: 0.14993292093276978

Testing loss: 0.18501706421375275



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.906433	0.906433	1.000000	0.950920	171
1	Healthy	0.963057	0.969512	0.969512	0.845745	0.903409	164
2	URTI	0.993726	0.822368	0.822368	0.961538	0.886525	152
3	Bronchiectasis	0.981273	1.000000	1.000000	0.907975	0.951768	148
4	Pneumoina	0.992386	0.975155	0.975155	0.963190	0.969136	161
5	Bronchiolitis	0.994975	0.954248	0.954248	0.973333	0.963696	153

17. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_20"

Layer (type)	Output Shape	Param #
conv1d_58 (Conv1D)	(None, 36, 64)	384
conv1d_59 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_20 (MaxPooling1D)	(None, 16, 64)	0
dropout_118 (Dropout)	(None, 16, 64)	0
flatten_20 (Flatten)	(None, 1024)	0
dense_100 (Dense)	(None, 100)	102500
activation_100 (Activation)	(None, 100)	0
dropout_119 (Dropout)	(None, 100)	0
dense_101 (Dense)	(None, 200)	20200
activation_101 (Activation)	(None, 200)	0
dropout_120 (Dropout)	(None, 200)	0

dense_102 (Dense)	(None, 100)	20100
activation_102 (Activation)	(None, 100)	0
dropout_121 (Dropout)	(None, 100)	0
dense_103 (Dense)	(None, 200)	20200
activation_103 (Activation)	(None, 200)	0
dropout_122 (Dropout)	(None, 200)	0
dense_104 (Dense)	(None, 6)	1206
activation_104 (Activation)	(None, 6)	0

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Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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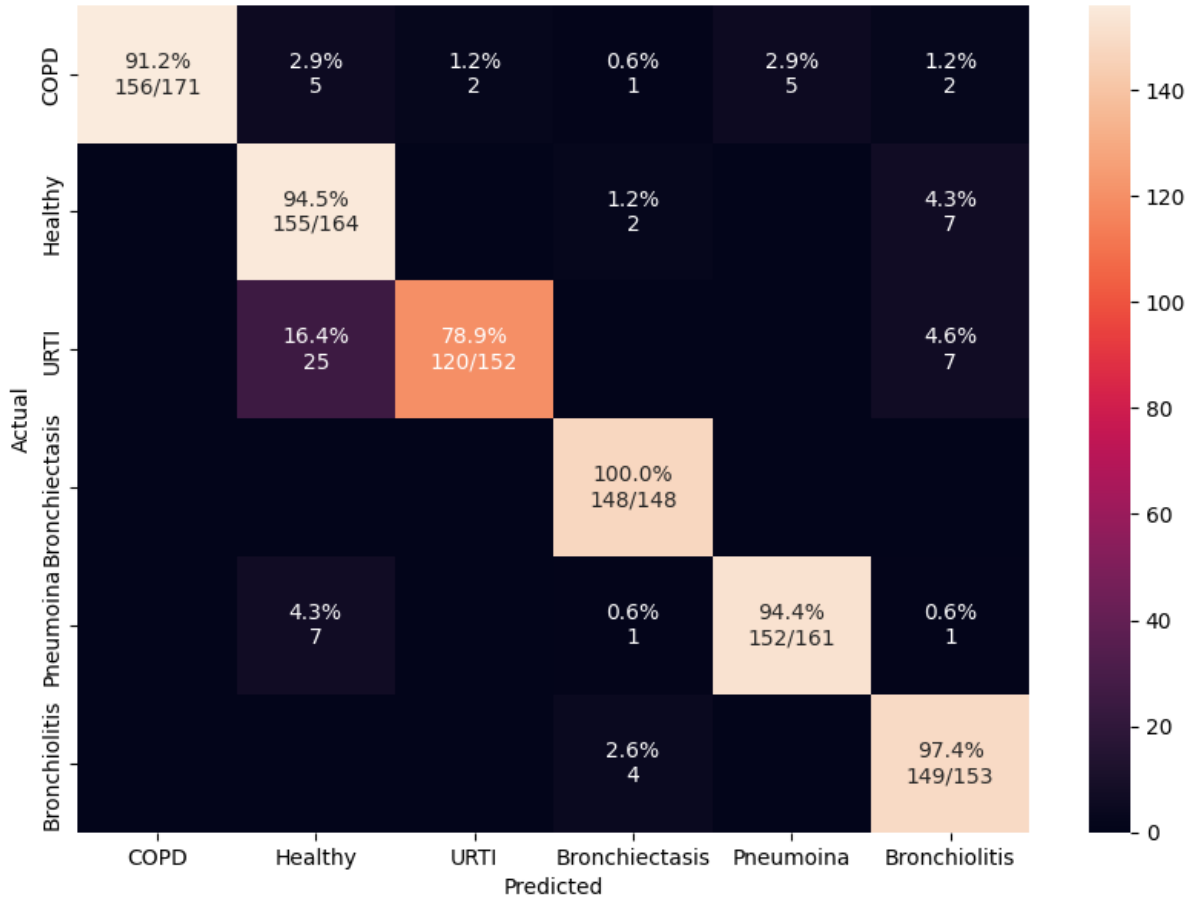
Training Accuracy: 0.9227293133735657

Testing Accuracy: 0.9272918701171875

Training loss: 0.20370566844940186

Testing loss: 0.24470750987529755



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.912281	0.912281	1.000000	0.954128	171
1	Healthy	0.952866	0.945122	0.945122	0.807292	0.870787	164
2	URTI	0.997491	0.789474	0.789474	0.983607	0.875912	152
3	Bronchiectasis	0.990012	1.000000	1.000000	0.948718	0.973684	148
4	Pneumoina	0.993655	0.944099	0.944099	0.968153	0.955975	161
5	Bronchiolitis	0.978643	0.973856	0.973856	0.897590	0.934169	153

18. Batch-size : 16, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_26"

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Layer (type) Output Shape Param #

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conv1d_72 (Conv1D) (None, 36, 64) 384

conv1d_73 (Conv1D) (None, 32, 64) 20544

max_pooling1d_26 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_150 (Dropout) (None, 16, 64) 0

conv1d_74 (Conv1D) (None, 12, 64) 20544

dropout_151 (Dropout) (None, 12, 64) 0

flatten_26 (Flatten) (None, 768) 0

dense_130 (Dense) (None, 100) 76900

activation_130 (Activation) (None, 100) 0

dropout_152 (Dropout) (None, 100) 0

dense_131 (Dense) (None, 200) 20200

activation_131 (Activation) (None, 200) 0

dropout_153 (Dropout)	(None, 200)	0
dense_132 (Dense)	(None, 100)	20100
activation_132 (Activation)	(None, 100)	0
dropout_154 (Dropout)	(None, 100)	0
dense_133 (Dense)	(None, 200)	20200
activation_133 (Activation)	(None, 200)	0
dropout_155 (Dropout)	(None, 200)	0
dense_134 (Dense)	(None, 6)	1206
activation_134 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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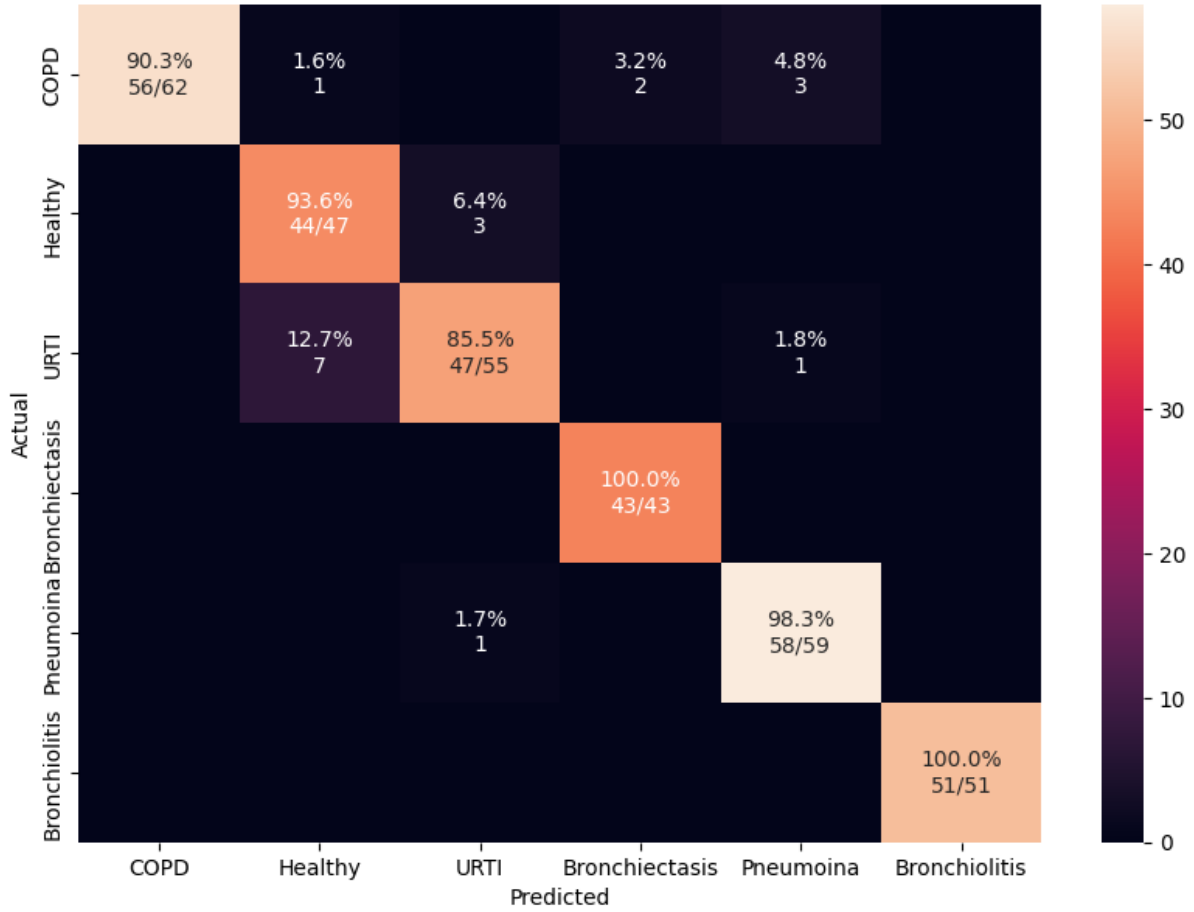
Training Accuracy: 0.9623901844024658

Testing Accuracy: 0.9432176947593689

Training loss: 0.12280203402042389

Testing loss: 0.15045423805713654



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.903226	0.903226	1.000000	0.949153	62
1	Healthy	0.970370	0.936170	0.936170	0.846154	0.888889	47
2	URTI	0.984733	0.854545	0.854545	0.921569	0.886792	55
3	Bronchiectasis	0.992701	1.000000	1.000000	0.955556	0.977273	43
4	Pneumoina	0.984496	0.983051	0.983051	0.935484	0.958678	59
5	Bronchiolitis	1.000000	1.000000	1.000000	1.000000	1.000000	51

19. Batch-size : 16, training-testing ratio : 80/20, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_30"

Layer (type)	Output Shape	Param #
conv1d_84 (Conv1D)	(None, 36, 64)	384
conv1d_85 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_30 (MaxPooling1D)	(None, 16, 64)	0
dropout_174 (Dropout)	(None, 16, 64)	0
conv1d_86 (Conv1D)	(None, 12, 64)	20544
dropout_175 (Dropout)	(None, 12, 64)	0
flatten_30 (Flatten)	(None, 768)	0
dense_150 (Dense)	(None, 100)	76900
activation_150 (Activation)	(None, 100)	0
dropout_176 (Dropout)	(None, 100)	0
dense_151 (Dense)	(None, 200)	20200

activation_151 (Activation) (None, 200) 0

dropout_177 (Dropout) (None, 200) 0

dense_152 (Dense) (None, 100) 20100

activation_152 (Activation) (None, 100) 0

dropout_178 (Dropout) (None, 100) 0

dense_153 (Dense) (None, 200) 20200

activation_153 (Activation) (None, 200) 0

dropout_179 (Dropout) (None, 200) 0

dense_154 (Dense) (None, 6) 1206

activation_154 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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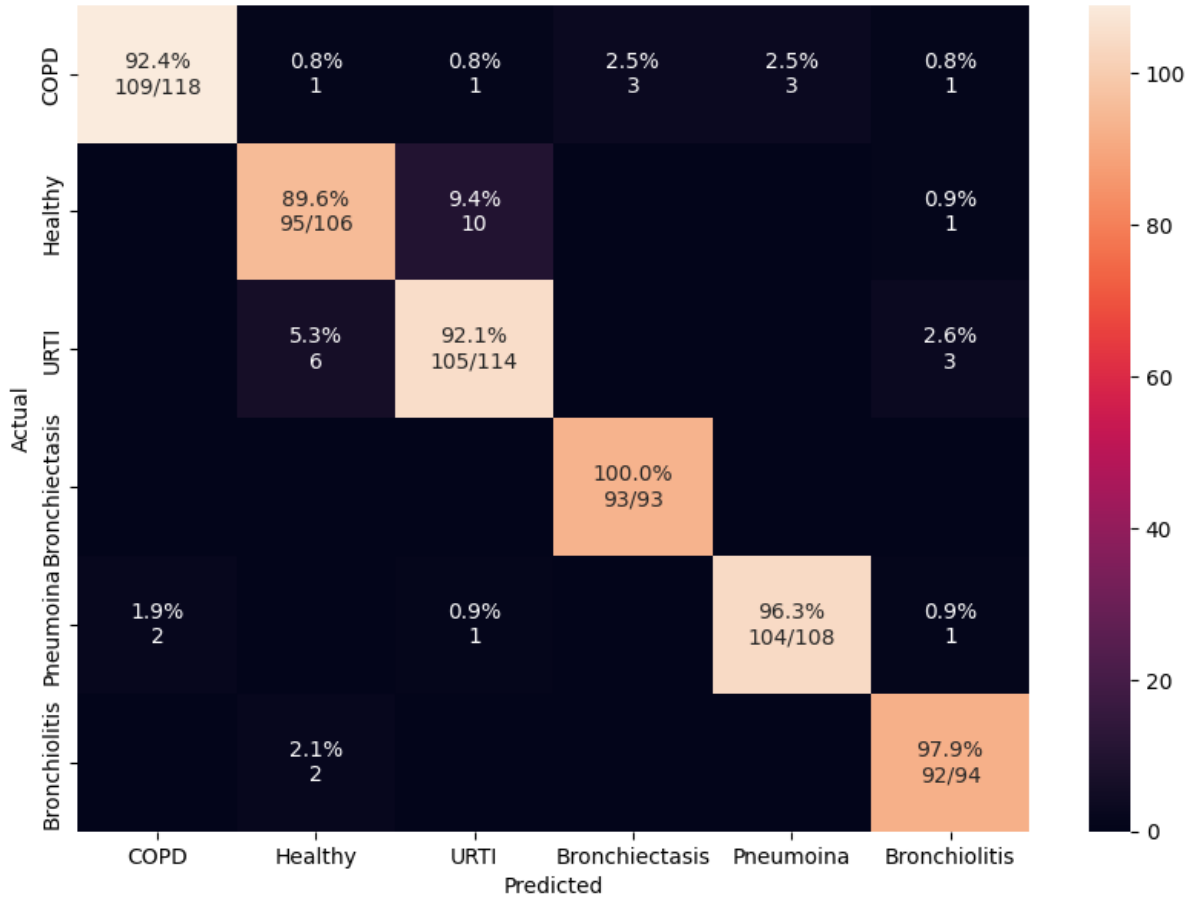
Training Accuracy: 0.9671807289123535

Testing Accuracy: 0.9447077512741089

Training loss: 0.10311418771743774

Testing loss: 0.19118116796016693



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.996117	0.923729	0.923729	0.981982	0.951965	118
1	Healthy	0.982922	0.896226	0.896226	0.913462	0.904762	106
2	URTI	0.976879	0.921053	0.921053	0.897436	0.909091	114
3	Bronchiectasis	0.994444	1.000000	1.000000	0.968750	0.984127	93
4	Pneumoina	0.994286	0.962963	0.962963	0.971963	0.967442	108
5	Bronchiolitis	0.988868	0.978723	0.978723	0.938776	0.958333	94

20. Batch-size : 16, training-testing ratio : 80/20, dropout layer : 50%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_38"

