**Model Summary**

Model: "sequential"

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Layer (type) Output Shape Param #

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conv2d (Conv2D) (None, 32, 32, 32) 896

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activation (Activation) (None, 32, 32, 32) 0

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batch\_normalization (BatchNo (None, 32, 32, 32) 128

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conv2d\_1 (Conv2D) (None, 32, 32, 32) 9248

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activation\_1 (Activation) (None, 32, 32, 32) 0

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batch\_normalization\_1 (Batch (None, 32, 32, 32) 128

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max\_pooling2d (MaxPooling2D) (None, 16, 16, 32) 0

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dropout (Dropout) (None, 16, 16, 32) 0

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conv2d\_2 (Conv2D) (None, 16, 16, 64) 18496

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activation\_2 (Activation) (None, 16, 16, 64) 0

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batch\_normalization\_2 (Batch (None, 16, 16, 64) 256

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conv2d\_3 (Conv2D) (None, 16, 16, 64) 36928

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activation\_3 (Activation) (None, 16, 16, 64) 0

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batch\_normalization\_3 (Batch (None, 16, 16, 64) 256

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max\_pooling2d\_1 (MaxPooling2 (None, 8, 8, 64) 0

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dropout\_1 (Dropout) (None, 8, 8, 64) 0

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conv2d\_4 (Conv2D) (None, 8, 8, 128) 73856

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activation\_4 (Activation) (None, 8, 8, 128) 0

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batch\_normalization\_4 (Batch (None, 8, 8, 128) 512

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conv2d\_5 (Conv2D) (None, 8, 8, 128) 147584

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activation\_5 (Activation) (None, 8, 8, 128) 0

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batch\_normalization\_5 (Batch (None, 8, 8, 128) 512

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max\_pooling2d\_2 (MaxPooling2 (None, 4, 4, 128) 0

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dropout\_2 (Dropout) (None, 4, 4, 128) 0

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flatten (Flatten) (None, 2048) 0

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dense (Dense) (None, 10) 20490

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Total params: 309,290

Trainable params: 308,394

Non-trainable params: 896

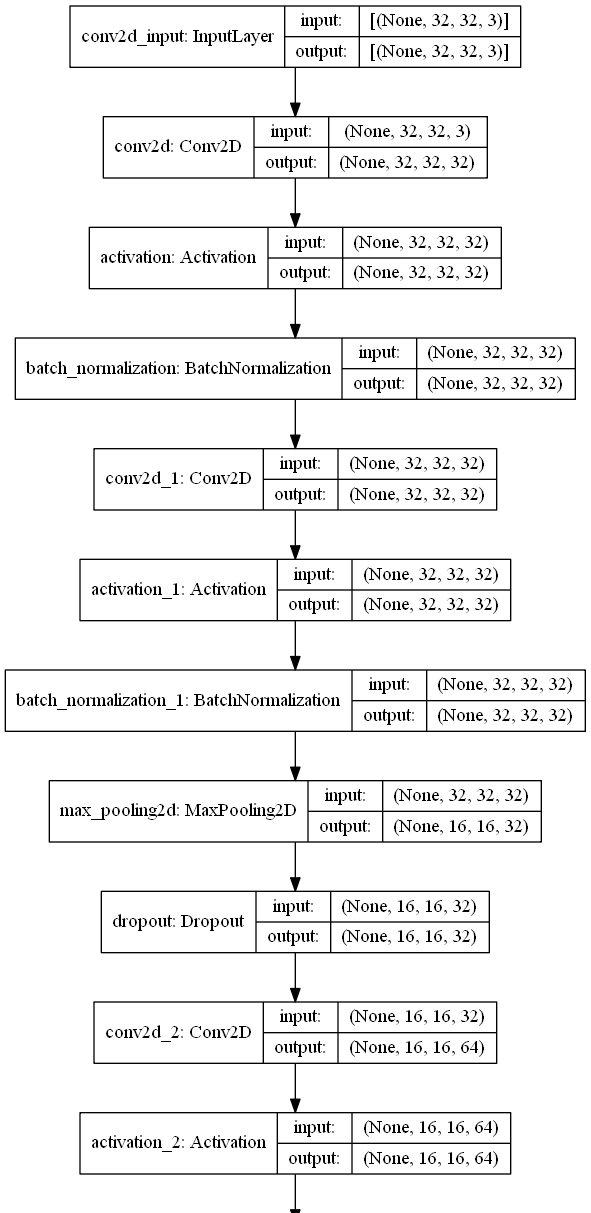
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Model Results**

