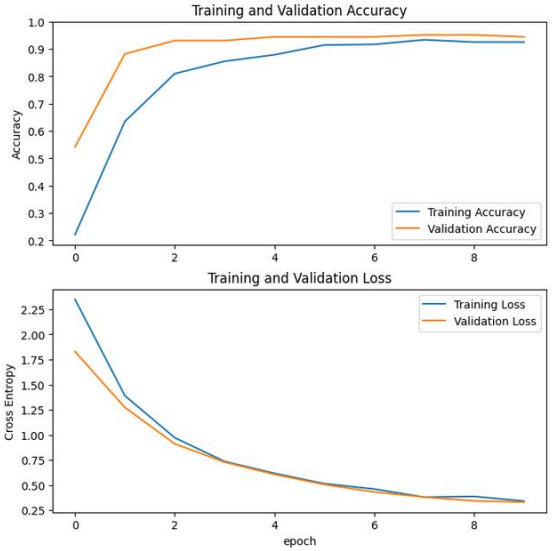
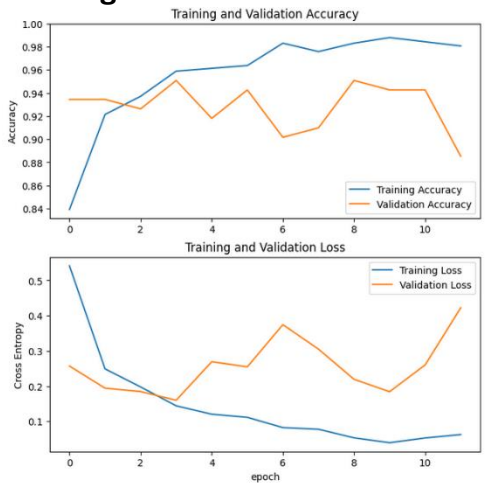
Andrew Nguyen, Aaron Fredericks

Assignment 3 Parameter History

Iteration	Parameters	Test/Train Accuracy	History Plot Graphs
1	**PREPROCESSING:** ***batch*** = 32 ***seed*** = 1337 ***flip*** = "horizontal" ***rotation*** = 0.5 ***zoom*** = 0.1 **MODEL:** ***alpha_val*** = 1.0 ***include_top_val*** = False ***dropout_rate_val*** = 0.2 ***optimizer_val*** = tf.keras.optimizers.Adam() ***optimizer_val_tuning*** = tf.keras.optimizers.Adam(1e-4) ***global_average_layer_parameter*** = tf.keras.layers.GlobalAveragePooling2D() ***loss_val*** = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.0001 ***initial_epochs*** = 10 ***fine_tune_layers*** = 30 ***fine_tune_epochs*** = 10	**Training = False:** Train Acc: 0.9251 Train Loss: 0.3416 Validation Acc: 0.9444 Validation Loss: 0.3313 **Training = True:** Train Acc: 1.000 Train Loss: 0.9444 Validation Acc: 0.9444 Validation Loss: 0.9444 **Test:** Test Acc: 0.9829 Test Loss: 0.0521	**Training = False:**  **Training=True:** 

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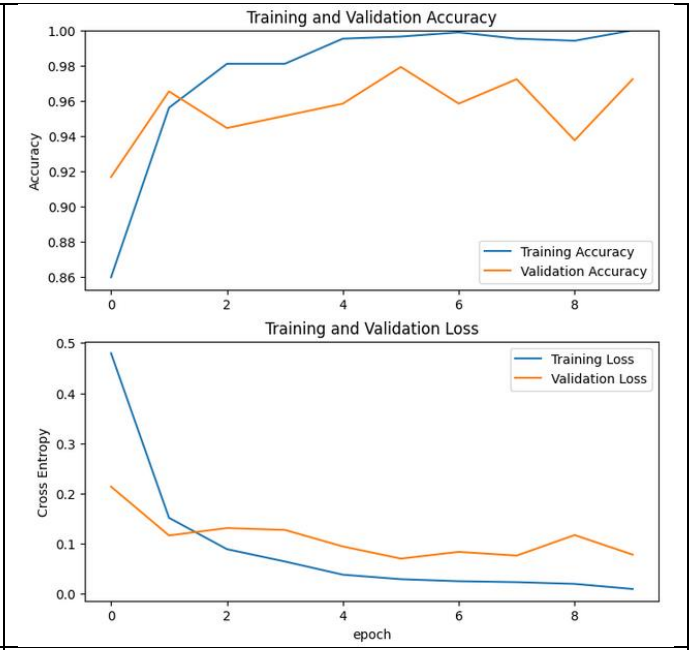
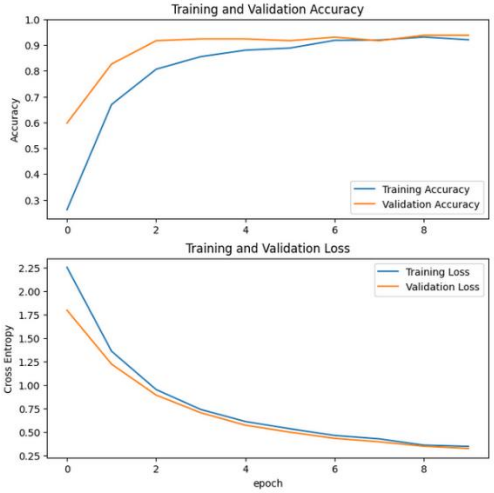
			