Layer (type)	Output Shape	Param #
conv1d_108 (Conv1D)	(None, 36, 64)	384
conv1d_109 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_38 (MaxPooling1D)	(None, 16, 64)	0
dropout_222 (Dropout)	(None, 16, 64)	0
conv1d_110 (Conv1D)	(None, 12, 64)	20544
dropout_223 (Dropout)	(None, 12, 64)	0
flatten_38 (Flatten)	(None, 768)	0
dense_190 (Dense)	(None, 100)	76900
activation_190 (Activation)	(None, 100)	0
dropout_224 (Dropout)	(None, 100)	0
dense_191 (Dense)	(None, 200)	20200

activation_191 (Activation) (None, 200) 0

dropout_225 (Dropout) (None, 200) 0

dense_192 (Dense) (None, 100) 20100

activation_192 (Activation) (None, 100) 0

dropout_226 (Dropout) (None, 100) 0

dense_193 (Dense) (None, 200) 20200

activation_193 (Activation) (None, 200) 0

dropout_227 (Dropout) (None, 200) 0

dense_194 (Dense) (None, 6) 1206

activation_194 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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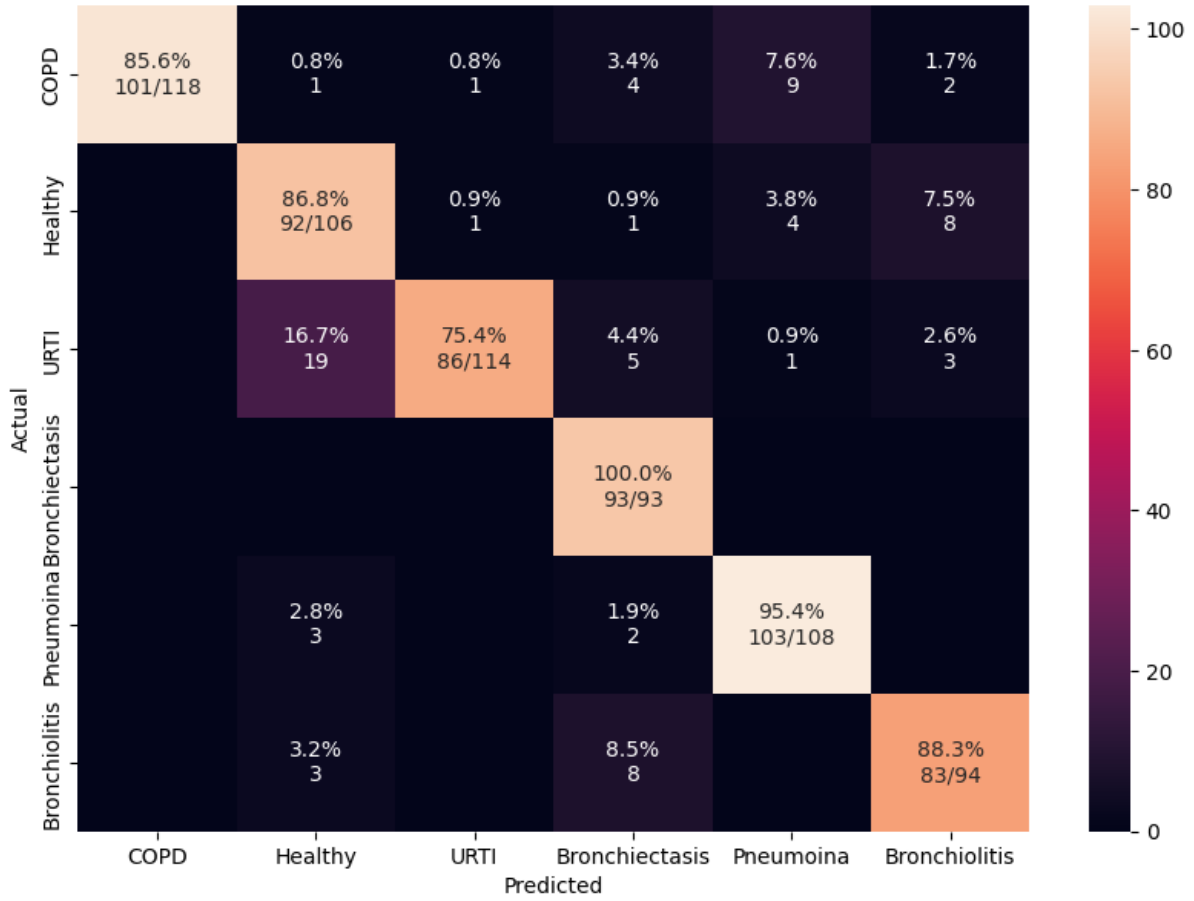
Training Accuracy: 0.8829576969146729

Testing Accuracy: 0.8815165758132935

Training loss: 0.307261198759079

Testing loss: 0.34332388639450073



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.855932	0.855932	1.000000	0.922374	118
1	Healthy	0.950664	0.867925	0.867925	0.779661	0.821429	106
2	URTI	0.996146	0.754386	0.754386	0.977273	0.851485	114
3	Bronchiectasis	0.962963	1.000000	1.000000	0.823009	0.902913	93
4	Pneumoina	0.973333	0.953704	0.953704	0.880342	0.915556	108
5	Bronchiolitis	0.975881	0.882979	0.882979	0.864583	0.873684	94

21. Batch-size : 8, training-testing ratio : 80/20, dropout layer : 40%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_44"

Layer (type)	Output Shape	Param #
conv1d_124 (Conv1D)	(None, 36, 64)	384
conv1d_125 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_44 (MaxPooling1D)	(None, 16, 64)	0
dropout_256 (Dropout)	(None, 16, 64)	0
flatten_44 (Flatten)	(None, 1024)	0
dense_220 (Dense)	(None, 100)	102500
activation_220 (Activation)	(None, 100)	0
dropout_257 (Dropout)	(None, 100)	0
dense_221 (Dense)	(None, 200)	20200
activation_221 (Activation)	(None, 200)	0
dropout_258 (Dropout)	(None, 200)	0

dense_222 (Dense) (None, 100) 20100

activation_222 (Activation) (None, 100) 0

dropout_259 (Dropout) (None, 100) 0

dense_223 (Dense) (None, 200) 20200

activation_223 (Activation) (None, 200) 0

dropout_260 (Dropout) (None, 200) 0

dense_224 (Dense) (None, 6) 1206

activation_224 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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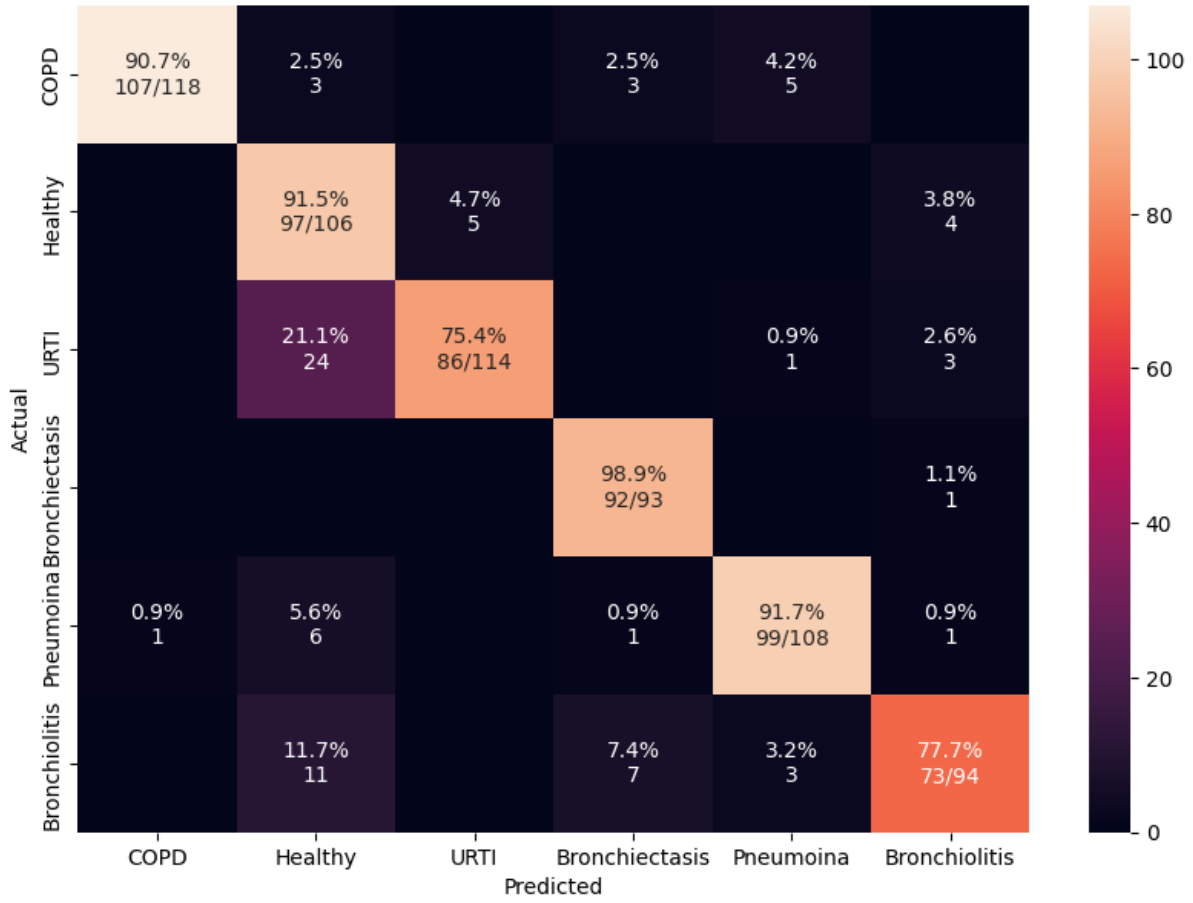
Training Accuracy: 0.8793990015983582

Testing Accuracy: 0.8751974701881409

Training loss: 0.30304625630378723

Testing loss: 0.32352763414382935



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998058	0.906780	0.906780	0.990741	0.946903	118
1	Healthy	0.916509	0.915094	0.915094	0.687943	0.785425	106
2	URTI	0.990366	0.754386	0.754386	0.945055	0.839024	114
3	Bronchiectasis	0.979630	0.989247	0.989247	0.893204	0.938776	93
4	Pneumoina	0.982857	0.916667	0.916667	0.916667	0.916667	108
5	Bronchiolitis	0.983302	0.776596	0.776596	0.890244	0.829545	94

22. Batch-size : 8, training-testing ratio : 80/20, dropout layer : 50%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_50"

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Layer (type) Output Shape Param #

==========

conv1d_138 (Conv1D) (None, 36, 64) 384

conv1d_139 (Conv1D) (None, 32, 64) 20544

max_pooling1d_50 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_288 (Dropout) (None, 16, 64) 0

conv1d_140 (Conv1D) (None, 12, 64) 20544

dropout_289 (Dropout) (None, 12, 64) 0

flatten_50 (Flatten) (None, 768) 0

dense_250 (Dense) (None, 100) 76900

activation_250 (Activation) (None, 100) 0

dropout_290 (Dropout) (None, 100) 0

dense_251 (Dense) (None, 200) 20200

activation_251 (Activation) (None, 200) 0

dropout_291 (Dropout) (None, 200) 0

dense_252 (Dense) (None, 100) 20100

activation_252 (Activation) (None, 100) 0

dropout_292 (Dropout) (None, 100) 0

dense_253 (Dense) (None, 200) 20200

activation_253 (Activation) (None, 200) 0

dropout_293 (Dropout) (None, 200) 0

dense_254 (Dense) (None, 6) 1206

activation_254 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

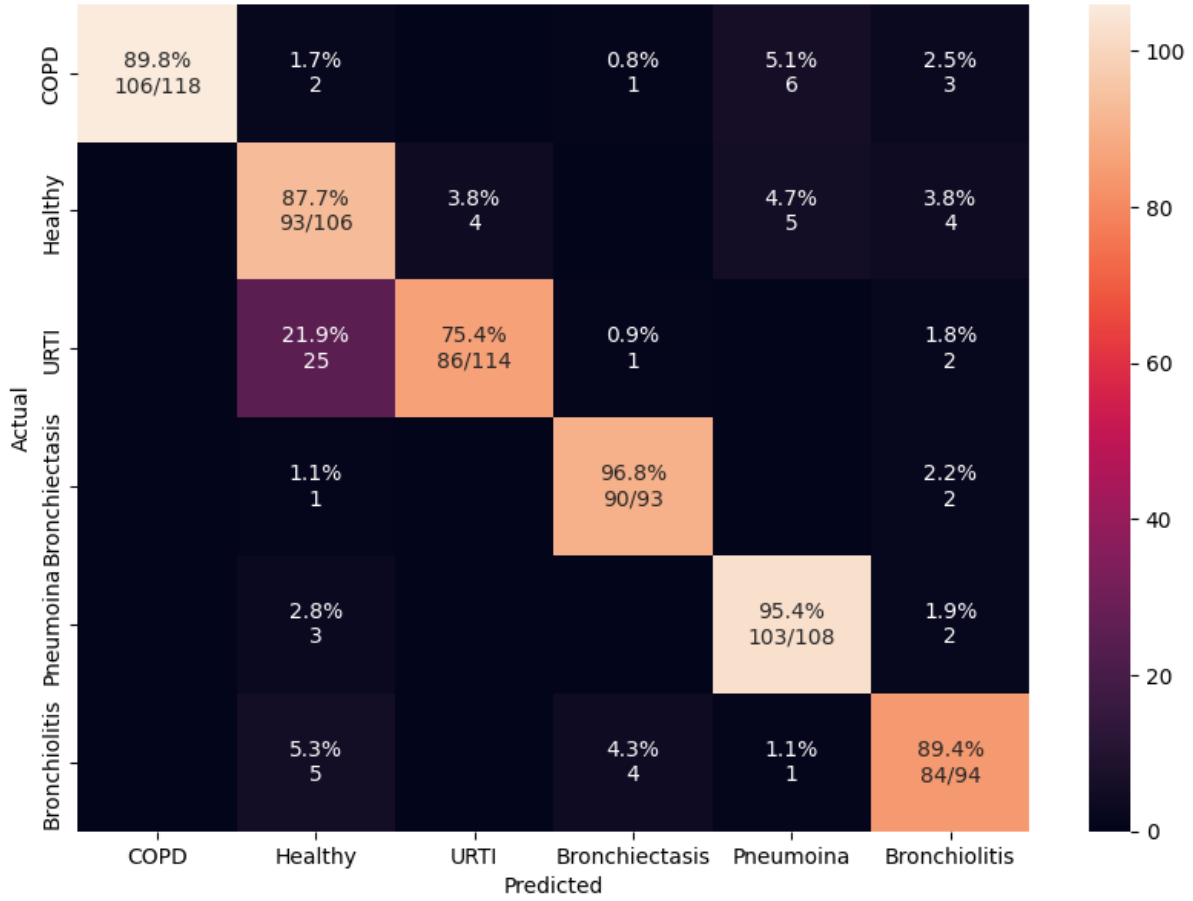
Non-trainable params: 0

Training Accuracy: 0.8833531141281128

Testing Accuracy: 0.887835681438446

Training loss: 0.3170205354690552

Testing loss: 0.3304157257080078



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.898305	0.898305	1.000000	0.946429	118
1	Healthy	0.931689	0.877358	0.877358	0.720930	0.791489	106
2	URTI	0.992293	0.754386	0.754386	0.955556	0.843137	114
3	Bronchiectasis	0.988889	0.967742	0.967742	0.937500	0.952381	93
4	Pneumoina	0.977143	0.953704	0.953704	0.895652	0.923767	108
5	Bronchiolitis	0.975881	0.893617	0.893617	0.865979	0.879581	94

