## Project Development Phase Model Performance Test

## **Model Performance Testing:**

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model		In [12]: 1 model.summary()
1.			Model: "model"
	Summary		Layer (type) Output Shape Param # Connected to
			input_1 (InputLayer) [(None, 299, 299, 3 0 [] )]
			block1_conv1 (Conv20) (None, 149, 149, 32 864 ['input_1[0][0]']
			block1_comv1_bn (BatchNormaliz (Mone, 149, 149, 32 128 ['block1_comv1[0][0]'] ation)
			block1_comv1_act (Activation) (None, 149, 149, 32 0 ['block1_comv1_bn[@][@]']
			block1_comv2 (Comv20) (None, 147, 147, 64 18432 ['block1_comv1_act[0][0]']
			block1_conv2_bn (BatchNormaliz (None, 147, 147, 64 256 ['block1_conv2[0][0]'] ation)
			block1_comv2_act (Activation) (None, 147, 147, 64 0 ['block1_comv2_bn[0][0]']
			block2_sepconv1 (SeparableConv (Nome, 147, 147, 12 8768 ['block1_conv2_act[0][0]'] 20)
			block2_sepconv1_bm (BatchNorma (None, 147, 147, 12 512 ['block2_sepconv1[0][0]'] lization) 8)
			block2_sepconv2_act (Activatio (Hone, 147, 147, 12 0 ['block2_sepconv1_bn[@][@]'] n) ['block2_sepconv1_bn[@][@]']
			block2_sepconv2 (SeparableConv (None, 147, 147, 12 17536 ['block2_sepconv2_act[0][0]'] 2D) 8)
			block2_sepconv2_bn (BatchNorma (None, 147, 147, 12 512 ['block2_sepconv2[0][0]'] lization) 8)
			conv2d (Conv2D) (None, 74, 74, 128) 8192 ['block1_conv2_act[0][0]']
			block2_pool (MaxPooling2D) (None, 74, 74, 128) 0 ['block2_sepconv2_bn[0][0]']
			batch_normalization (BatchNorm (None, 74, 74, 128) 512 ['conv2d[0][0]'] alization)
			add (Add) (None, 74, 74, 128) 0 ['blockz_pool[0][0]', 'batch_normalization[0][0]']
			block3_sepconv1_act (Activatio (None, 74, 74, 128) 0 ['add[0][0]'] n)
			block3_sepconv1 (SeparableConv (None, 74, 74, 256) 33928 ['block3_sepconv1_act[0][0]'] 20)
			block3_sepconv1_bn (BatchNorma (None, 74, 74, 256) 1024 ['block3_sepconv1[0][0]'] liration)
			block3_sepconv2_act (Activatio (None, 74, 74, 256) 0 ['block3_sepconv1_bn[0][0]'] n)
			block3_sepconv2 (SeparableConv (None, 74, 74, 256) 67840 ['block3_sepconv2_act[0][0]'] 20)