2	**PREPROCESSING:** ***batch*** = 32 ***seed*** = 1337 ***flip*** = "horizontal" ***rotation*** = 0.5 ***zoom*** = 0.1 **MODEL:** ***alpha_val*** = 1.0 ***include_top_val*** = False ***dropout_rate_val*** = 0.25 ***optimizer_val*** = tf.keras.optimizers.Adam() ***optimizer_val_tuning*** = tf.keras.optimizers.Adam(1e-4)	**Training = False:** Train Acc: 0.9203 Train Loss: 0.3460 Validation Acc: 0.9375 Validation Loss: 0.3242 **Training = True:** Train Acc: 0.9952 Train Loss: 0.0200 Validation Acc: 0.9861 Validation Loss: 0.0437 **Test:** Test Acc: 0.9881 Test Loss: 0.0449	**Training = False:**  **Training=True:**

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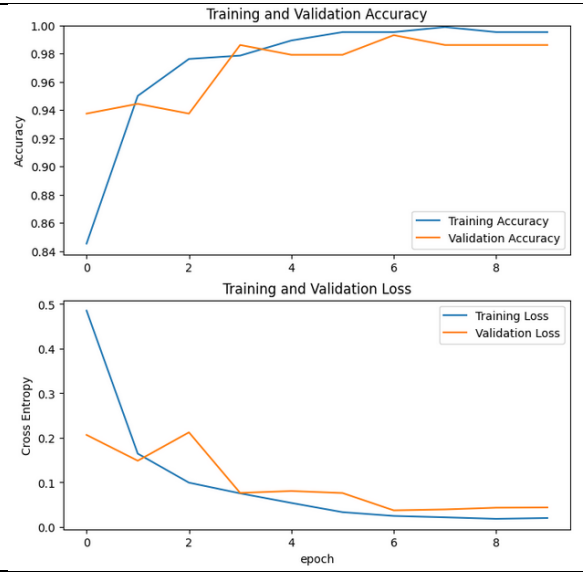
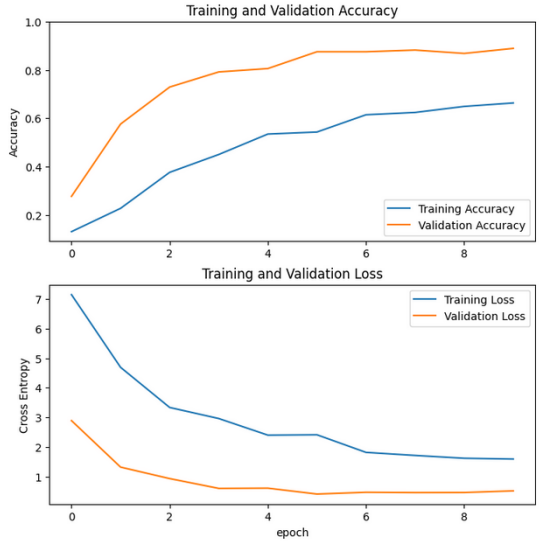
Assignment 3 Parameter History

	global_average_layer_parameter = tf.keras.layers.GlobalAveragePooling2D() ***loss_val*** = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.0005 ***initial_epochs*** = 10 ***fine_tune_layers*** = 40 ***fine_tune_epochs*** = 10		
3	**PREPROCESSING:** ***batch*** = 32 ***seed*** = 1337 ***flip*** = "horizontal" ***rotation*** = 0.8 ***zoom*** = 0.5 **MODEL:** ***alpha_val*** = 1.0 ***include_top_val*** = False ***dropout_rate_val*** = 0.25 ***optimizer_val*** = tf.keras.optimizers.Adam() ***optimizer_val_tuning*** = tf.keras.optimizers.Adam(1e-4) ***global_average_layer_parameter*** = tf.keras.layers.GlobalMaxPooling2D()	**Training = False:** Train Acc: 0.6635 Train Loss: 1.5923 Validation Acc: 0.8889 Validation Loss: 0.5169 **Training = True:** Train Acc: 0.9417 Train Loss: 0.2009 Validation Acc: 0.9514 Validation Loss: 0.2407 **Test:** Test Acc: Test Loss:	**Training = False:**  **Training=True:**

