

Model Training Report

Configuration and Parameters:

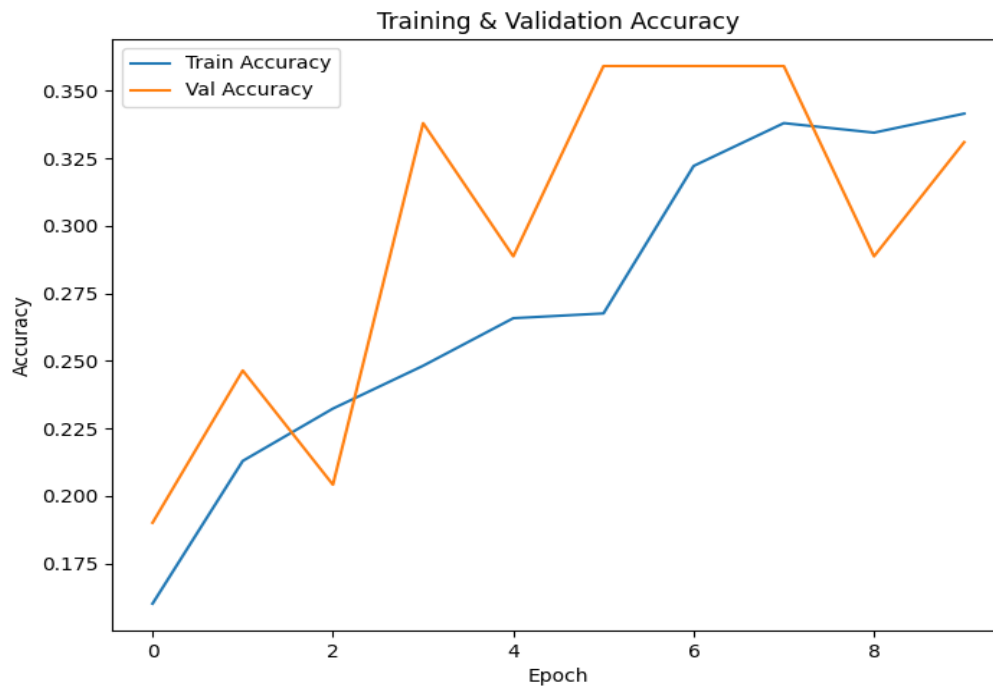
Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79

Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
max_pooling2d_1 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032
Total params: 33,509,978 (127.83 MB)		
Trainable params: 11,169,992 (42.61 MB)		
Non-trainable params: 0 (0.00 B)		
Optimizer params: 22,339,986 (85.22 MB)		

Test Accuracy: 0.3165

Training Accuracy over Epochs:



Model Training Report

Configuration and Parameters:

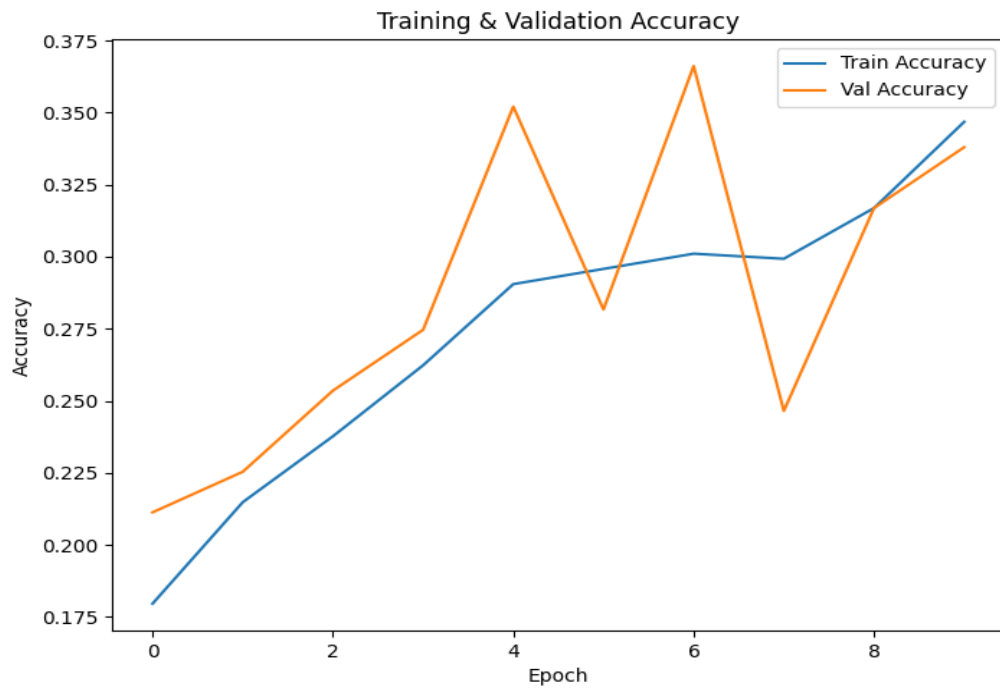
Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79