	ı		0001 0000 0000 0000		and the second s
		block3_sepconv2_bn (BatchNorma lization)	(None, 74, 74, 256)	1024	['block3_sepconv2[0][0]']
1		conv2d_1 (Conv2D)	(None, 37, 37, 256) 3	2768	['add[0][0]']
		block3_pool (MaxPooling2D)	(None, 37, 37, 256) 0		['block3_sepconv2_bn[0][0]']
		<pre>batch_normalization_1 (BatchNo rmalization)</pre>	(None, 37, 37, 256)	1024	['conv2d_1[0][0]']
		add_1 (Add)	(None, 37, 37, 256) 0		['block3_pool[0][0]', 'batch_normalization_1[0][0]']
		block4_sepconv1_act (Activation)	(None, 37, 37, 256)	0	['add_1[0][0]']
		block4_sepconv1 (SeparableConv 2D)	(None, 37, 37, 728)	188672	['block4_sepconv1_act[0][0]']
		block4_sepconv1_bn (BatchNorma lization)	(None, 37, 37, 728)	2912	['block4_sepconv1[0][0]']
		block4_sepconv2_act (Activation)	(None, 37, 37, 728)	0	['block4_sepconv1_bn[0][0]']
		block4_sepconv2 (SeparableConv 2D)	(None, 37, 37, 728)	536536	['block4_sepconv2_act[0][0]']
		block4_sepconv2_bn (BatchNorma lization)	(None, 37, 37, 728)	2912	['block4_sepconv2[0][0]']
		conv2d_2 (Conv2D)	(None, 19, 19, 728) 1	86368	['add_1[0][0]']
		block4_pool (MaxPooling2D)	(None, 19, 19, 728) 0		['block4_sepconv2_bn[0][0]']
		<pre>batch_normalization_2 (BatchNo rmalization)</pre>	(None, 19, 19, 728)	2912	['conv2d_2[0][0]']
		add_2 (Add)	(None, 19, 19, 728)	9	['block4_pool[0][0]', 'batch_normalization_2[0][0]']
		<pre>block5_sepconv1_act (Activatio n)</pre>	(None, 19, 19, 728)	0	['add_2[0][0]']
		block5_sepconv1 (SeparableConv 2D)	(None, 19, 19, 728)	536536	['block5_sepconv1_act[0][0]']
		block5_sepconv1_bn (BatchNorma lization)	(None, 19, 19, 728)	2912	$['block5\_sepconv1[\theta][\theta]']$
		block5_sepconv2_act (Activation)	(None, 19, 19, 728)	0	['block5_sepconv1_bn[0][0]']
		block5_sepconv2 (SeparableConv 2D)	(None, 19, 19, 728)	536536	['block5_sepconv2_act[0][0]']
		block5_sepconv2_bn (BatchNorma lization)	(None, 19, 19, 728)	2912	['block5_sepconv2[0][0]']
		block5_sepconv3_act (Activation)	(None, 19, 19, 728)	0	['block5_sepconv2_bn[0][0]']
		block5_sepconv3 (SeparableConv 2D)	(None, 19, 19, 728)	536536	['block5_sepconv3_act[0][0]']
		block5_sepconv3_bn (BatchNorma lization)	(None, 19, 19, 728)	2912	['block5_sepconv3[0][0]']
		add_3 (Add)	(None, 19, 19, 728) 6	9	['block5_sepconv3_bn[0][0]',
					<u> </u>
-	<del>-</del>	 	<u> </u>		

	<pre>block6_sepconv1_act (Activatio n)</pre>	(None, 19, 19, 728) 0	['add_3[0][0]']
	block6_sepconv1 (SeparableConv 2D)	(None, 19, 19, 728) 536536	['block6_sepconv1_act[0][0]']
	block6_sepconv1_bn (BatchNorma lization)	(None, 19, 19, 728) 2912	['block6_sepconv1[0][0]']
	block6_sepconv2_act (Activation)	(None, 19, 19, 728) 0	['block6_sepconv1_bn[0][0]']
	block6_sepconv2 (SeparableConv 2D)	(None, 19, 19, 728) 536536	['block6_sepconv2_act[0][0]']
	block6_sepconv2_bn (BatchNorma	(None, 19, 19, 728) 2912	['block6_sepconv2[0][0]']
	block6_sepconv3_act (Activation)	(None, 19, 19, 728) 0	['block6_sepconv2_bn[0][0]']
	block6_sepconv3 (SeparableConv 2D)	(None, 19, 19, 728) 536536	['block6_sepconv3_act[0][0]']
	block6_sepconv3_bn (BatchNorma lization)	(None, 19, 19, 728) 2912	['block6_sepconv3[0][0]']
	add_4 (Add)	(None, 19, 19, 728) 0	['block6_sepconv3_bn[0][0]', 'add_s[0][0]']
	block7_sepconv1_act (Activation)	(None, 19, 19, 728) 0	['add_4[@][@]']
	block7_sepconv1 (SeparableConv 2D)	(None, 19, 19, 728) 536536	['block7_sepconv1_act[0][0]']
	block7_sepconv1_bn (BatchNor lization)	ma (None, 19, 19, 728) 2912	['block7_sepconv1[0][0]']
	block7_sepconv2_act (Activat n)	io (None, 19, 19, 728) 0	['block7_sepconv1_bn[0][0]']
	block7_sepconv2 (SeparableCo 2D)	nv (None, 19, 19, 728) 536536	['block7_sepconv2_act[0][0]']
	block7_sepconv2_bn (BatchNor lization)	ma (None, 19, 19, 728) 2912	['block7_sepconv2[0][0]']
	block7_sepconv3_act (Activat n)	io (None, 19, 19, 728) 0	['block7_sepconv2_bn[0][0]']
	block7_sepconv3 (SeparableCo 2D)	nv (None, 19, 19, 728) 536536	['block7_sepconv3_act[0][0]']
	block7_sepconv3_bn (BatchNor lization)	ma (None, 19, 19, 728) 2912	['block7_sepconv3[0][0]']
	add_5 (Add)	(None, 19, 19, 728) 0	['block7_sepconv3_bn[0][0]', 'add_4[0][0]']
	block8_sepconv1_act (Activat n)	io (None, 19, 19, 728) 0	['add_5[0][0]']
	block8_sepconv1 (SeparableCo 2D)	nv (None, 19, 19, 728) 536536	['block8_sepconv1_act[0][0]']
	block8_sepconv1_bn (BatchNor lization)	ma (None, 19, 19, 728) 2912	['block8_sepconv1[0][0]']
	block8_sepconv2_act (Activat n)	io (None, 19, 19, 728) 0	['block8_sepconv1_bn[0][0]']