23. Batch-size : 16, training-testing ratio : 90/10, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_2"

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Layer (type)	Output Shape	Param #
conv1d_6 (Conv1D)	(None, 36, 64)	384
conv1d_7 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_2 (MaxPooling 1D)	(None, 16, 64)	0
dropout_12 (Dropout)	(None, 16, 64)	0
conv1d_8 (Conv1D)	(None, 12, 64)	20544
dropout_13 (Dropout)	(None, 12, 64)	0
flatten_2 (Flatten)	(None, 768)	0
dense_10 (Dense)	(None, 100)	76900
activation_10 (Activation)	(None, 100)	0
dropout_14 (Dropout)	(None, 100)	0
dense_11 (Dense)	(None, 200)	20200
activation_11 (Activation)	(None, 200)	0

dropout_15 (Dropout)	(None, 200)	0
dense_12 (Dense)	(None, 100)	20100
activation_12 (Activation)	(None, 100)	0
dropout_16 (Dropout)	(None, 100)	0
dense_13 (Dense)	(None, 200)	20200
activation_13 (Activation)	(None, 200)	0
dropout_17 (Dropout)	(None, 200)	0
dense_14 (Dense)	(None, 6)	1206
activation_14 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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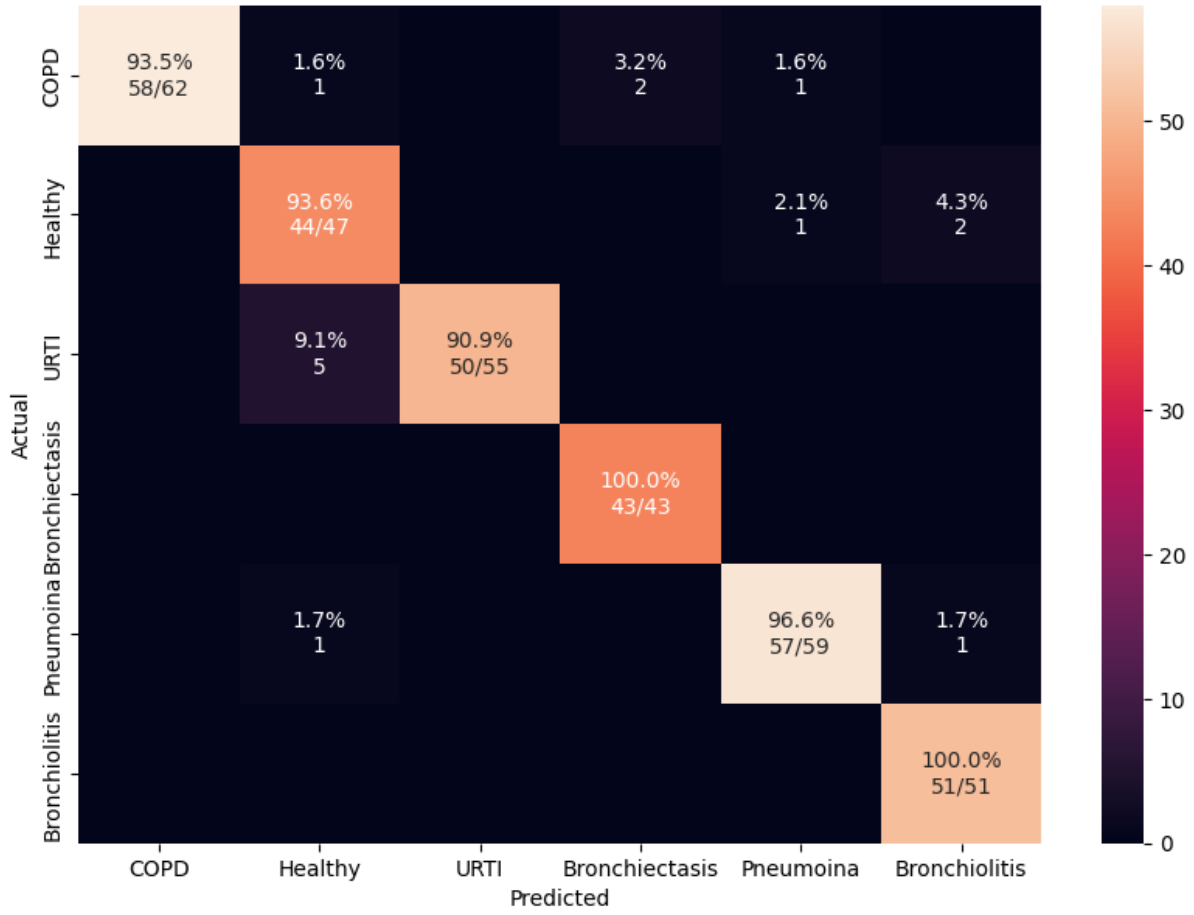
Training Accuracy: 0.9627416729927063

Testing Accuracy: 0.9558359384536743

Training loss: 0.10264183580875397

Testing loss: 0.1526739001274109



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.935484	0.935484	1.000000	0.966667	62
1	Healthy	0.974074	0.936170	0.936170	0.862745	0.897959	47
2	URTI	1.000000	0.909091	0.909091	1.000000	0.952381	55
3	Bronchiectasis	0.992701	1.000000	1.000000	0.955556	0.977273	43
4	Pneumoina	0.992248	0.966102	0.966102	0.966102	0.966102	59
5	Bronchiolitis	0.988722	1.000000	1.000000	0.944444	0.971429	51

24. Batch-size : 16, training-testing ratio : 90/10, dropout layer : 30%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_8"

Layer (type)	Output Shape	Param #
conv1d_22 (Conv1D)	(None, 36, 64)	384
conv1d_23 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_8 (MaxPooling 1D)	(None, 16, 64)	0
dropout_46 (Dropout)	(None, 16, 64)	0
flatten_8 (Flatten)	(None, 1024)	0
dense_40 (Dense)	(None, 100)	102500
activation_40 (Activation)	(None, 100)	0
dropout_47 (Dropout)	(None, 100)	0
dense_41 (Dense)	(None, 200)	20200
activation_41 (Activation)	(None, 200)	0
dropout_48 (Dropout)	(None, 200)	0

dense_42 (Dense)	(None, 100)	20100
activation_42 (Activation)	(None, 100)	0
dropout_49 (Dropout)	(None, 100)	0
dense_43 (Dense)	(None, 200)	20200
activation_43 (Activation)	(None, 200)	0
dropout_50 (Dropout)	(None, 200)	0
dense_44 (Dense)	(None, 6)	1206
activation_44 (Activation)	(None, 6)	0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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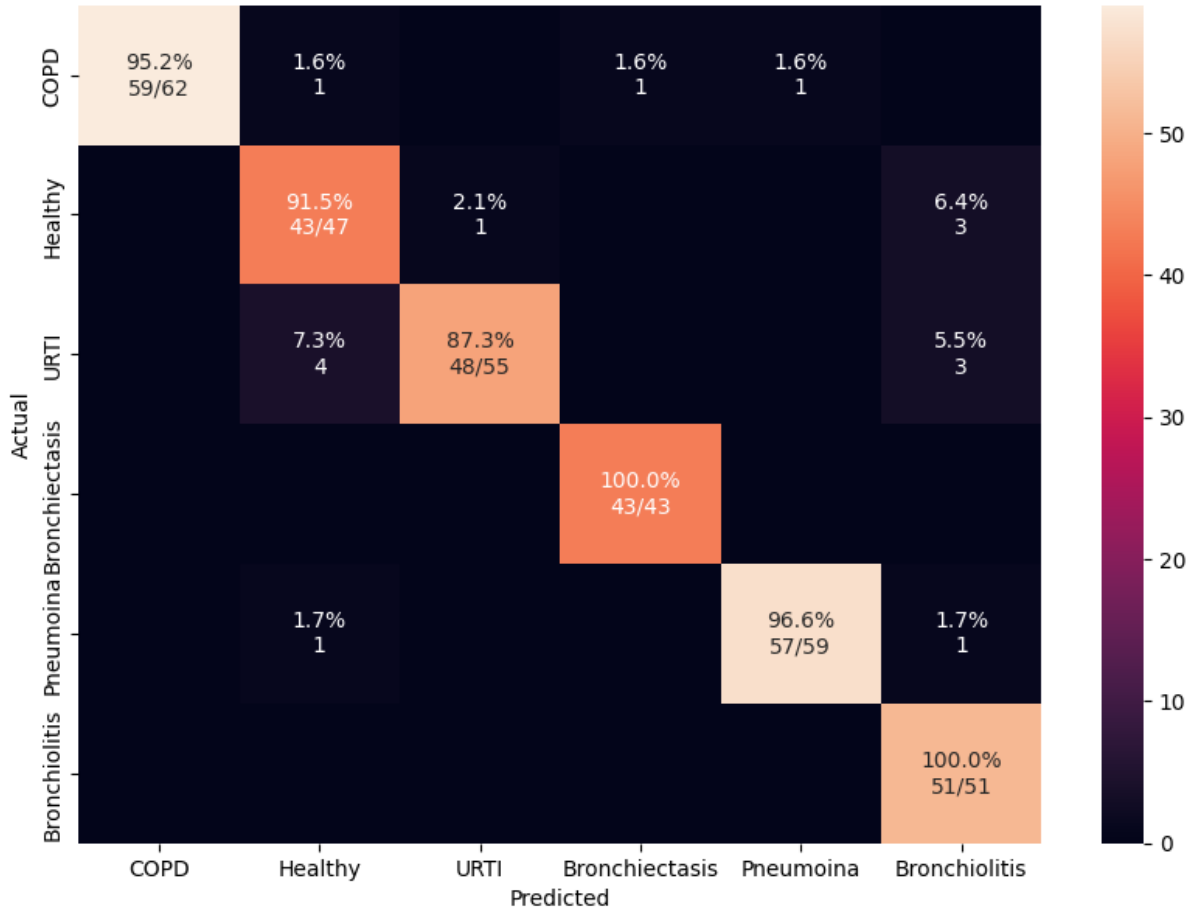
Training Accuracy: 0.9514938592910767

Testing Accuracy: 0.9495267868041992

Training loss: 0.131293386220932

Testing loss: 0.16054394841194153



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.951613	0.951613	1.000000	0.975207	62
1	Healthy	0.977778	0.914894	0.914894	0.877551	0.895833	47
2	URTI	0.996183	0.872727	0.872727	0.979592	0.923077	55
3	Bronchiectasis	0.996350	1.000000	1.000000	0.977273	0.988506	43
4	Pneumoina	0.996124	0.966102	0.966102	0.982759	0.974359	59
5	Bronchiolitis	0.973684	1.000000	1.000000	0.879310	0.935780	51

25. Batch-size : 32, training-testing ratio : 90/10, dropout layer : 50%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_14"

Layer (type)	Output Shape	Param #

==========

conv1d_34 (Conv1D) (None, 36, 64) 384

conv1d_35 (Conv1D) (None, 32, 64) 20544

max_pooling1d_14 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_76 (Dropout) (None, 16, 64) 0

flatten_14 (Flatten) (None, 1024) 0

dense_70 (Dense) (None, 100) 102500

activation_70 (Activation) (None, 100) 0

dropout_77 (Dropout) (None, 100) 0

dense_71 (Dense) (None, 200) 20200

activation_71 (Activation) (None, 200) 0

dropout_78 (Dropout) (None, 200) 0

dense_72 (Dense) (None, 100) 20100

activation_72 (Activation) (None, 100) 0

dropout_79 (Dropout) (None, 100) 0

dense_73 (Dense) (None, 200) 20200

activation_73 (Activation) (None, 200) 0

dropout_80 (Dropout) (None, 200) 0

dense_74 (Dense) (None, 6) 1206

activation_74 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

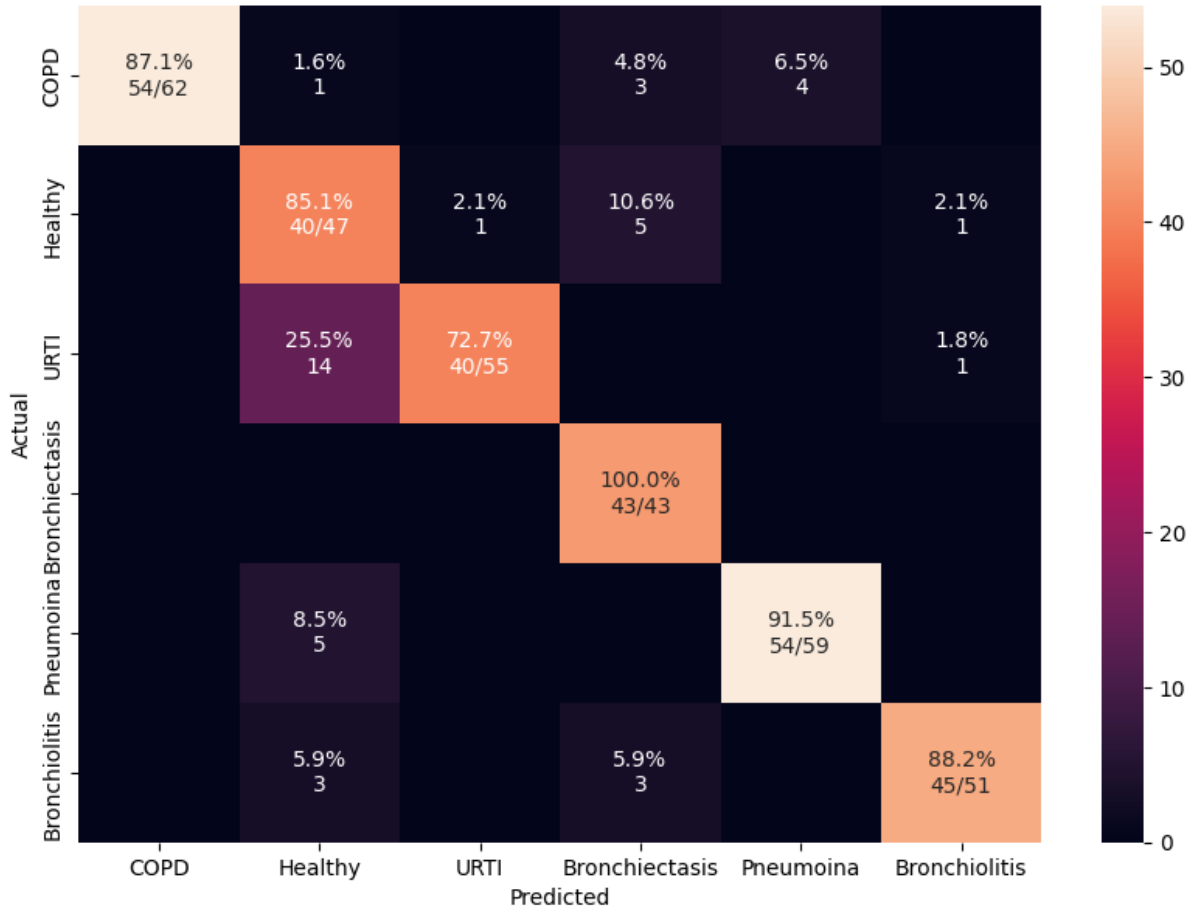
Non-trainable params: 0

Training Accuracy: 0.890333890914917

Testing Accuracy: 0.8706624507904053

Training loss: 0.3064504563808441

Testing loss: 0.3581172227859497



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.870968	0.870968	1.000000	0.931034	62
1	Healthy	0.914815	0.851064	0.851064	0.634921	0.727273	47
2	URTI	0.996183	0.727273	0.727273	0.975610	0.833333	55
3	Bronchiectasis	0.959854	1.000000	1.000000	0.796296	0.886598	43
4	Pneumoina	0.984496	0.915254	0.915254	0.931034	0.923077	59
5	Bronchiolitis	0.992481	0.882353	0.882353	0.957447	0.918367	51

26. Batch-size : 32, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_22"

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Layer (type) Output Shape Param #

==========

conv1d_50 (Conv1D) (None, 36, 64) 384

conv1d_51 (Conv1D) (None, 32, 64) 20544

max_pooling1d_22 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_116 (Dropout) (None, 16, 64) 0

flatten_22 (Flatten) (None, 1024) 0

dense_110 (Dense) (None, 100) 102500

activation_110 (Activation) (None, 100) 0

dropout_117 (Dropout) (None, 100) 0

dense_111 (Dense) (None, 200) 20200

activation_111 (Activation) (None, 200) 0

dropout_118 (Dropout) (None, 200) 0

dense_112 (Dense) (None, 100) 20100

activation_112 (Activation) (None, 100) 0

dropout_119 (Dropout) (None, 100) 0

dense_113 (Dense) (None, 200) 20200

activation_113 (Activation) (None, 200) 0

dropout_120 (Dropout) (None, 200) 0

dense_114 (Dense) (None, 6) 1206

activation_114 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

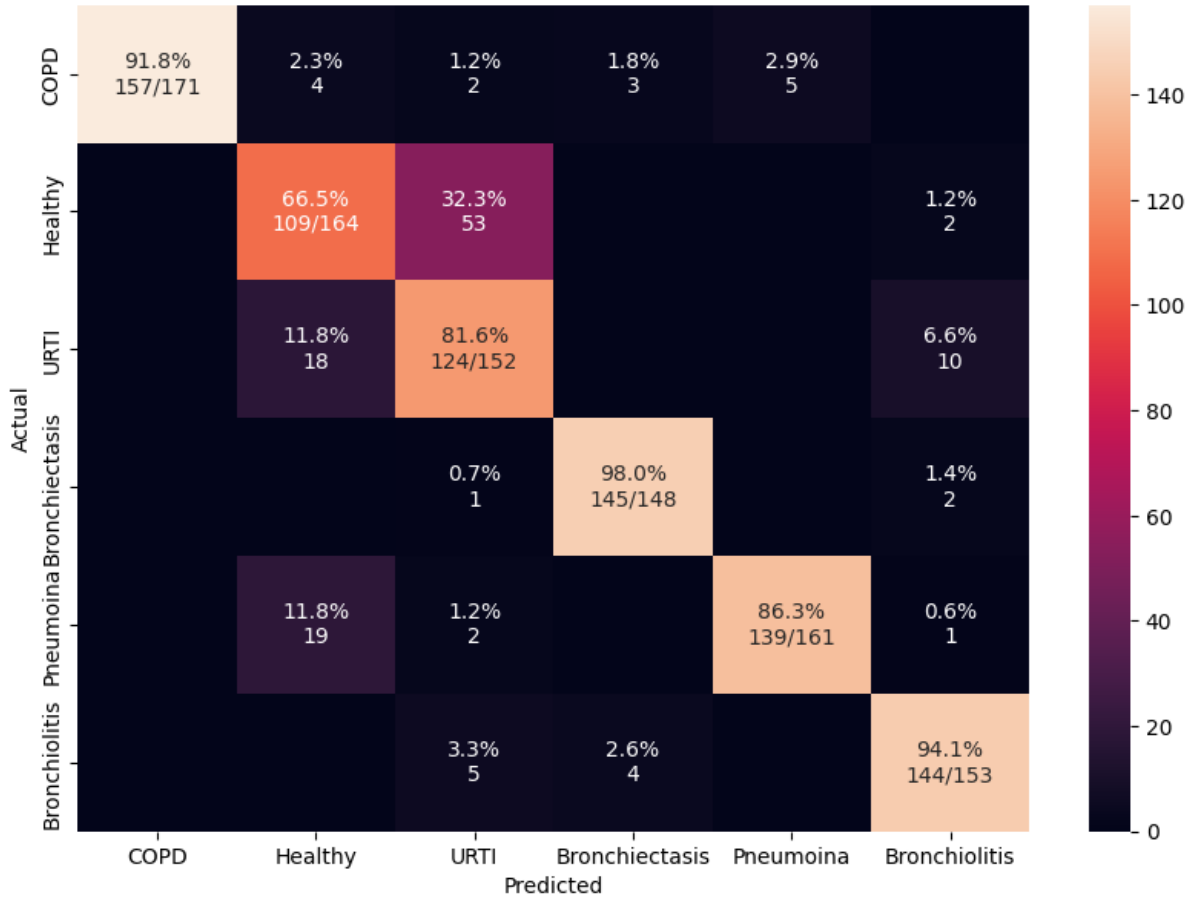
Non-trainable params: 0

Training Accuracy: 0.863985538482666

Testing Accuracy: 0.8619599342346191

Training loss: 0.35184937715530396

Testing loss: 0.34537506103515625



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.918129	0.918129	1.000000	0.957317	171
1	Healthy	0.947771	0.664634	0.664634	0.726667	0.694268	164
2	URTI	0.920954	0.815789	0.815789	0.663102	0.731563	152
3	Bronchiectasis	0.991261	0.979730	0.979730	0.953947	0.966667	148
4	Pneumoina	0.993655	0.863354	0.863354	0.965278	0.911475	161
5	Bronchiolitis	0.981156	0.941176	0.941176	0.905660	0.923077	153

27. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_24"

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Layer (type) Output Shape Param #

==========

conv1d_54 (Conv1D) (None, 36, 64) 384

conv1d_55 (Conv1D) (None, 32, 64) 20544

max_pooling1d_24 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_126 (Dropout) (None, 16, 64) 0

conv1d_56 (Conv1D) (None, 12, 64) 20544

dropout_127 (Dropout) (None, 12, 64) 0

flatten_24 (Flatten) (None, 768) 0

dense_120 (Dense) (None, 100) 76900

activation_120 (Activation) (None, 100) 0

dropout_128 (Dropout) (None, 100) 0

dense_121 (Dense) (None, 200) 20200

activation_121 (Activation) (None, 200) 0

dropout_129 (Dropout) (None, 200) 0

dense_122 (Dense) (None, 100) 20100

activation_122 (Activation) (None, 100) 0

dropout_130 (Dropout) (None, 100) 0

dense_123 (Dense) (None, 200) 20200

activation_123 (Activation) (None, 200) 0

dropout_131 (Dropout) (None, 200) 0

dense_124 (Dense) (None, 6) 1206

activation_124 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

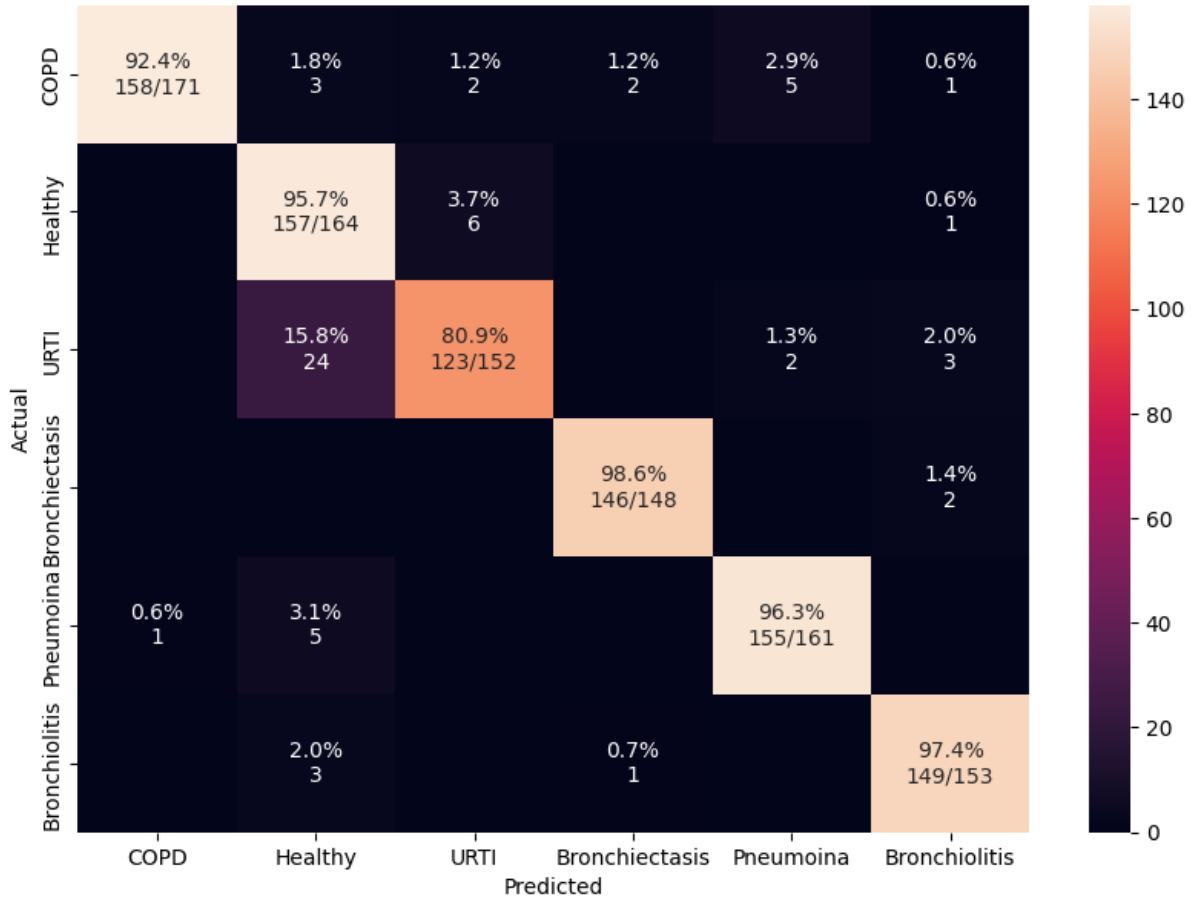
_____

Training Accuracy: 0.9435155987739563

Testing Accuracy: 0.9357218146324158

Training loss: 0.15786682069301605

Testing loss: 0.20167411863803864



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.923977	0.923977	0.993711	0.957576	171
1	Healthy	0.955414	0.957317	0.957317	0.817708	0.882022	164
2	URTI	0.989962	0.809211	0.809211	0.938931	0.869258	152
3	Bronchiectasis	0.996255	0.986486	0.986486	0.979866	0.983165	148
4	Pneumoina	0.991117	0.962733	0.962733	0.956790	0.959752	161
5	Bronchiolitis	0.991206	0.973856	0.973856	0.955128	0.964401	153

28. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :RMSprop, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_30"

Layer (type) Output Shape Param #

==========

conv1d_72 (Conv1D) (None, 36, 64) 384

conv1d_73 (Conv1D) (None, 32, 64) 20544

max_pooling1d_30 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_162 (Dropout) (None, 16, 64) 0

conv1d_74 (Conv1D) (None, 12, 64) 20544

dropout_163 (Dropout) (None, 12, 64) 0

flatten_30 (Flatten) (None, 768) 0

dense_150 (Dense) (None, 100) 76900

activation_150 (Activation) (None, 100) 0

dropout_164 (Dropout) (None, 100) 0

dense_151 (Dense) (None, 200) 20200

activation_151 (Activation) (None, 200) 0

dropout_165 (Dropout) (None, 200) 0

dense_152 (Dense) (None, 100) 20100

activation_152 (Activation) (None, 100) 0

dropout_166 (Dropout) (None, 100) 0

dense_153 (Dense) (None, 200) 20200

activation_153 (Activation) (None, 200) 0

dropout_167 (Dropout) (None, 200) 0

dense_154 (Dense) (None, 6) 1206

activation_154 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

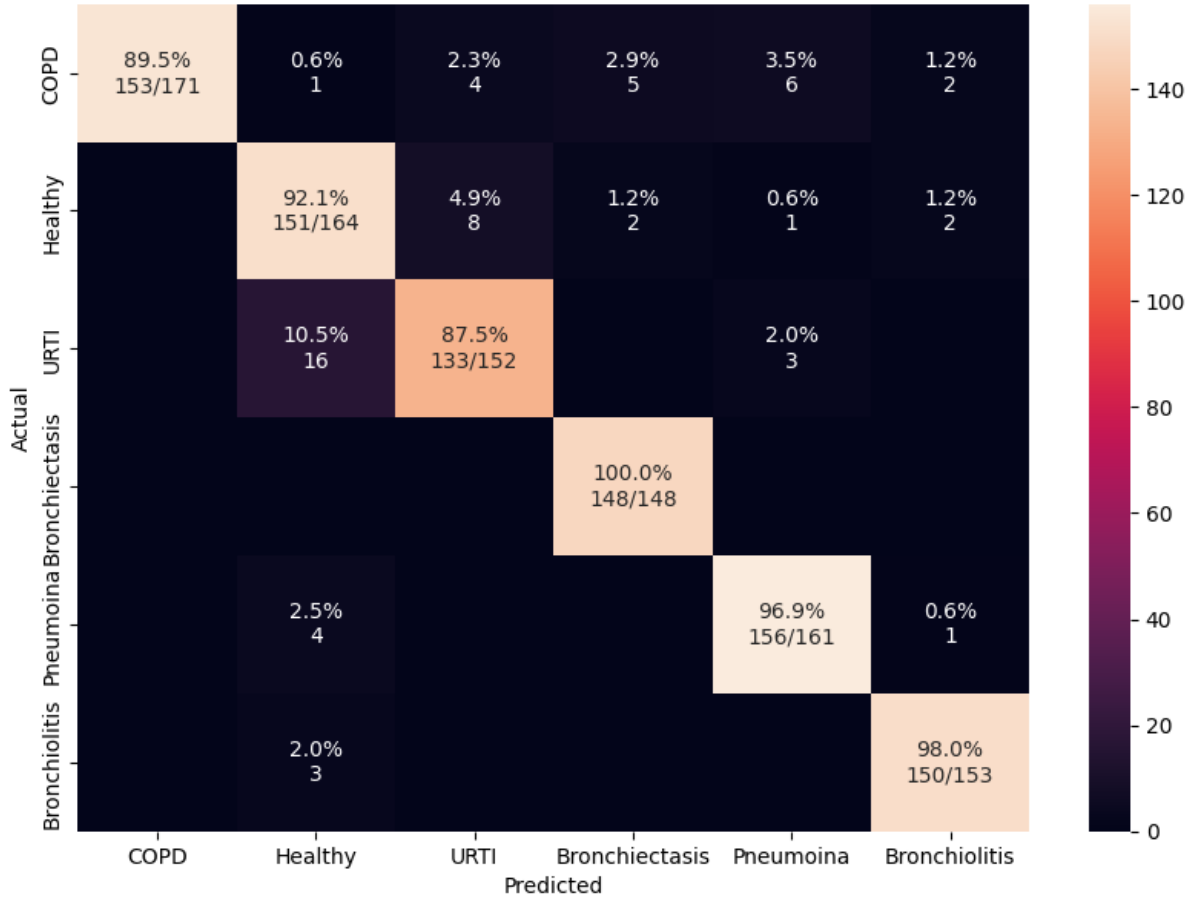
Non-trainable params: 0

Training Accuracy: 0.9403524398803711

Testing Accuracy: 0.9388830065727234

Training loss: 0.15629670023918152

Testing loss: 0.2727717161178589



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.894737	0.894737	1.000000	0.944444	171
1	Healthy	0.969427	0.920732	0.920732	0.862857	0.890855	164
2	URTI	0.984944	0.875000	0.875000	0.917241	0.895623	152
3	Bronchiectasis	0.991261	1.000000	1.000000	0.954839	0.976898	148
4	Pneumoina	0.987310	0.968944	0.968944	0.939759	0.954128	161
5	Bronchiolitis	0.993719	0.980392	0.980392	0.967742	0.974026	153

29. Batch-size : 32, training-testing ratio : 70/30, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_36"

Layer (type)	Output Shape	Param #
conv1d_90 (Conv1D)	(None, 36, 64)	384
conv1d_91 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_36 (MaxPooling1D)	(None, 16, 64)	0
dropout_198 (Dropout)	(None, 16, 64)	0
flatten_36 (Flatten)	(None, 1024)	0
dense_180 (Dense)	(None, 100)	102500
activation_180 (Activation)	(None, 100)	0
dropout_199 (Dropout)	(None, 100)	0
dense_181 (Dense)	(None, 200)	20200
activation_181 (Activation)	(None, 200)	0
dropout_200 (Dropout)	(None, 200)	0

dense_182 (Dense) (None, 100) 20100

activation_182 (Activation) (None, 100) 0

dropout_201 (Dropout) (None, 100) 0

dense_183 (Dense) (None, 200) 20200

activation_183 (Activation) (None, 200) 0

dropout_202 (Dropout) (None, 200) 0

dense_184 (Dense) (None, 6) 1206

activation_184 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

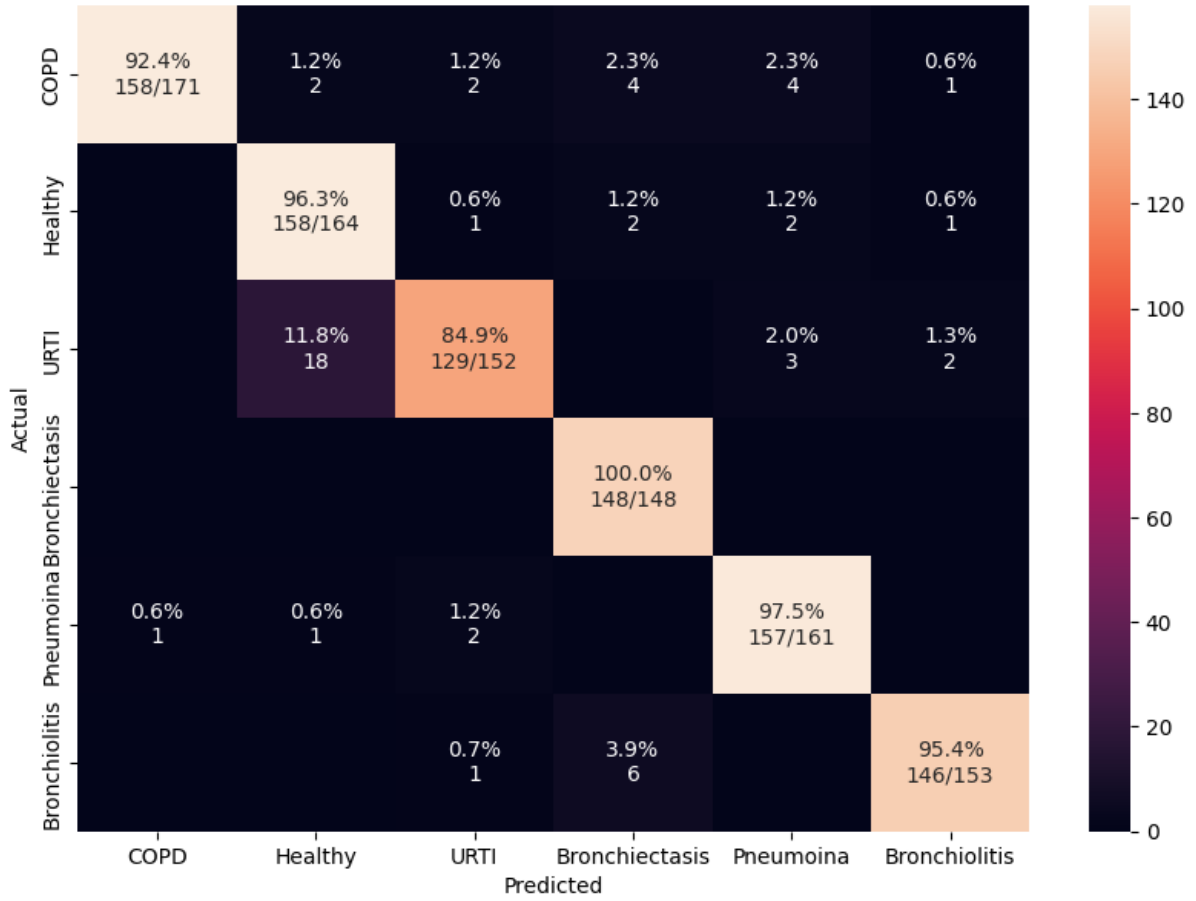
_____

Training Accuracy: 0.9525530934333801

Testing Accuracy: 0.944151759147644

Training loss: 0.11384960263967514

Testing loss: 0.1804238110780716



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.923977	0.923977	0.993711	0.957576	171
1	Healthy	0.973248	0.963415	0.963415	0.882682	0.921283	164
2	URTI	0.992472	0.848684	0.848684	0.955556	0.898955	152
3	Bronchiectasis	0.985019	1.000000	1.000000	0.925000	0.961039	148
4	Pneumoina	0.988579	0.975155	0.975155	0.945783	0.960245	161
5	Bronchiolitis	0.994975	0.954248	0.954248	0.973333	0.963696	153

30. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_44"

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Layer (type) Output Shape Param #