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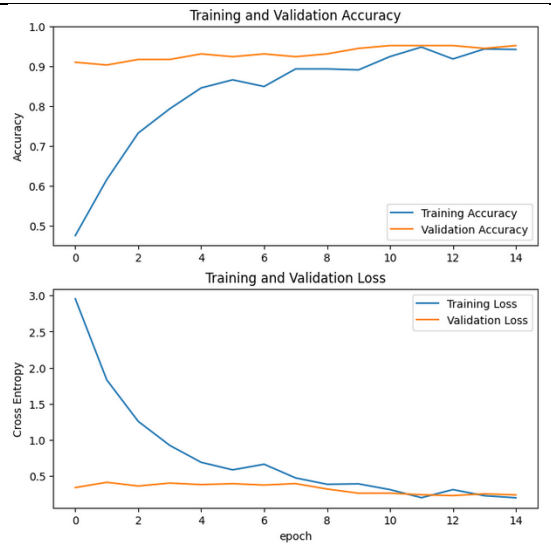
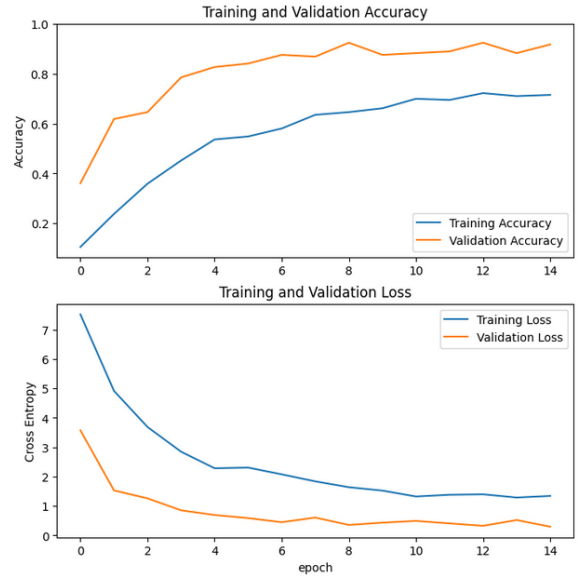
Assignment 3 Parameter History

	loss_val = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.001 ***initial_epochs*** = 10 ***fine_tune_layers*** = 50 ***fine_tune_epochs*** = 15		
4	**PREPROCESSING:** ***batch*** = 32 ***seed*** = 1337 ***flip*** = "horizontal" ***rotation*** = 0.8 ***zoom*** = 0.5 **MODEL:** ***alpha_val*** = 1.0 ***include_top_val*** = False ***dropout_rate_val*** = 0.25 ***optimizer_val*** = tf.keras.optimizers.Adam() ***optimizer_val_tuning*** = tf.keras.optimizers.Adam(1e-4) ***global_average_layer_parameter*** = tf.keras.layers.GlobalMaxPooling2D()	**Training = False:** Train Acc: 0.7146 Train Loss: 1.3420 Validation Acc: 0.9167 Validation Loss: 0.2968 **Training = True:** Train Acc: 0.9239 Train Loss: 0.3158 Validation Acc: 0.9236 Validation Loss: 0.2660 **Test:** Test Acc: 0.9261 Test Loss: 0.3809	**Training = False:**  **Training=True:**

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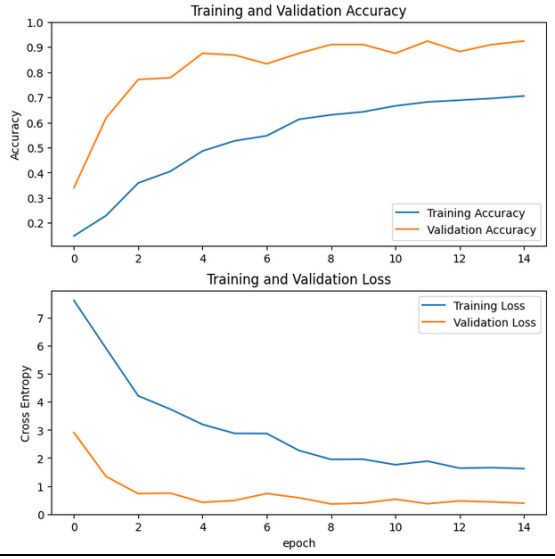
Assignment 3 Parameter History