Shield specond [separableton (low, 15, 19, 700) 33999						
				(None, 19, 19, 728)	536536	['block8_sepconv2_act[0][0]']
				(None, 19, 19, 728)	2912	['block8_sepconv2[0][0]']
				(None, 19, 19, 728)	0	['block8_sepconv2_bn[0][0]']
				(None, 19, 19, 728)	536536	['block8_sepconv3_act[0][0]']
				(None, 19, 19, 728)	2912	['block8_sepconv3[0][0]']
			add_6 (Add)	(None, 19, 19, 728) 8	)	
				(None, 19, 19, 728)	0	['add_6[0][0]']
				(None, 19, 19, 728)	536536	['block9_sepconv1_act[0][0]']
n) blockd_sepconv2_bm (Batchmorna (None, 19, 19, 728) 536536 ['blockd_sepconv2_act[0][0]'] blockd_sepconv2_bm (Batchmorna (None, 19, 19, 728) 2912 ['blockd_sepconv2_bm[0][0]']    blockd_sepconv2_bm (Batchmorna (None, 19, 19, 728) 0 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv3_bm (Batchmorna (None, 19, 19, 728) 536536 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv3_bm (Batchmorna (None, 19, 19, 728) 2912 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv3_bm (Batchmorna (None, 19, 19, 728) 2912 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv1_cact (Activati (None, 19, 19, 728) 0 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv1_cact (Activati (None, 19, 19, 728) 0 ['blockd_sepconv1_act[0][0]']   blockd_sepconv1_cact (Activati (None, 19, 19, 728) 536536 ['blockd_sepconv1_act[0][0]']   blockd_sepconv2_bm (Batchmorn (None, 19, 19, 728) 2912 ['blockd_sepconv1_am[0][0]']   blockd_sepconv2_bm (Batchmorn (None, 19, 19, 728) 2912 ['blockd_sepconv2_bm[0][0]']   blockd_sepconv2_bm (Batchmorn (None, 19, 19, 728) 2912 ['blockd_sepconv2_act[0][0]']   blockd_sepconv2_bm (Batchmorn (None, 19, 19, 728) 2912 ['blockd_sepconv2_act[0][0]']   blockd_sepconv2_bm (Batchmorn (None, 19, 19, 728) 2912 ['blockd_sepconv2_bm[0][0]']				(None, 19, 19, 728)	2912	['block9_sepconv1[0][0]']
				(None, 19, 19, 728)	0	['block9_sepconv1_bn[0][0]']
				(None, 19, 19, 728)	536536	['block9_sepconv2_act[0][0]']
block9 sepconv3 (SeparableConv (None, 19, 19, 728) 536536				(None, 19, 19, 728)	2912	['block9_sepconv2[0][0]']
block9_sepcomv3_bn (BatchNorma (None, 19, 19, 728) 2912 ['block9_sepcomv3[0][0]']   lization     add_7 (Add)		click to scroll ou	hlock9_senconv3_act (Activatio	(None, 19, 19, 728)	0	['block9_sepcomv2_bn[@][@]']
lization)  add_7 (Add)				(None, 19, 19, 728)	536536	['block9_sepconv3_act[0][0]']
'add_6[@][@]']  block10_sepconv1_act (Activati (None, 19, 19, 728) 0 ['add_7[@][@]']  block10_sepconv1 (SeparableCon (None, 19, 19, 728) 536536 ['block10_sepconv1_act[@][@]']  v2D)  block10_sepconv1_bn (BatchNorm (None, 19, 19, 728) 2912 ['block10_sepconv1[@][@]']  alization)  block10_sepconv2_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv1_bn[@][@]']  on)  block10_sepconv2_c(separableCon (None, 19, 19, 728) 536536 ['block10_sepconv2_act[@][@]']  v2D)  block10_sepconv2_bn (BatchNorm (None, 19, 19, 728) 2912 ['block10_sepconv2_act[@][@]']  alization)  block10_sepconv3_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv2_bn[@][@]']				(None, 19, 19, 728)	2912	['block9_sepconv3[0][0]']
on)  blocki0_sepconv1 (SeparableCon (None, 19, 19, 728) 536536 ['blocki0_sepconv1_act[0][0]']  v2D)  blocki0_sepconv1_bn (BatchNorm (None, 19, 19, 728) 2912 ['blocki0_sepconv1[0][0]']  alization)  blocki0_sepconv2_act (Activati (None, 19, 19, 728) 0 ['blocki0_sepconv1_bn[0][0]']  on)  blocki0_sepconv2_c (SeparableCon (None, 19, 19, 728) 536536 ['blocki0_sepconv2_act[0][0]']  v2D)  blocki0_sepconv2_bn (BatchNorm (None, 19, 19, 728) 2912 ['blocki0_sepconv2_oct[0][0]']  alization)  blocki0_sepconv3_act (Activati (None, 19, 19, 728) 0 ['blocki0_sepconv2_bn[0][0]']			add_7 (Add)	(None, 19, 19, 728)	0	['block9_sepconv3_bn[0][0]',
v20				(None, 19, 19, 728)	0	['add_7[0][0]']
alization)  block10_sepconv2_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv1_bn[0][0]']  on)  block10_sepconv2 (SeparableCon (None, 19, 19, 728) 536536 ['block10_sepconv2_act[0][0]']  v20)  block10_sepconv2_bn (BatchNorm (None, 19, 19, 728) 2912 ['block10_sepconv2[0][0]']  alization)  block10_sepconv3_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv2_bn[0][0]']				(None, 19, 19, 728)	536536	['block10_sepconv1_act[0][0]']
on) block10_sepconv2 (SeparableCon (None, 19, 19, 728) 536536 ['block10_sepconv2_act[0][0]'] v20) block10_sepconv2_bn (BatchNorm (None, 19, 19, 728) 2912 ['block10_sepconv2[0][0]'] alization) block10_sepconv3_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv2_bn[0][0]']				(None, 19, 19, 728)	2912	['block10_sepconv1[0][0]']
v20				(None, 19, 19, 728)	0	['block10_sepconv1_bn[0][0]']
alization) block10_sepconv3_act (Activati (None, 19, 19, 728) 0 ['block10_sepconv2_bn[0][0]']				(None, 19, 19, 728)	536536	['block10_sepconv2_act[0][0]']
				(None, 19, 19, 728)	2912	['block10_sepconv2[0][0]']
				(None, 19, 19, 728)	0	['block10_sepconv2_bn[0][0]']