==========

conv1d_108 (Conv1D) (None, 36, 64) 384

conv1d_109 (Conv1D) (None, 32, 64) 20544

max_pooling1d_44 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_240 (Dropout) (None, 16, 64) 0

conv1d_110 (Conv1D) (None, 12, 64) 20544

dropout_241 (Dropout) (None, 12, 64) 0

flatten_44 (Flatten) (None, 768) 0

dense_220 (Dense) (None, 100) 76900

activation_220 (Activation) (None, 100) 0

dropout_242 (Dropout) (None, 100) 0

dense_221 (Dense) (None, 200) 20200

activation_221 (Activation) (None, 200) 0

dropout_243 (Dropout) (None, 200) 0

dense_222 (Dense) (None, 100) 20100

activation_222 (Activation) (None, 100) 0

dropout_244 (Dropout) (None, 100) 0

dense_223 (Dense) (None, 200) 20200

activation_223 (Activation) (None, 200) 0

dropout_245 (Dropout) (None, 200) 0

dense_224 (Dense) (None, 6) 1206

activation_224 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

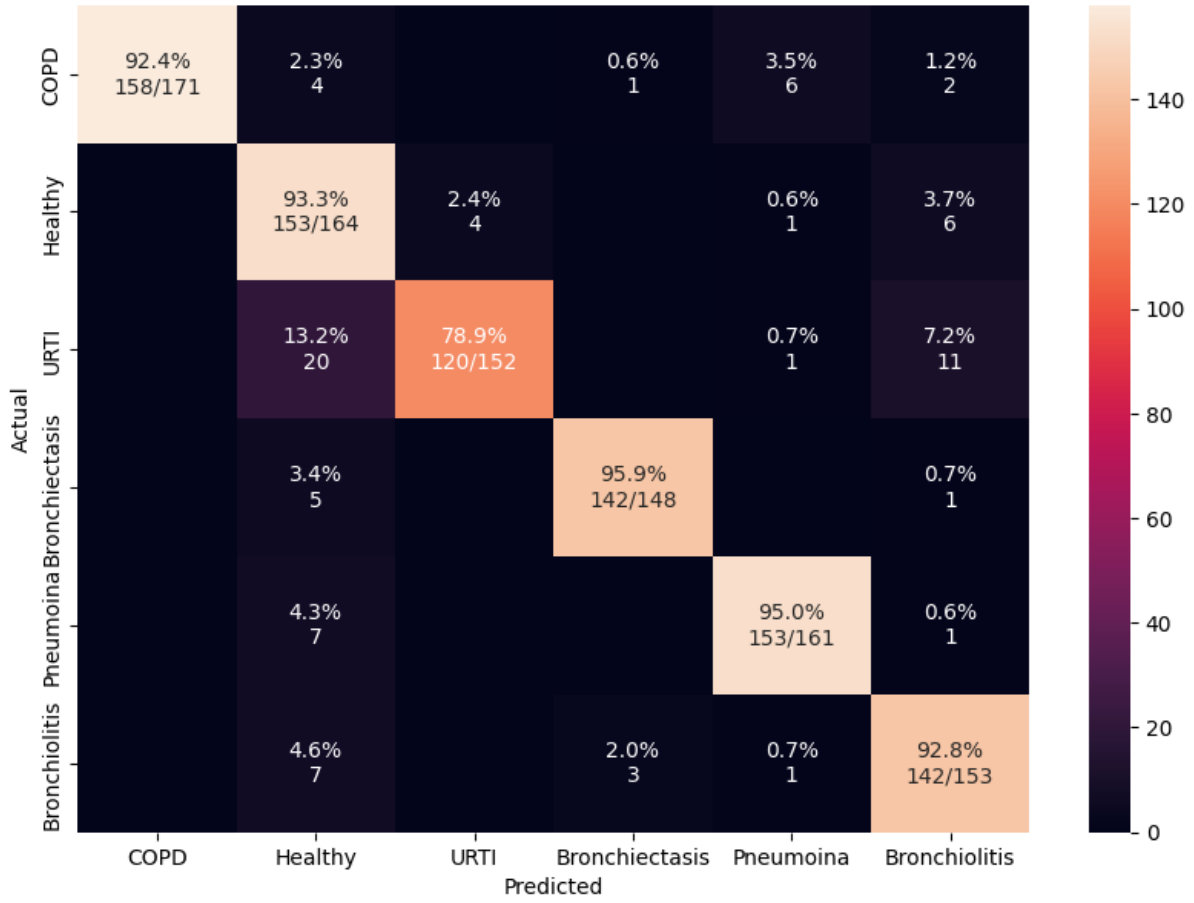
_____

Training Accuracy: 0.91640305519104

Testing Accuracy: 0.9146469831466675

Training loss: 0.23859712481498718

Testing loss: 0.2963169515132904



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.923977	0.923977	1.000000	0.960486	171
1	Healthy	0.945223	0.932927	0.932927	0.780612	0.850000	164
2	URTI	0.994981	0.789474	0.789474	0.967742	0.869565	152
3	Bronchiectasis	0.995006	0.959459	0.959459	0.972603	0.965986	148
4	Pneumoina	0.988579	0.950311	0.950311	0.944444	0.947368	161
5	Bronchiolitis	0.973618	0.928105	0.928105	0.871166	0.898734	153

31. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :Adam, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_50"

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Layer (type) Output Shape Param #

==========

conv1d_124 (Conv1D) (None, 36, 64) 384

conv1d_125 (Conv1D) (None, 32, 64) 20544

max_pooling1d_50 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_274 (Dropout) (None, 16, 64) 0

flatten_50 (Flatten) (None, 1024) 0

dense_250 (Dense) (None, 100) 102500

activation_250 (Activation) (None, 100) 0

dropout_275 (Dropout) (None, 100) 0

dense_251 (Dense) (None, 200) 20200

activation_251 (Activation) (None, 200) 0

dropout_276 (Dropout) (None, 200) 0

dense_252 (Dense) (None, 100) 20100

activation_252 (Activation) (None, 100) 0

dropout_277 (Dropout) (None, 100) 0

dense_253 (Dense) (None, 200) 20200

activation_253 (Activation) (None, 200) 0

dropout_278 (Dropout) (None, 200) 0

dense_254 (Dense) (None, 6) 1206

activation_254 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

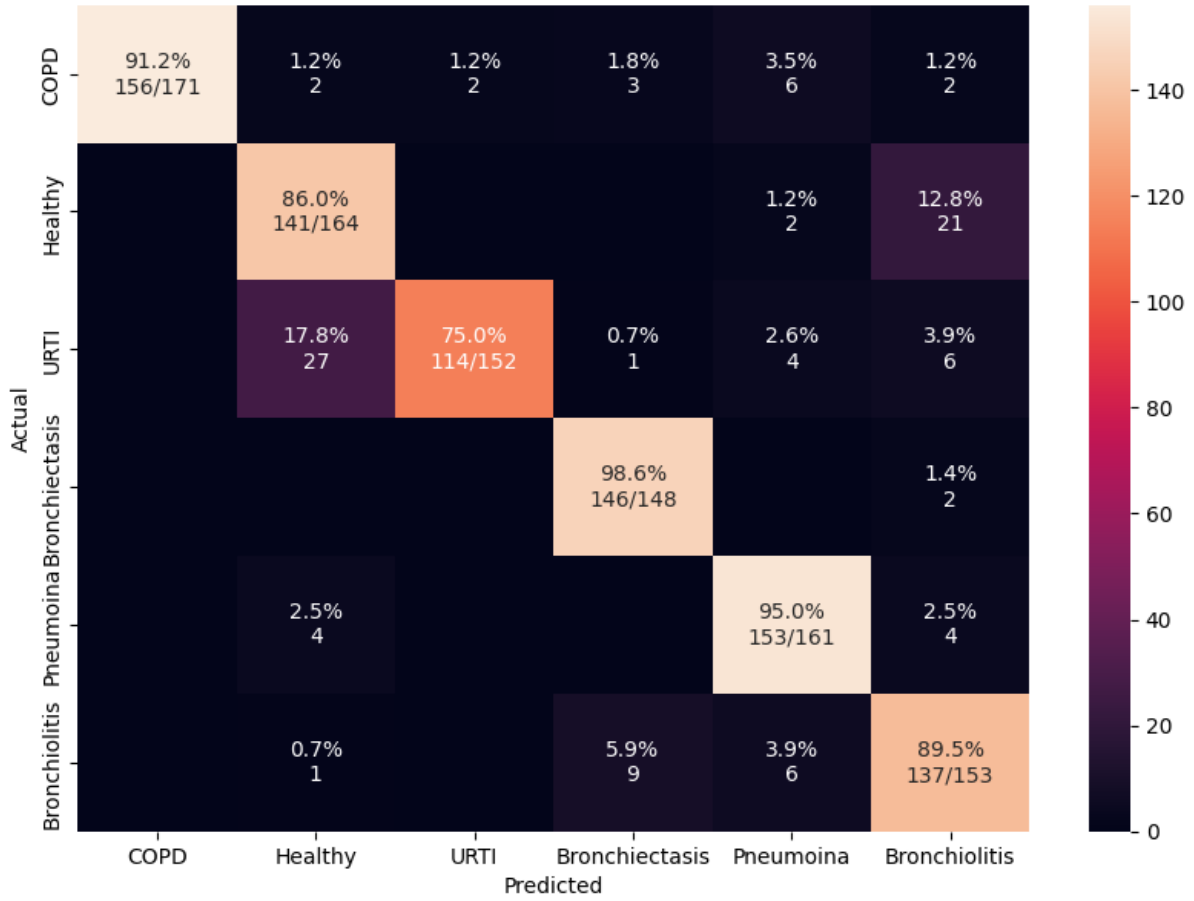
Non-trainable params: 0

Training Accuracy: 0.8996837139129639

Testing Accuracy: 0.8925184607505798

Training loss: 0.2646995782852173

Testing loss: 0.3047677278518677



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.912281	0.912281	1.000000	0.954128	171
1	Healthy	0.956688	0.859756	0.859756	0.805714	0.831858	164
2	URTI	0.997491	0.750000	0.750000	0.982759	0.850746	152
3	Bronchiectasis	0.983770	0.986486	0.986486	0.918239	0.951140	148
4	Pneumoina	0.977157	0.950311	0.950311	0.894737	0.921687	161
5	Bronchiolitis	0.956030	0.895425	0.895425	0.796512	0.843077	153

32. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_54"

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Layer (type) Output Shape Param #

==========

conv1d_132 (Conv1D) (None, 36, 64) 384

conv1d_133 (Conv1D) (None, 32, 64) 20544

max_pooling1d_54 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_294 (Dropout) (None, 16, 64) 0

conv1d_134 (Conv1D) (None, 12, 64) 20544

dropout_295 (Dropout) (None, 12, 64) 0

flatten_54 (Flatten) (None, 768) 0

dense_270 (Dense) (None, 100) 76900

activation_270 (Activation) (None, 100) 0

dropout_296 (Dropout) (None, 100) 0

dense_271 (Dense) (None, 200) 20200

activation_271 (Activation) (None, 200) 0

dropout_297 (Dropout) (None, 200) 0

dense_272 (Dense) (None, 100) 20100

activation_272 (Activation) (None, 100) 0

dropout_298 (Dropout) (None, 100) 0

dense_273 (Dense) (None, 200) 20200

activation_273 (Activation) (None, 200) 0

dropout_299 (Dropout) (None, 200) 0

dense_274 (Dense) (None, 6) 1206

activation_274 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

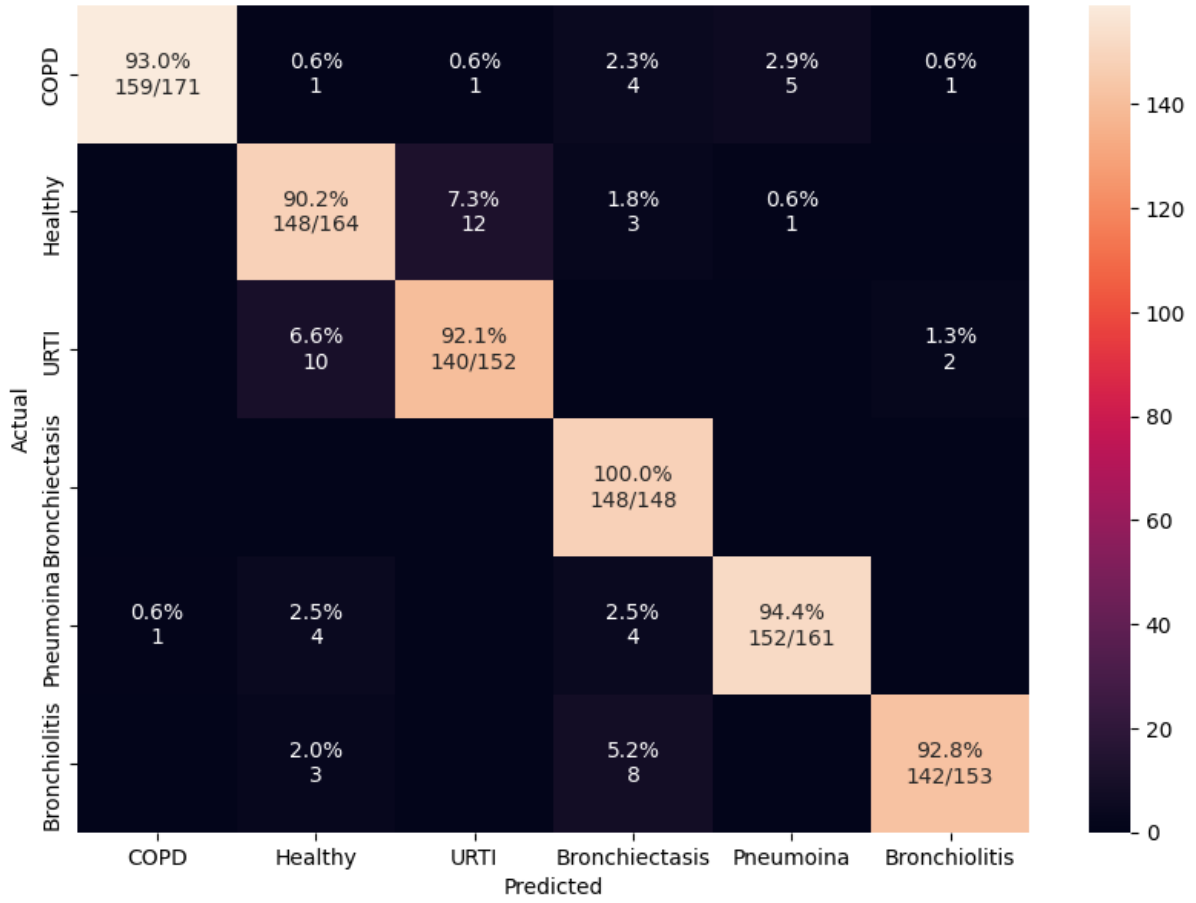
_____

Training Accuracy: 0.9521012306213379

Testing Accuracy: 0.9367755651473999

Training loss: 0.1319839209318161

Testing loss: 0.21170800924301147



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.929825	0.929825	0.993750	0.960725	171
1	Healthy	0.977070	0.902439	0.902439	0.891566	0.896970	164
2	URTI	0.983689	0.921053	0.921053	0.915033	0.918033	152
3	Bronchiectasis	0.976280	1.000000	1.000000	0.886228	0.939683	148
4	Pneumoina	0.992386	0.944099	0.944099	0.962025	0.952978	161
5	Bronchiolitis	0.996231	0.928105	0.928105	0.979310	0.953020	153

33. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_2"