	loss_val = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.001 ***initial_epochs*** = 15 ***fine_tune_layers*** = 75 ***fine_tune_epochs*** = 12		
5	**PREPROCESSING:** ***batch*** = 32 ***seed*** = 1337 ***flip*** = "vertical" ***rotation*** = 0.8 ***zoom*** = 0.5 **MODEL:** ***alpha_val*** = 1 ***include_top_val*** = False ***dropout_rate_val*** = 0.35 ***optimizer_val*** = tf.keras.optimizers.Adam() ***optimizer_val_tuning*** = tf.keras.optimizers.Adam(1e-5)	**Training = False:** Train Acc: 0.7051 Train Loss: 1.6204 Validation Acc: 0.9236 Validation Loss: 0.3886 **Training = True:** Train Acc: 0.6266 Train Loss: 2.1800 Validation Acc: 0.9236 Validation Loss: 0.3919 **Test:** Test Acc: 0.9629 Test Loss: 0.2663	**Training = False:** 

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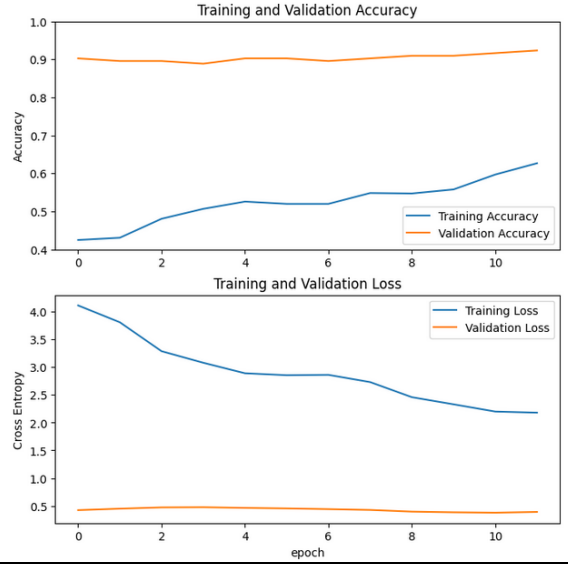
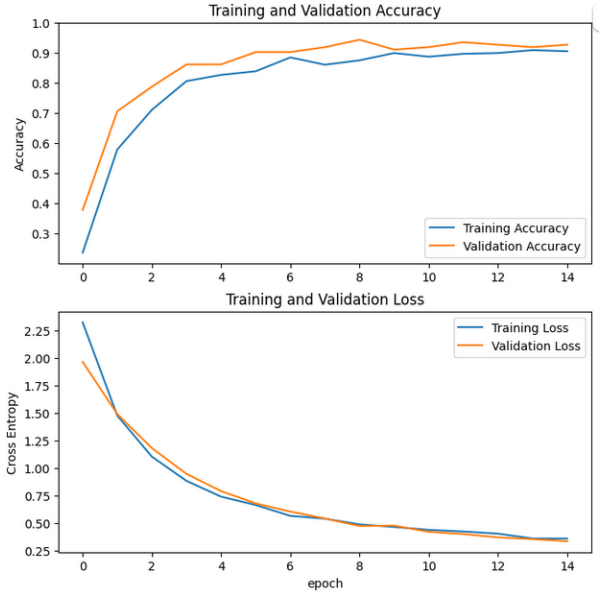
Assignment 3 Parameter History

	global_average_layer_parameter = tf.keras.layers.GlobalMaxPooling2D() ***loss_val*** = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.001 ***initial_epochs*** = 15 ***fine_tune_layers*** = 75 ***fine_tune_epochs*** = 12		**Training=True:** 
6	**PREPROCESSING:** ***batch*** = 30 ***seed*** = 1337 ***flip*** = "vertical" ***rotation*** = 0.8 ***zoom*** = 0.5 **MODEL:** ***alpha_val*** = 1 ***include_top_val*** = False ***dropout_rate_val*** = 0.30 ***optimizer_val*** = tf.keras.optimizers.AdamW() ***optimizer_val_tuning*** = tf.keras.optimizers.AdamW(1e-4)	**Training = False:** Train Acc: 0.9045 Train Loss: 0.3633 Validation Acc: 0.9262 Validation Loss: 0.3386 **Training = True:** Train Acc: 0.9807 Train Loss: 0.0624 Validation Acc: 0.8852 Validation Loss: 0.4223 **Test:** Test Acc: 0.9367 Test Loss: 0.1942	**Training = False:** 

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Assignment 3 Parameter History

	global_average_layer_parameter = tf.keras.layers.GlobalAveragePooling2D() ***loss_val*** = "sparse_categorical_crossentropy" ***base_learning_rate*** = 0.001 ***initial_epochs*** = 15 ***fine_tune_layers*** = 75 ***fine_tune_epochs*** = 12		**Training=True:**