Model Summary:

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max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032
Total params: 33,509,978 (127.83 MB)		
Trainable params: 11,169,992 (42.61 MB)		
Non-trainable params: 0 (0.00 B)		
Optimizer params: 22,339,986 (85.22 MB)		

Test Accuracy: 0.2785

Training Accuracy over Epochs:



Model Training Report

Configuration and Parameters:

Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79
Comments: Increased augmentation by adding random brightness

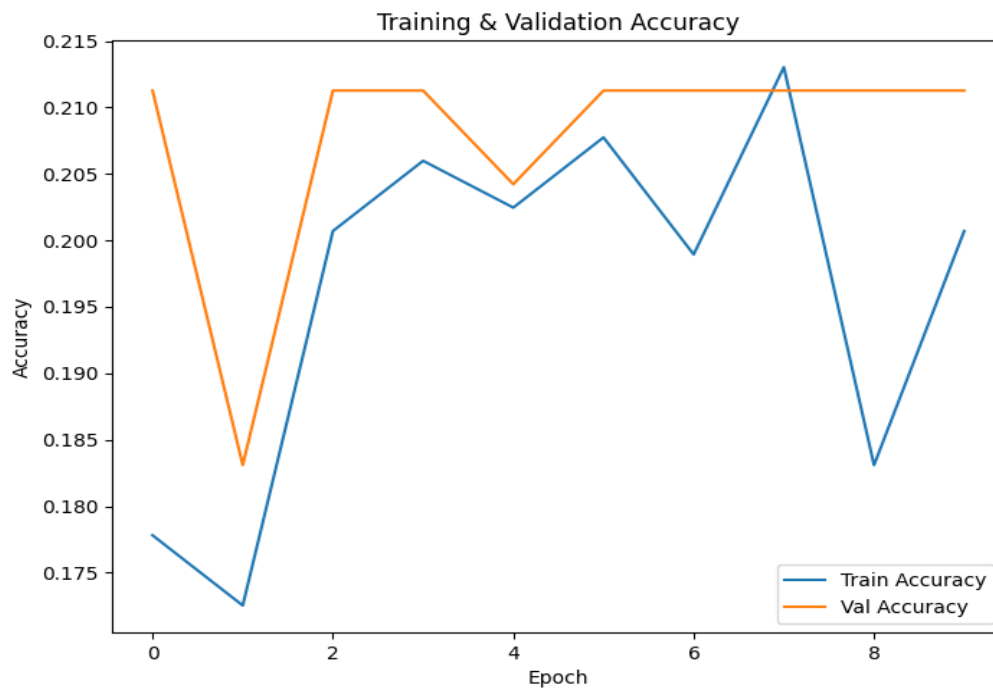
Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
max_pooling2d_1 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032
Total params: 33,509,978 (127.83 MB)		
Trainable params: 11,169,992 (42.61 MB)		
Non-trainable params: 0 (0.00 B)		