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Layer (type)	Output Shape	Param #

conv1d_4 (Conv1D)	(None, 36, 64)	384
conv1d_5 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_2 (MaxPooling 1D)	(None, 16, 64)	0
dropout_10 (Dropout)	(None, 16, 64)	0
flatten_2 (Flatten)	(None, 1024)	0
dense_10 (Dense)	(None, 100)	102500
activation_10 (Activation)	(None, 100)	0
dropout_11 (Dropout)	(None, 100)	0
dense_11 (Dense)	(None, 200)	20200
activation_11 (Activation)	(None, 200)	0
dropout_12 (Dropout)	(None, 200)	0
dense_12 (Dense)	(None, 100)	20100

activation_12 (Activation) (None, 100) 0

dropout_13 (Dropout) (None, 100) 0

dense_13 (Dense) (None, 200) 20200

activation_13 (Activation) (None, 200) 0

dropout_14 (Dropout) (None, 200) 0

dense_14 (Dense) (None, 6) 1206

activation_14 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

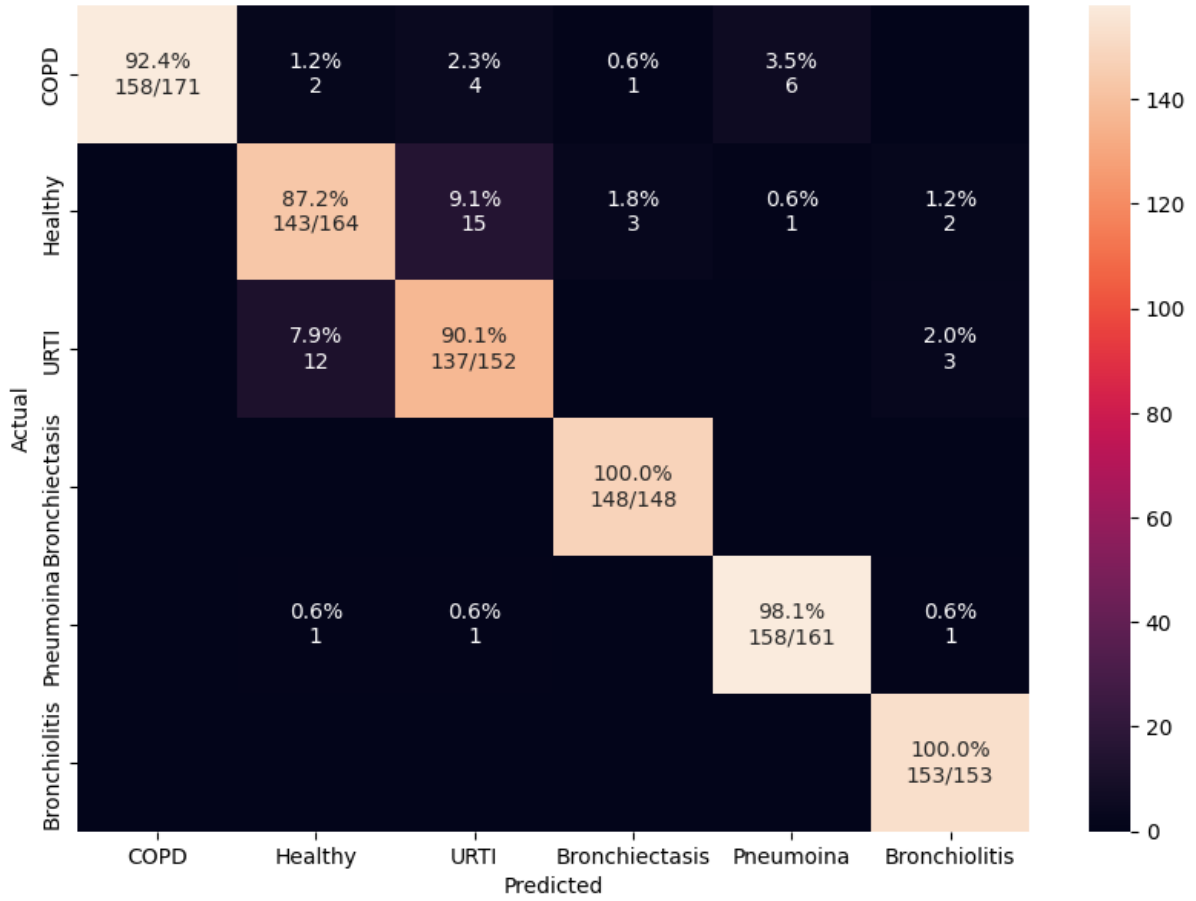
_____

Training Accuracy: 0.9579756259918213

Testing Accuracy: 0.9452054500579834

Training loss: 0.12296046316623688

Testing loss: 0.18155603110790253



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.923977	0.923977	1.000000	0.960486	171
1	Healthy	0.980892	0.871951	0.871951	0.905063	0.888199	164
2	URTI	0.974906	0.901316	0.901316	0.872611	0.886731	152
3	Bronchiectasis	0.995006	1.000000	1.000000	0.973684	0.986667	148
4	Pneumoina	0.991117	0.981366	0.981366	0.957576	0.969325	161
5	Bronchiolitis	0.992462	1.000000	1.000000	0.962264	0.980769	153

34. Batch-size : 32, training-testing ratio : 70/30, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_8"

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Layer (type) Output Shape Param #

==========

conv1d_18 (Conv1D) (None, 36, 64) 384

conv1d_19 (Conv1D) (None, 32, 64) 20544

max_pooling1d_8 (MaxPooling 1D) (None, 16, 64) 0

dropout_42 (Dropout) (None, 16, 64) 0

conv1d_20 (Conv1D) (None, 12, 64) 20544

dropout_43 (Dropout) (None, 12, 64) 0

flatten_8 (Flatten) (None, 768) 0

dense_40 (Dense) (None, 100) 76900

activation_40 (Activation) (None, 100) 0

dropout_44 (Dropout) (None, 100) 0

dense_41 (Dense) (None, 200) 20200

activation_41 (Activation) (None, 200) 0

dropout_45 (Dropout) (None, 200) 0

dense_42 (Dense)	(None, 100)	20100
activation_42 (Activation)	(None, 100)	0
dropout_46 (Dropout)	(None, 100)	0
dense_43 (Dense)	(None, 200)	20200
activation_43 (Activation)	(None, 200)	0
dropout_47 (Dropout)	(None, 200)	0
dense_44 (Dense)	(None, 6)	1206
activation_44 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

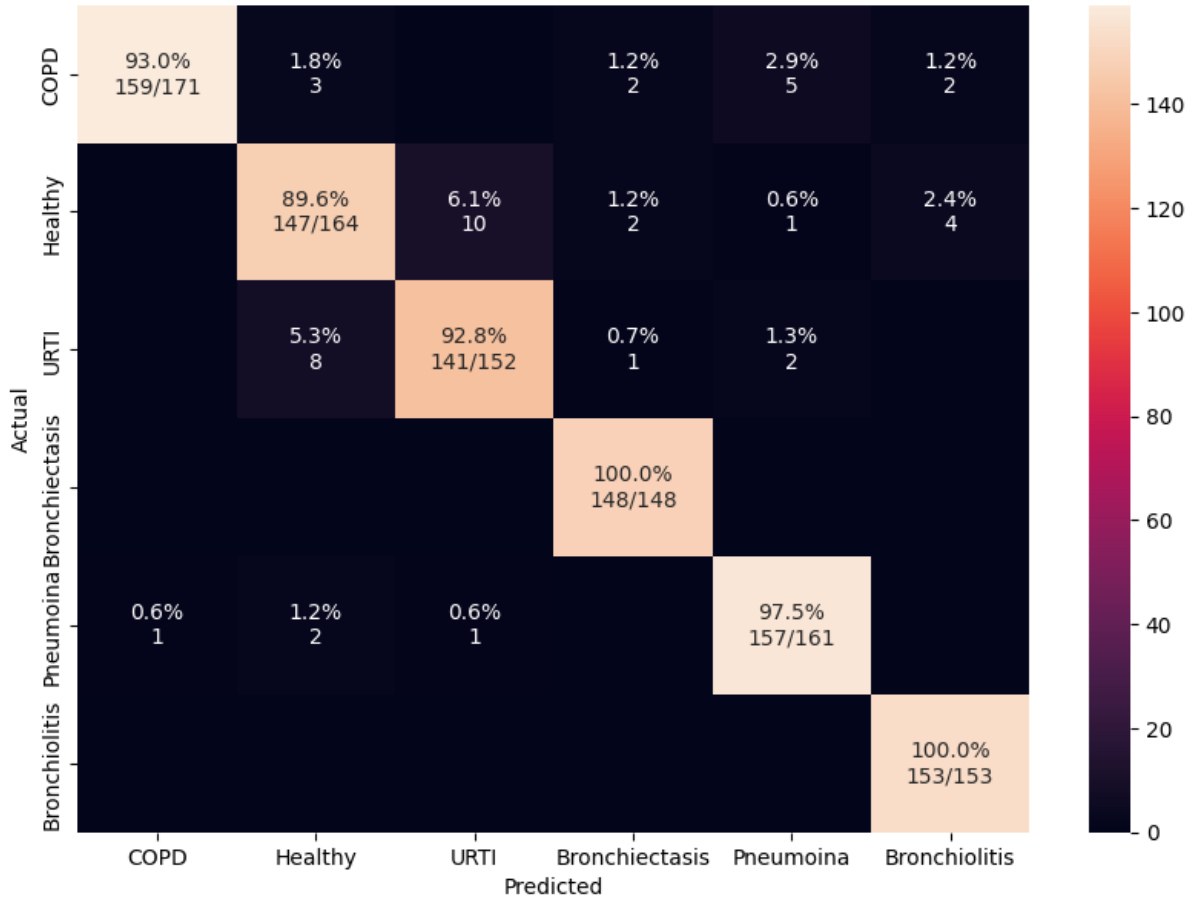
_____

Training Accuracy: 0.9647537469863892

Testing Accuracy: 0.9536353945732117

Training loss: 0.09144599735736847

Testing loss: 0.17733575403690338



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.929825	0.929825	0.993750	0.960725	171
1	Healthy	0.983439	0.896341	0.896341	0.918750	0.907407	164
2	URTI	0.986198	0.927632	0.927632	0.927632	0.927632	152
3	Bronchiectasis	0.993758	1.000000	1.000000	0.967320	0.983389	148
4	Pneumoina	0.989848	0.975155	0.975155	0.951515	0.963190	161
5	Bronchiolitis	0.992462	1.000000	1.000000	0.962264	0.980769	153

35. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_4"

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Layer (type) Output Shape Param #

conv1d_8 (Conv1D)	(None, 36, 64)	384
conv1d_9 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_4 (MaxPooling 1D)	(None, 16, 64)	0
dropout_20 (Dropout)	(None, 16, 64)	0
flatten_4 (Flatten)	(None, 1024)	0
dense_20 (Dense)	(None, 100)	102500
activation_20 (Activation)	(None, 100)	0
dropout_21 (Dropout)	(None, 100)	0
dense_21 (Dense)	(None, 200)	20200
activation_21 (Activation)	(None, 200)	0
dropout_22 (Dropout)	(None, 200)	0
dense_22 (Dense)	(None, 100)	20100

activation_22 (Activation) (None, 100) 0

dropout_23 (Dropout) (None, 100) 0

dense_23 (Dense) (None, 200) 20200

activation_23 (Activation) (None, 200) 0

dropout_24 (Dropout) (None, 200) 0

dense_24 (Dense) (None, 6) 1206

activation_24 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

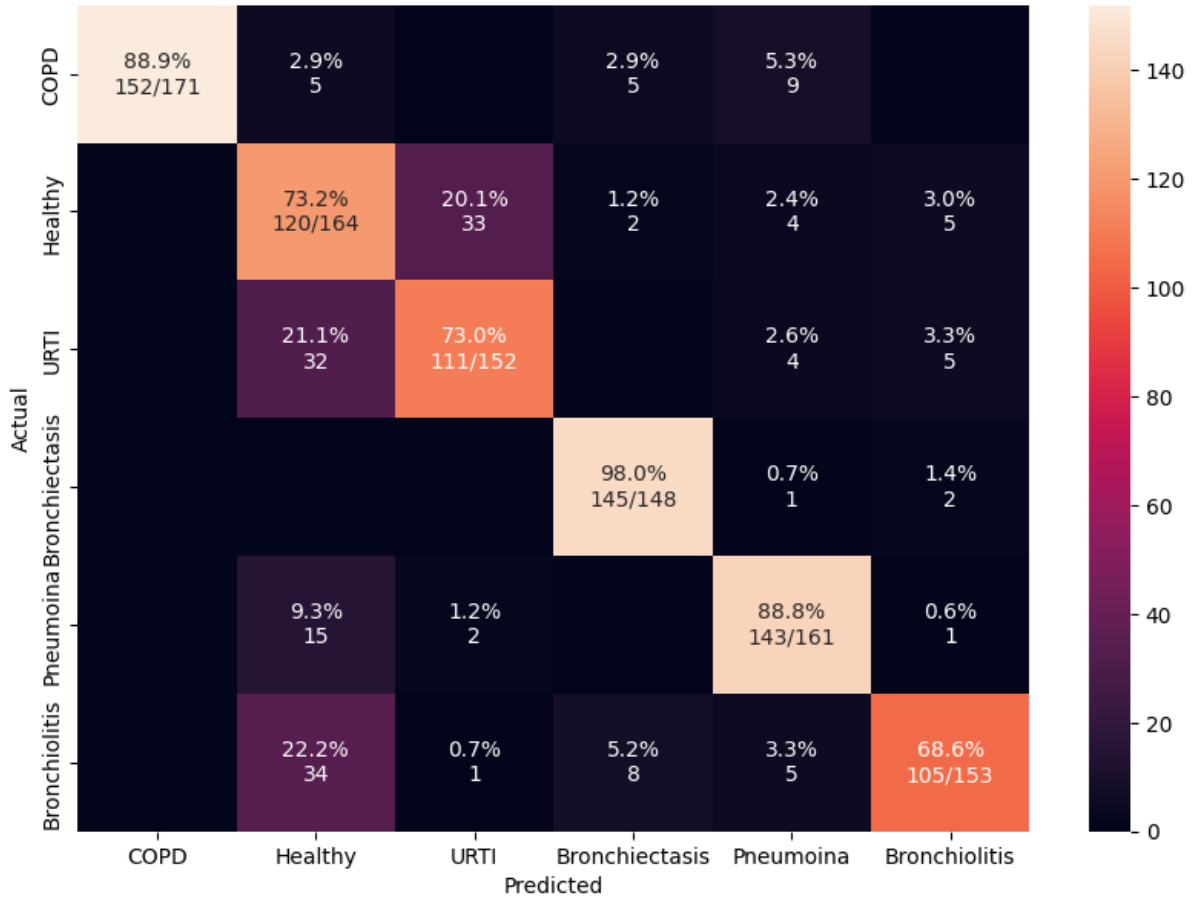
_____

Training Accuracy: 0.8147311210632324

Testing Accuracy: 0.8177028298377991

Training loss: 0.45246046781539917

Testing loss: 0.4770590662956238



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.888889	0.888889	1.000000	0.941176	171
1	Healthy	0.890446	0.731707	0.731707	0.582524	0.648649	164
2	URTI	0.954831	0.730263	0.730263	0.755102	0.742475	152
3	Bronchiectasis	0.981273	0.979730	0.979730	0.906250	0.941558	148
4	Pneumoina	0.970812	0.888199	0.888199	0.861446	0.874618	161
5	Bronchiolitis	0.983668	0.686275	0.686275	0.889831	0.774908	153

36. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 40%, epochs : 100, optimizer :RMSprop, Convolutional layer : 3 [Neurons(64,64,64)].

Model: "sequential_20"

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Layer (type) Output Shape Param #

==========

conv1d_48 (Conv1D) (None, 36, 64) 384

conv1d_49 (Conv1D) (None, 32, 64) 20544

max_pooling1d_20 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_108 (Dropout) (None, 16, 64) 0

conv1d_50 (Conv1D) (None, 12, 64) 20544

dropout_109 (Dropout) (None, 12, 64) 0

flatten_20 (Flatten) (None, 768) 0

dense_100 (Dense) (None, 100) 76900

activation_100 (Activation) (None, 100) 0

dropout_110 (Dropout) (None, 100) 0

dense_101 (Dense) (None, 200) 20200

activation_101 (Activation) (None, 200) 0

dropout_111 (Dropout) (None, 200) 0

dense_102 (Dense) (None, 100) 20100

activation_102 (Activation) (None, 100) 0

dropout_112 (Dropout) (None, 100) 0

dense_103 (Dense) (None, 200) 20200

activation_103 (Activation) (None, 200) 0

dropout_113 (Dropout) (None, 200) 0

dense_104 (Dense) (None, 6) 1206

activation_104 (Activation) (None, 6) 0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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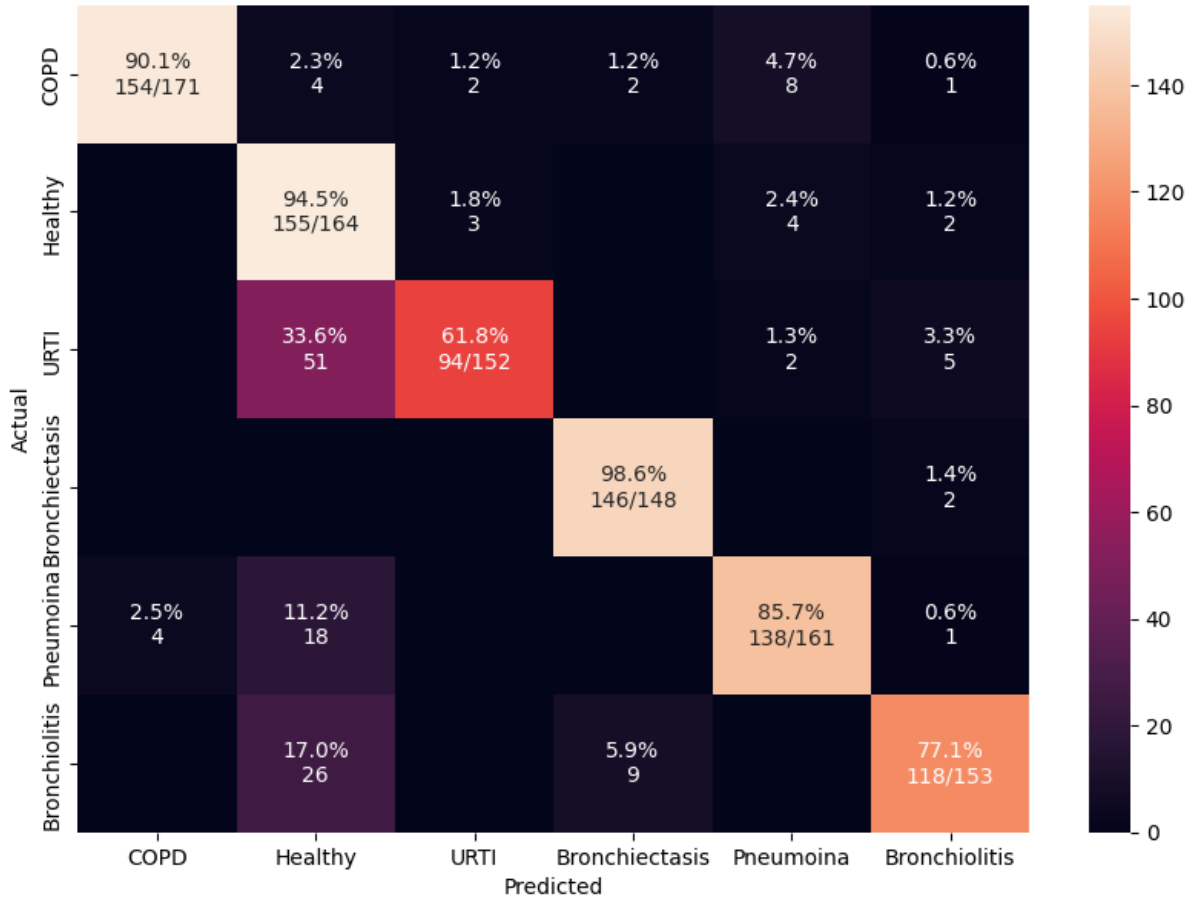
Training Accuracy: 0.8319023847579956