	block10_sepconv3 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block10_sepconv3_act[0][0]']
	block10_sepconv3_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block10_sepcomv3[0][0]']
	add_8 (Add)	(None, 19, 19, 728)	0	['block10_sepconv3_bn[0][0]',
	block11_sepconv1_act (Activati on)	(None, 19, 19, 728)	0	['add_8[0][0]']
	block11_sepconv1 (SeparableCon v2D)	(None, 19, 19, 728)	536536	$['block11\_sepconv1\_act[\theta][\theta]']$
	block11_sepconv1_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block11_sepconv1[0][0]']
	block11_sepconv2_act (Activati on)	(None, 19, 19, 728)	0	['block11_sepconv1_bn[0][0]']
	block11_sepconv2 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block11_sepconv2_act[0][0]']
	block11_sepconv2_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block11_sepconv2[0][0]']
	block11_sepconv3_act (Activati on)	(None, 19, 19, 728)	0	['block11_sepconv2_bn[0][0]']
	block11_sepconv3 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block11_sepconv3_act[0][0]']
	block11_sepconv3_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block11_sepconv3[0][0]']
	add_9 (Add)	(None, 19, 19, 728)	0	['block11_sepconv3_bn[0][0]',
	block12_sepconv1_act (Activati on)	(None, 19, 19, 728)	0	['add_9[0][0]']
	block12_sepconv1 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block12_sepconv1_act[0][0]']
	block12_sepconv1_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block12_sepconv1[0][0]']
	<pre>block12_sepconv2_act (Activati on)</pre>	(None, 19, 19, 728)	0	['block12_sepconv1_bn[0][0]']
	block12_sepconv2 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block12_sepconv2_act[0][0]']
	block12_sepconv2_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block12_sepconv2[0][0]']
	block12_sepconv3_act (Activati on)	(None, 19, 19, 728)	0	['block12_sepconv2_bn[0][0]']
	block12_sepconv3 (SeparableCon v2D)	(None, 19, 19, 728)	536536	['block12_sepconv3_act[0][0]']
	block12_sepconv3_bn (BatchNorm alization)	(None, 19, 19, 728)	2912	['block12_sepconv3[0][0]']
	add_10 (Add)	(None, 19, 19, 728)	0	['block12_sepconv3_bn[0][0]', 'add_9[0][0]']
	block13_sepconv1_act (Activati on)	(None, 19, 19, 728)	0	['add_10[0][0]']