Optimizer params: 22,339,986 (85.22 MB)

Test Accuracy: 0.2152

Training Accuracy over Epochs:



Model Training Report

Configuration and Parameters:

Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Class Weights: {0: np.float64(1.3653846153846154), 1: np.float64(0.5867768595041323), 2: np.float64(1.3148148148148149), 3: np.float64(0.6454545454545455), 4: np.float64(1.1639344262295082), 5: np.float64(1.1451612903225807), 6: np.float64(1.3148148148148149), 7: np.float64(1.3148148148148149)}
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79
Comments: Apply class weights for balancing

Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
max_pooling2d_1 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032

Test Accuracy: 0.1013

The graph displays the training and validation accuracy over 9 epochs. The training accuracy (blue line) starts at approximately 0.151 and drops to about 0.097 by epoch 9. The validation accuracy (orange line) starts at approximately 0.134 and drops to about 0.098 by epoch 9. Both accuracies show significant fluctuations throughout the training process.

Epoch	Train Accuracy	Val Accuracy
0	0.151	0.134
1	0.097	0.098
2	0.100	0.106
3	0.081	0.098
4	0.093	0.105
5	0.100	0.113
6	0.084	0.100
7	0.095	0.084
8	0.090	0.084
9	0.088	0.098

Model Training Report

Configuration and Parameters:

Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Class Weights: {0: np.float64(1.3653846153846154), 1: np.float64(0.5867768595041323), 2: np.float64(1.3148148148148149), 3: np.float64(0.6454545454545455), 4: np.float64(1.1639344262295082), 5: np.float64(1.1451612903225807), 6: np.float64(1.3148148148148149), 7: np.float64(1.3148148148148149)}
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79
Comments: Applied real random brightness augmentation

Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
max_pooling2d_1 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032

Test Accuracy: 0.3544

The graph displays the training and validation accuracy over 9 epochs. The training accuracy (blue line) starts at 0.100 and increases steadily to approximately 0.295. The validation accuracy (orange line) starts at 0.105, dips slightly at epoch 1, then rises to a peak of 0.175 at epoch 2, followed by a dip at epoch 3. It then rises sharply to 0.240 at epoch 4, peaks at 0.245 at epoch 5, dips to 0.232 at epoch 6, rises to 0.240 at epoch 7, dips to 0.232 at epoch 8, and finally spikes to 0.305 at epoch 9.

Epoch	Train Accuracy	Val Accuracy
0	0.100	0.105
1	0.112	0.098
2	0.128	0.175
3	0.165	0.135
4	0.215	0.240
5	0.260	0.245
6	0.255	0.232
7	0.280	0.240
8	0.288	0.232
9	0.295	0.305

Model Training Report

Configuration and Parameters:

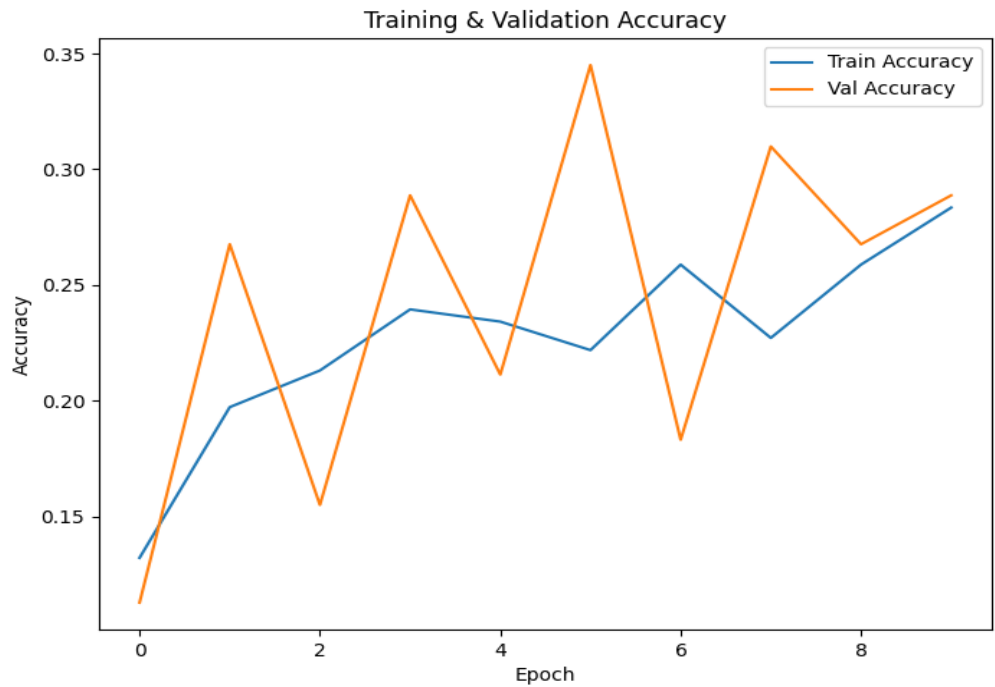
Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Class Weights: {0: np.float64(1.3653846153846154), 1: np.float64(0.5867768595041323), 2: np.float64(1.3148148148148149), 3: np.float64(0.6454545454545455), 4: np.float64(1.1639344262295082), 5: np.float64(1.1451612903225807), 6: np.float64(1.3148148148148149), 7: np.float64(1.3148148148148149)}
Epochs: 10
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79
Comments: Applied real random translation augmentation

Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 222, 222, 32)	896
max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
max_pooling2d_1 (MaxPooling2D)	(None, 54, 54, 64)	0
conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032

Test Accuracy: 0.2532

Training Accuracy over Epochs:



Model Training Report

Configuration and Parameters:

Image Size: (224, 224)
Batch Size: 32
Number of Classes: 8
Class Weights: {0: 1.365, 1: 0.587, 2: 1.315, 3: 0.645, 4: 1.164, 5: 1.145, 6: 1.315, 7: 1.315}
Epochs: 10
Data Augmentation: RandomFlip(horizontal), RandomRotation(0.1 radians), RandomZoom(0.1), RandomContrast(0.1), RandomBrightness(0.1)RandomTranslation(0.05, 0.05)
Gaussian Noise STD: 0.03
Salt-Pepper Noise Amount: 0.01
Train Size: 568
Validation Size: 142
Test Size: 79
Comments: Reduced random translation augmentation to 5%

Model Summary:

Model: "sequential_1"		
Layer (type)	Output Shape	Param #
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max_pooling2d (MaxPooling2D)	(None, 111, 111, 32)	0
conv2d_1 (Conv2D)	(None, 109, 109, 64)	18,496
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conv2d_2 (Conv2D)	(None, 52, 52, 128)	73,856
max_pooling2d_2 (MaxPooling2D)	(None, 26, 26, 128)	0
flatten (Flatten)	(None, 86528)	0
dense (Dense)	(None, 128)	11,075,712
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 8)	1,032

Test Accuracy: 0.1519

The graph displays the training and validation accuracy over 9 epochs. The training accuracy (blue line) starts at approximately 0.13, remains relatively stable until epoch 3, then increases to a peak of 0.25 at epoch 7, before slightly declining and ending at 0.24. The validation accuracy (orange line) starts lower at approximately 0.08, peaks at 0.23 at epoch 2, drops to 0.16 at epoch 3, and then shows a significant peak of 0.30 at epoch 8, before ending at 0.16. The legend indicates that the blue line is 'Train Accuracy' and the orange line is 'Val Accuracy'.

Epoch	Train Accuracy	Val Accuracy
0	0.13	0.08
1	0.13	0.11
2	0.14	0.23
3	0.12	0.16
4	0.16	0.17
5	0.16	0.11
6	0.23	0.22
7	0.25	0.14
8	0.23	0.30
9	0.24	0.16