Testing Accuracy: 0.8482613563537598

Training loss: 0.42878618836402893

Testing loss: 0.441259503364563



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.994859	0.900585	0.900585	0.974684	0.936170	171
1	Healthy	0.873885	0.945122	0.945122	0.610236	0.741627	164
2	URTI	0.993726	0.618421	0.618421	0.949495	0.749004	152
3	Bronchiectasis	0.986267	0.986486	0.986486	0.929936	0.957377	148
4	Pneumoina	0.982234	0.857143	0.857143	0.907895	0.881789	161
5	Bronchiolitis	0.986181	0.771242	0.771242	0.914729	0.836879	153

37. Batch-size : 8, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_24"

Layer (type) Output Shape Param #

==========

conv1d_60 (Conv1D) (None, 36, 64) 384

conv1d_61 (Conv1D) (None, 32, 64) 20544

max_pooling1d_24 (MaxPoolin (None, 16, 64) 0

g1D)

dropout_132 (Dropout) (None, 16, 64) 0

flatten_24 (Flatten) (None, 1024) 0

dense_120 (Dense) (None, 100) 102500

activation_120 (Activation) (None, 100) 0

dropout_133 (Dropout) (None, 100) 0

dense_121 (Dense) (None, 200) 20200

activation_121 (Activation) (None, 200) 0

dropout_134 (Dropout) (None, 200) 0

dense_122 (Dense) (None, 100) 20100

activation_122 (Activation) (None, 100) 0

dropout_135 (Dropout) (None, 100) 0

dense_123 (Dense) (None, 200) 20200

activation_123 (Activation) (None, 200) 0

dropout_136 (Dropout) (None, 200) 0

dense_124 (Dense) (None, 6) 1206

activation_124 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

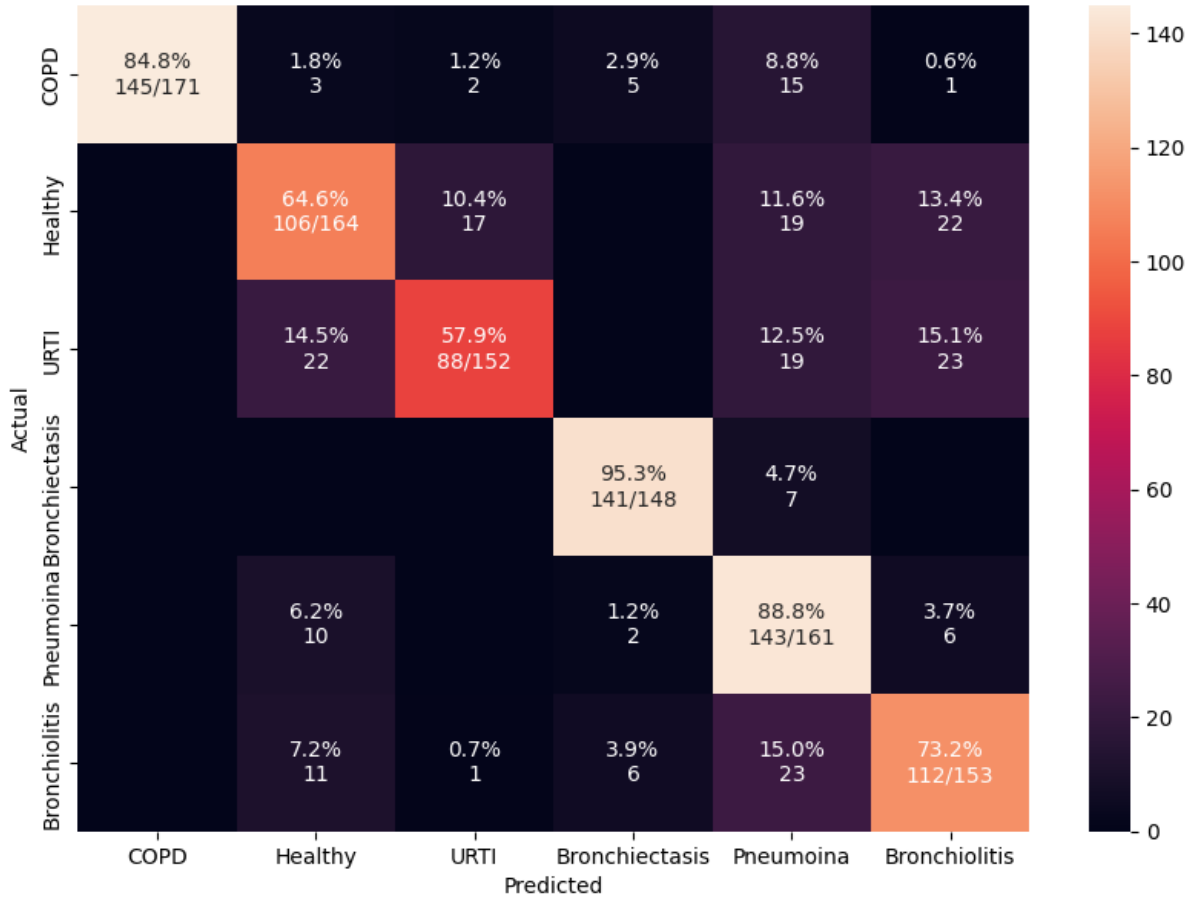
Non-trainable params: 0

Training Accuracy: 0.7722548842430115

Testing Accuracy: 0.7744994759559631

Training loss: 0.6301941871643066

Testing loss: 0.6604931950569153



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.847953	0.847953	1.000000	0.917722	171
1	Healthy	0.941401	0.646341	0.646341	0.697368	0.670886	164
2	URTI	0.974906	0.578947	0.578947	0.814815	0.676923	152
3	Bronchiectasis	0.983770	0.952703	0.952703	0.915584	0.933775	148
4	Pneumoina	0.894670	0.888199	0.888199	0.632743	0.739018	161
5	Bronchiolitis	0.934673	0.732026	0.732026	0.682927	0.706625	153

38. Batch-size : 16, training-testing ratio : 70/30, dropout layer : 50%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_34"

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Layer (type) Output Shape Param #

==========

conv1d_80 (Conv1D) (None, 36, 64) 384

conv1d_81 (Conv1D) (None, 32, 64) 20544

max_pooling1d_34 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_182 (Dropout) (None, 16, 64) 0

flatten_34 (Flatten) (None, 1024) 0

dense_170 (Dense) (None, 100) 102500

activation_170 (Activation) (None, 100) 0

dropout_183 (Dropout) (None, 100) 0

dense_171 (Dense) (None, 200) 20200

activation_171 (Activation) (None, 200) 0

dropout_184 (Dropout) (None, 200) 0

dense_172 (Dense) (None, 100) 20100

activation_172 (Activation) (None, 100) 0

dropout_185 (Dropout) (None, 100) 0

dense_173 (Dense) (None, 200) 20200

activation_173 (Activation) (None, 200) 0

dropout_186 (Dropout) (None, 200) 0

dense_174 (Dense) (None, 6) 1206

activation_174 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

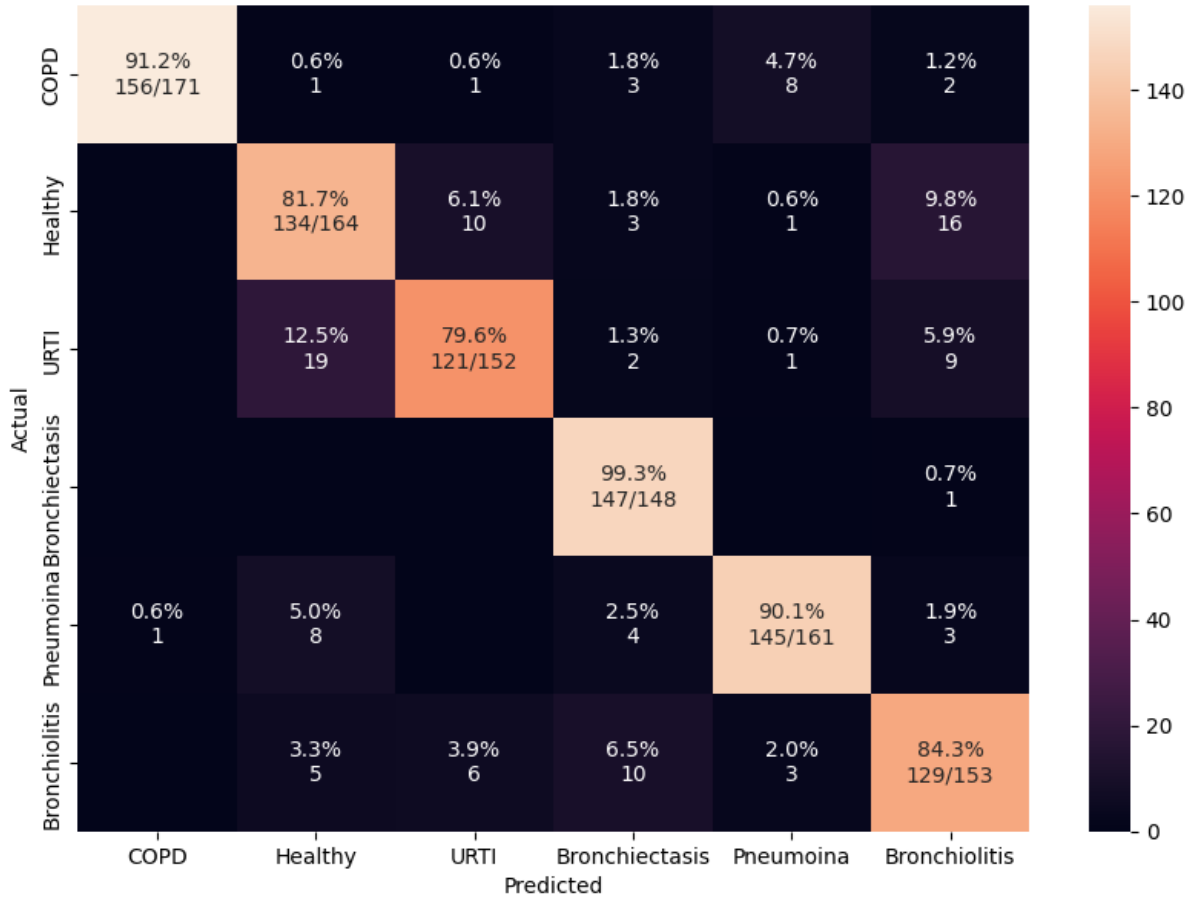
Non-trainable params: 0

Training Accuracy: 0.8879349231719971

Testing Accuracy: 0.8767123222351074

Training loss: 0.30748534202575684

Testing loss: 0.3338540494441986



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	0.998715	0.912281	0.912281	0.993631	0.951220	171
1	Healthy	0.957962	0.817073	0.817073	0.802395	0.809668	164
2	URTI	0.978670	0.796053	0.796053	0.876812	0.834483	152
3	Bronchiectasis	0.972534	0.993243	0.993243	0.869822	0.927445	148
4	Pneumoina	0.983503	0.900621	0.900621	0.917722	0.909091	161
5	Bronchiolitis	0.961055	0.843137	0.843137	0.806250	0.824281	153

39. Batch-size : 8, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer :Adam, Convolutional layer : 3 [Neurons(64,64)].

Model: "sequential_2"

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Layer (type) Output Shape Param #

==========

conv1d_6 (Conv1D) (None, 36, 64) 384

conv1d_7 (Conv1D) (None, 32, 64) 20544

max_pooling1d_2 (MaxPooling 1D) (None, 16, 64) 0

dropout_12 (Dropout) (None, 16, 64) 0

conv1d_8 (Conv1D) (None, 12, 64) 20544

dropout_13 (Dropout) (None, 12, 64) 0

flatten_2 (Flatten) (None, 768) 0

dense_10 (Dense) (None, 100) 76900

activation_10 (Activation) (None, 100) 0

dropout_14 (Dropout) (None, 100) 0

dense_11 (Dense) (None, 200) 20200

activation_11 (Activation) (None, 200) 0

dropout_15 (Dropout) (None, 200) 0

dense_12 (Dense)	(None, 100)	20100
activation_12 (Activation)	(None, 100)	0
dropout_16 (Dropout)	(None, 100)	0
dense_13 (Dense)	(None, 200)	20200
activation_13 (Activation)	(None, 200)	0
dropout_17 (Dropout)	(None, 200)	0
dense_14 (Dense)	(None, 6)	1206
activation_14 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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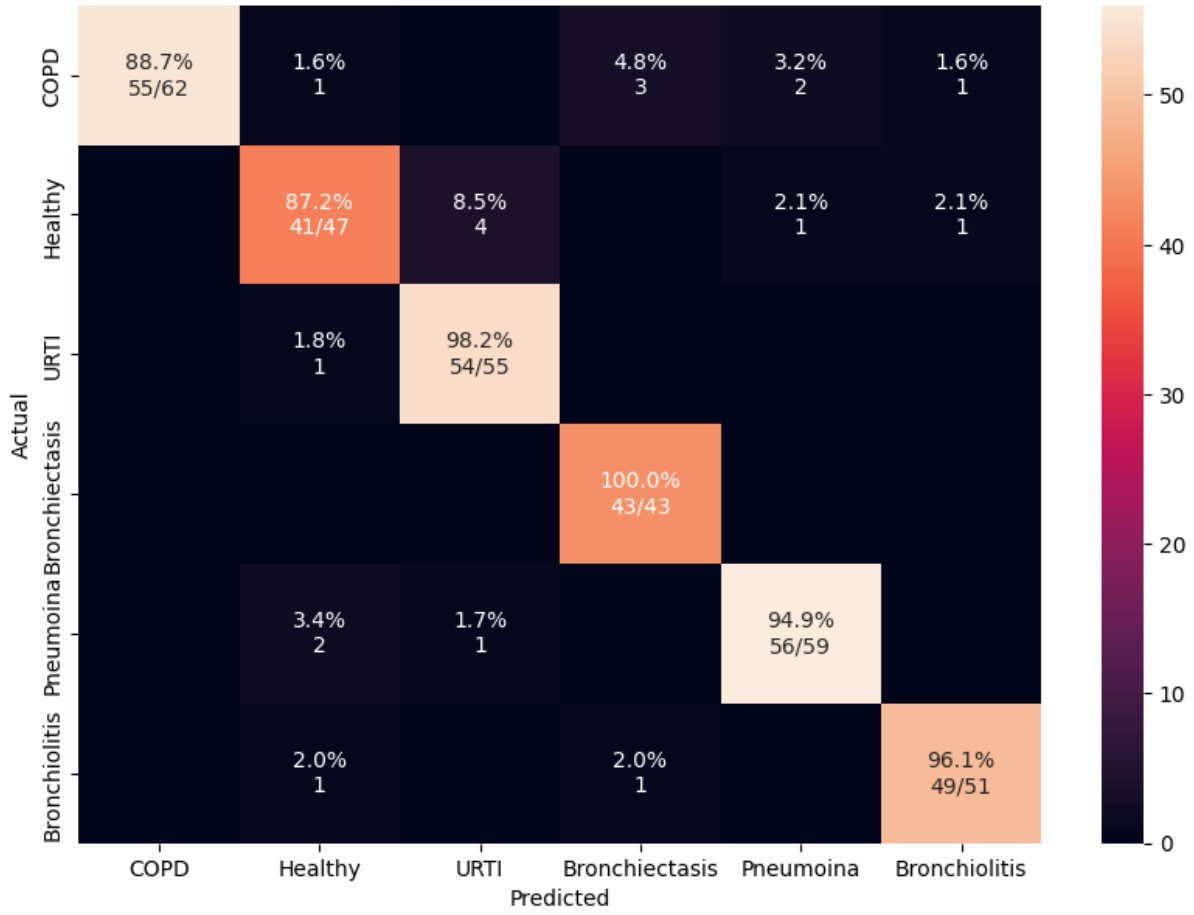
Training Accuracy: 0.9511423707008362