	block13_sepconv1 (SeparableCon (No v2D)	one, 19, 19, 728) 536536	['block13_sepconv1_act[0][0]']
	block13_sepconv1_bn (BatchNorm (No alization)	one, 19, 19, 728) 2912	['block13_sepconv1[0][0]']
	block13_sepconv2_act (Activati (No on)	one, 19, 19, 728) 0	['block13_sepconv1_bn[0][0]']
	block13_sepconv2 (SeparableCon (No v2D) )	one, 19, 19, 1024 752024	['block13_sepcomv2_act[0][0]']
	block13_sepconv2_bn (BatchNorm (No alization)	one, 19, 19, 1024 4096	['block13_sepconv2[0][0]']
	conv2d_3 (Conv2D) (Non	ne, 10, 10, 1024 745472	['add_10[0][0]']
	block13_pool (MaxPooling2D) (Non )	ne, 10, 10, 1024 0	['block13_sepconv2_bn[0][0]']
	<pre>batch_normalization_3 (BatchNo (No rmalization) )</pre>	one, 10, 10, 1024 4096	['conv2d_3[0][0]']
	add_11 (Add) (Non	ne, 10, 10, 1024 0	['block13_pool[0][0]', 'batch_normalization_3[0][0]']
	block14_sepconv1 (SeparableCon (No v2D)	one, 10, 10, 1536 1582080	['add_11[0][0]']
	block14_sepconv1_bn (BatchNorm (No alization) )	one, 10, 10, 1536 6144	['block14_sepcomv1[0][0]']
	block14_sepconv1_act (Activati (No on)	one, 10, 10, 1536 0	['block14_sepcomv1_bn[0][0]']
	block14_sepconv2 (SeparableCon (Non v2D) )	ne, 10, 10, 2048 3159552	['block14_sepconv1_act[0][0]']
	block14_sepconv2_bn (BatchNorm (Non alization) )	ne, 10, 10, 2048 8192	['block14_sepconv2[0][0]']
	block14_sepconv2_act (Activati (Non on) )	ne, 10, 10, 2048 0	['block14_sepconv2_bn[0][0]']
	flatten (Flatten) (None	e, 204800) 0	['block14_sepconv2_act[0][0]']
	dense (Dense) (None	e, 5) 1024005	['flatten[0][0]']
	Total params: 21,885,485 Trainable params: 1,024,005 Non-trainable params: 20,861,480		

2.	Accuracy	Training Accuracy – 0.8229	<pre>In [19]: 1 r = model.fit_generator(training_set,</pre>
		Validation Accuracy - 0.8542	C:\Users\SRI SAI\AppObta\(\tau\)ipykernel_7336\(\tau\)2721303376.py:1: Userkarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit', which supports generators.  r = model.fit_generator(training_set,
			Epoch 1/30 3/3 [
			Epoch 2/30 3/3 [===========] - 50s 23s/step - loss: 3.3913 - accuracy: 0.7700 - val_loss: 2.9005 - val_accuracy: 0.7500
			Epoch 3/30 3/3 [============] - 55s 22s/step - loss: 3.5076 - accuracy: 0.7396 - val_loss: 2.6472 - val_accuracy: 0.7917 Epoch 4/30
			3/3 [
			3/3 [
			3/3 [
			3/3 [
			Epoch 9/30 3/3 [
			Epoch 10/30 3/3 [
			Epoch 11/30 3/3 [===================================
			3/3 [
			Epoch 13/30 3/3 [
			Epoch 14/30 3/3 [
			3/3 [
			3/3 [
			Epoch 18/30 3/3 [===========] - 50s 20s/step - loss: 2.0621 - accuracy: 0.8229 - val_loss: 2.6166 - val_accuracy: 0.6875 Epoch 19/30
			3/3 [
			3/3 [
			Epoch 22/30 3/3 [=======] - 49s 19s/step - loss: 3.0081 - accuracy: 0.7292 - val_loss: 2.4708 - val_accuracy: 0.7396 Epoch 23/30
			3/3 [
			Epoch 25/30 3/3 [
			Epoch 26/30 3/3 [
			3/3 [========] - 51s 20s/step - loss: 3.0819 - accuracy: 0.7917 - val loss: 2.6662 - val accuracy: 0.7604  Epoch 28/30  3/3 [===================================
			Epoch 29/30 3/3 [
			Epoch 30/30 3/3 [

3.	Confidence	Class
	Score (Only	Detected -
	Yolo	
	Projects)	Confidence
		Score -