Testing Accuracy: 0.9400631189346313

Training loss: 0.1388755589723587

Testing loss: 0.19125786423683167



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.887097	0.887097	1.000000	0.940171	62
1	Healthy	0.981481	0.872340	0.872340	0.891304	0.881720	47
2	URTI	0.980916	0.981818	0.981818	0.915254	0.947368	55
3	Bronchiectasis	0.985401	1.000000	1.000000	0.914894	0.955556	43
4	Pneumoina	0.988372	0.949153	0.949153	0.949153	0.949153	59
5	Bronchiolitis	0.992481	0.960784	0.960784	0.960784	0.960784	51

40. Batch-size : 8, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_6"

Layer (type) Output Shape Param #

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conv1d_18 (Conv1D) (None, 36, 64) 384

conv1d_19 (Conv1D) (None, 32, 64) 20544

max_pooling1d_6 (MaxPooling (None, 16, 64) 0

1D)

dropout_36 (Dropout) (None, 16, 64) 0

flatten_6 (Flatten) (None, 1024) 0

dense_30 (Dense) (None, 100) 102500

activation_30 (Activation) (None, 100) 0

dropout_37 (Dropout) (None, 100) 0

dense_31 (Dense) (None, 200) 20200

activation_31 (Activation) (None, 200) 0

dropout_38 (Dropout) (None, 200) 0

dense_32 (Dense) (None, 100) 20100

activation_32 (Activation) (None, 100) 0

dropout_39 (Dropout) (None, 100) 0

dense_33 (Dense) (None, 200) 20200

activation_33 (Activation) (None, 200) 0

dropout_40 (Dropout) (None, 200) 0

dense_34 (Dense) (None, 6) 1206

activation_34 (Activation) (None, 6) 0

==========

Total params: 185,134

Trainable params: 185,134

Non-trainable params: 0

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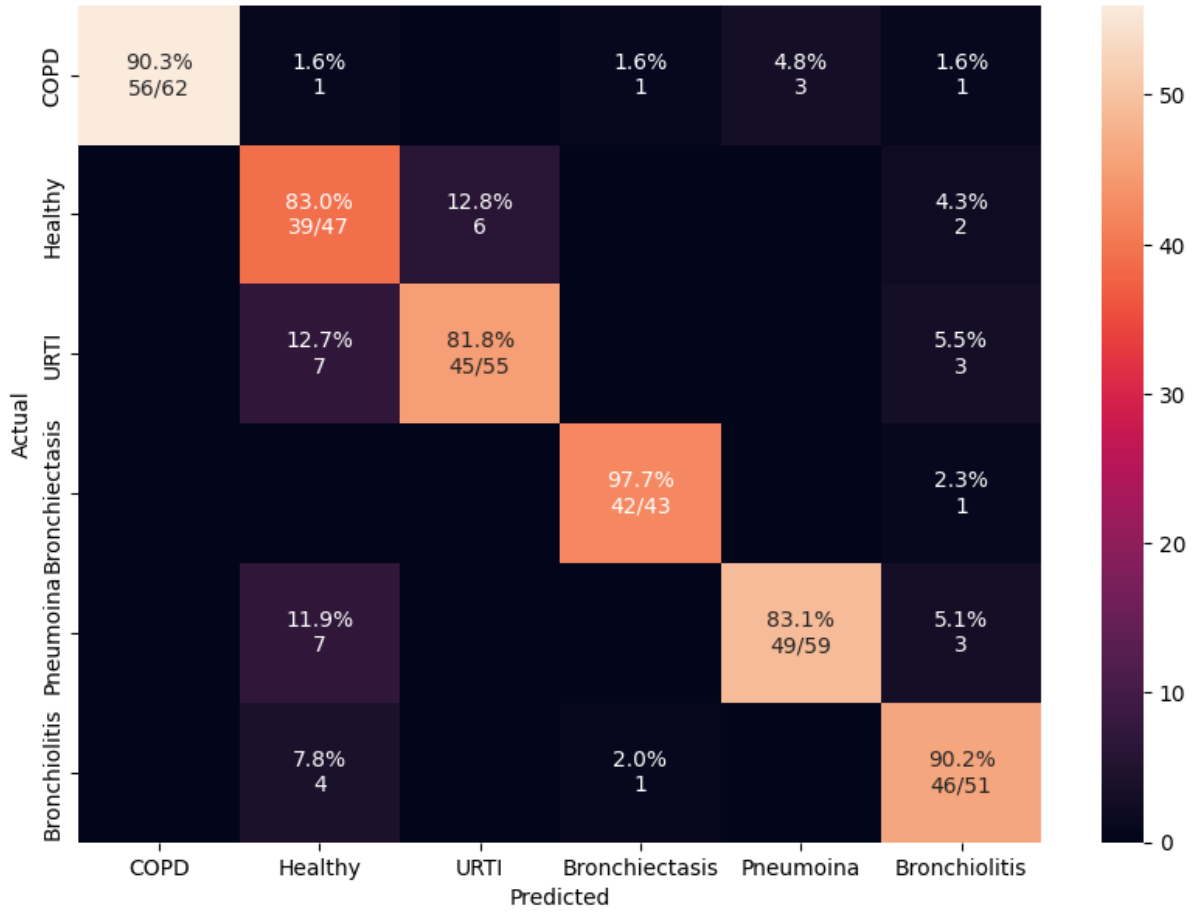
Training Accuracy: 0.8748682141304016

Testing Accuracy: 0.8738170266151428

Training loss: 0.350811243057251

Testing loss: 0.34339573979377747



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.903226	0.903226	1.000000	0.949153	62
1	Healthy	0.929630	0.829787	0.829787	0.672414	0.742857	47
2	URTI	0.977099	0.818182	0.818182	0.882353	0.849057	55
3	Bronchiectasis	0.992701	0.976744	0.976744	0.954545	0.965517	43
4	Pneumoina	0.988372	0.830508	0.830508	0.942308	0.882883	59
5	Bronchiolitis	0.962406	0.901961	0.901961	0.821429	0.859813	51

41. Batch-size : 8, training-testing ratio : 90/10, dropout layer : 40%, epochs : 100, optimizer :RMSprop, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_16"

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Layer (type) Output Shape Param #

==========

conv1d_42 (Conv1D) (None, 36, 64) 384

conv1d_43 (Conv1D) (None, 32, 64) 20544

max_pooling1d_16 (MaxPoolin (None, 16, 64) 0
g1D)

dropout_90 (Dropout) (None, 16, 64) 0

conv1d_44 (Conv1D) (None, 12, 64) 20544

dropout_91 (Dropout) (None, 12, 64) 0

flatten_16 (Flatten) (None, 768) 0

dense_80 (Dense) (None, 100) 76900

activation_80 (Activation) (None, 100) 0

dropout_92 (Dropout) (None, 100) 0

dense_81 (Dense) (None, 200) 20200

activation_81 (Activation) (None, 200) 0

dropout_93 (Dropout) (None, 200) 0

dense_82 (Dense)	(None, 100)	20100
activation_82 (Activation)	(None, 100)	0
dropout_94 (Dropout)	(None, 100)	0
dense_83 (Dense)	(None, 200)	20200
activation_83 (Activation)	(None, 200)	0
dropout_95 (Dropout)	(None, 200)	0
dense_84 (Dense)	(None, 6)	1206
activation_84 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

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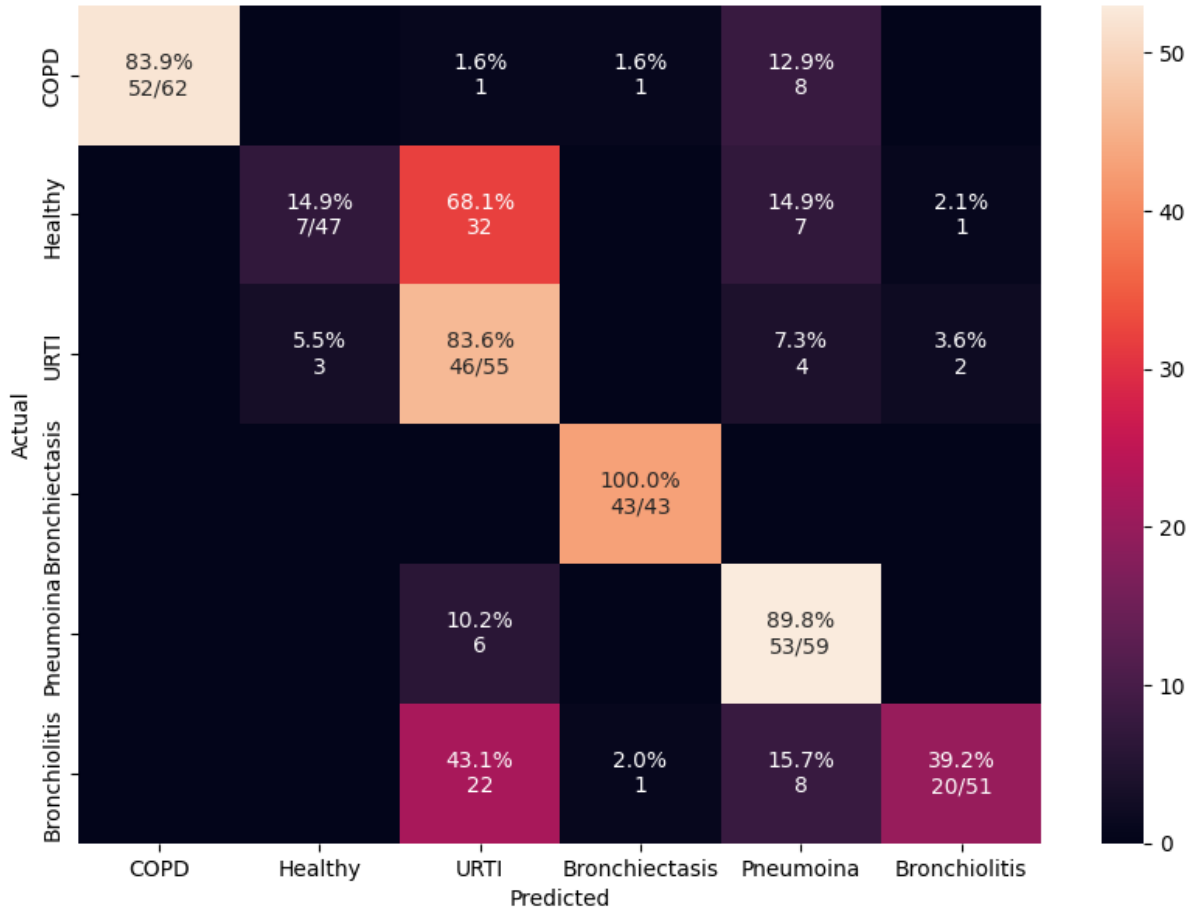
Training Accuracy: 0.6520211100578308

Testing Accuracy: 0.6971608996391296

Training loss: 0.821652889251709

Testing loss: 0.798028290271759



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.838710	0.838710	1.000000	0.912281	62
1	Healthy	0.988889	0.148936	0.148936	0.700000	0.245614	47
2	URTI	0.767176	0.836364	0.836364	0.429907	0.567901	55
3	Bronchiectasis	0.992701	1.000000	1.000000	0.955556	0.977273	43
4	Pneumoina	0.895349	0.898305	0.898305	0.662500	0.762590	59
5	Bronchiolitis	0.988722	0.392157	0.392157	0.869565	0.540541	51

42. Batch-size : 32, training-testing ratio : 90/10, dropout layer : 30%, epochs : 100, optimizer :Adam, Convolutional layer : 2 [Neurons(64,64)].

Model: "sequential_22"

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Layer (type)	Output Shape	Param #
conv1d_60 (Conv1D)	(None, 36, 64)	384
conv1d_61 (Conv1D)	(None, 32, 64)	20544
max_pooling1d_22 (MaxPooling1D)	(None, 16, 64)	0
dropout_126 (Dropout)	(None, 16, 64)	0
conv1d_62 (Conv1D)	(None, 12, 64)	20544
dropout_127 (Dropout)	(None, 12, 64)	0
flatten_22 (Flatten)	(None, 768)	0
dense_110 (Dense)	(None, 100)	76900
activation_110 (Activation)	(None, 100)	0
dropout_128 (Dropout)	(None, 100)	0
dense_111 (Dense)	(None, 200)	20200
activation_111 (Activation)	(None, 200)	0

dropout_129 (Dropout)	(None, 200)	0
dense_112 (Dense)	(None, 100)	20100
activation_112 (Activation)	(None, 100)	0
dropout_130 (Dropout)	(None, 100)	0
dense_113 (Dense)	(None, 200)	20200
activation_113 (Activation)	(None, 200)	0
dropout_131 (Dropout)	(None, 200)	0
dense_114 (Dense)	(None, 6)	1206
activation_114 (Activation)	(None, 6)	0

==========

Total params: 180,078

Trainable params: 180,078

Non-trainable params: 0

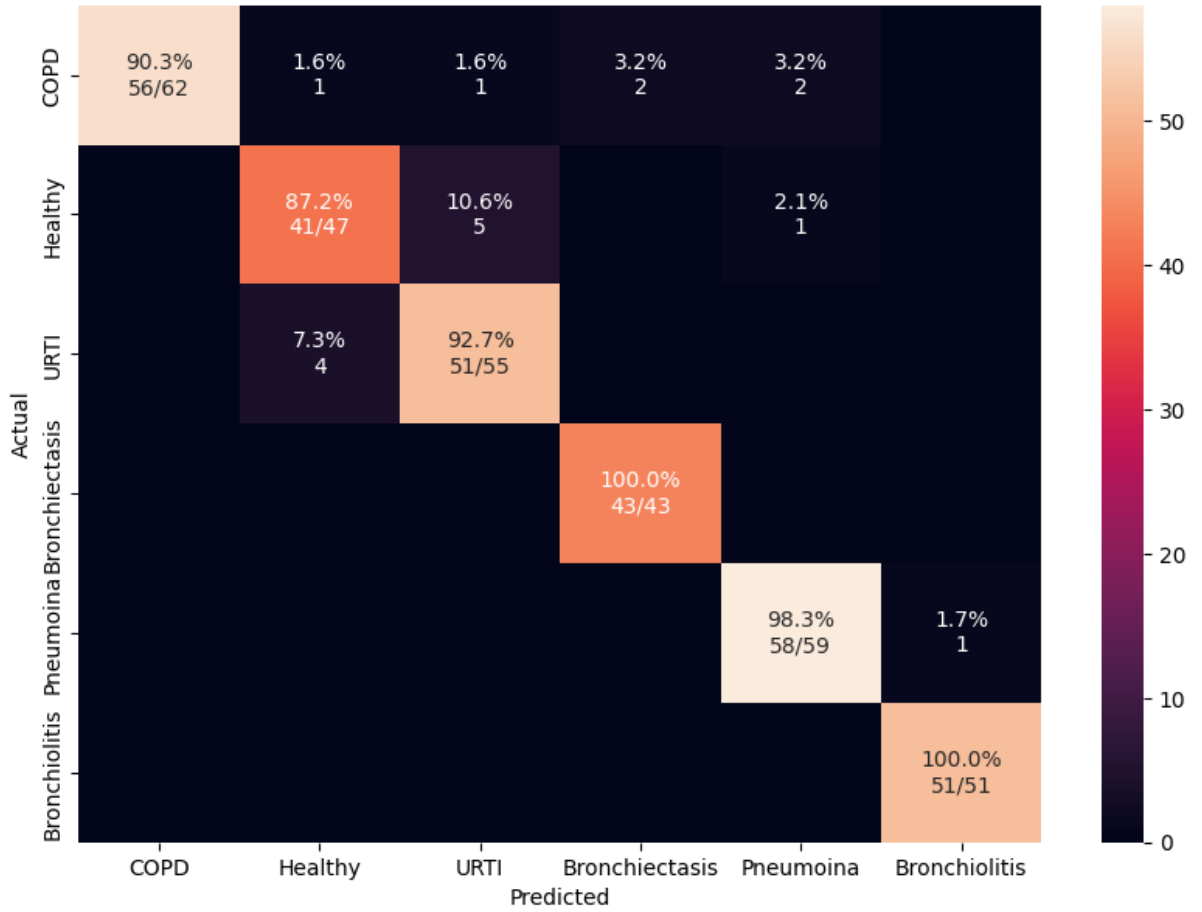
_____

Training Accuracy: 0.9609841704368591

Testing Accuracy: 0.9463722109794617

Training loss: 0.09634323418140411

Testing loss: 0.14831823110580444



	label	Specificity	Sensitivity	Recall	Precision	f_score	support
0	COPD	1.000000	0.903226	0.903226	1.000000	0.949153	62
1	Healthy	0.981481	0.872340	0.872340	0.891304	0.881720	47
2	URTI	0.977099	0.927273	0.927273	0.894737	0.910714	55
3	Bronchiectasis	0.992701	1.000000	1.000000	0.955556	0.977273	43
4	Pneumoina	0.988372	0.983051	0.983051	0.950820	0.966667	59
5	Bronchiolitis	0.996241	1.000000	1.000000	0.980769	0.990291	51