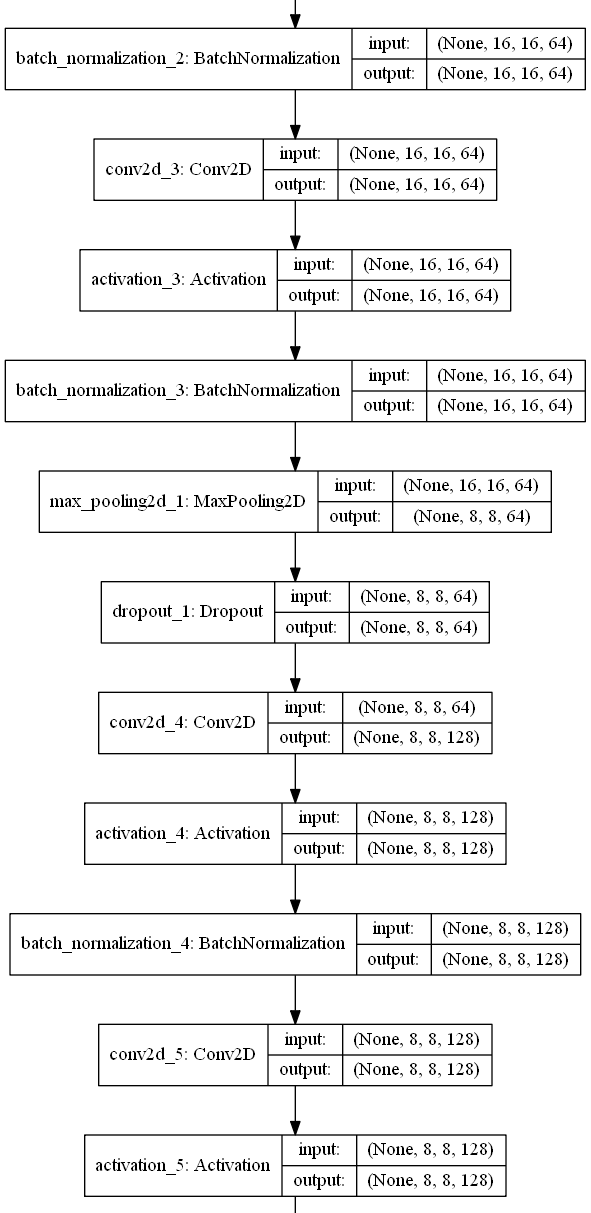
79/79 [==============================] - 3s 26ms/step - loss: 0.4667 - accuracy: 0.8781

Test result: 87.810 loss: 0.467

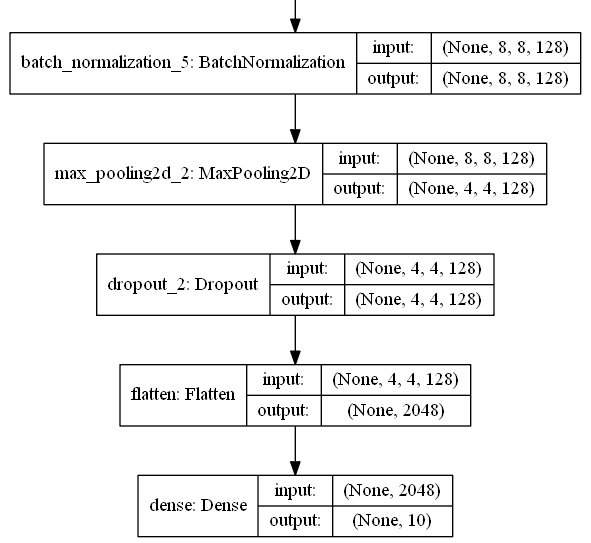
**Model Image (part 1 – Full image in model\_arch.png)**



**Model Image (part 2 – Full image in model\_arch.png)**



**Model Image (part 3 – Full image in model\_arch.png)**



**Final Results of predictions (Available classes are: [airplane, automobile, bird, cat, deer, dog, frog, horse, ship, truck])**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Original Image | 256x256 resized image | 32x32 (Level 3) pyramid image of 256x256 | Class Probabilities | Maximal Class Probability |
|  |  |  | [  7.0537409e-11  4.7682043e-15  0.0000000e+00  1.1182911e-14  1.4756171e-30  8.3045746e-14  0.0000000e+00  2.1457900e-15  2.8690471e-26  1.0000000e+00] | truck |
|  |  |  | [  9.9989712e-01  1.6290996e-19  0.0000000e+00  9.3706314e-13  0.0000000e+00  1.0286330e-04  0.0000000e+00  4.5009605e-09  1.7185493e-24  5.7645524e-09  ] | airplane |
|  |  |  | [  5.2923439e-17  2.1673228e-24  3.0575725e-37  5.4800838e-01  2.4888288e-19  4.3766928e-09  0.0000000e+00  4.5199162e-01  1.3900030e-23  1.0630394e-09  ] | cat |
|  |  |  | [  6.9309461e-24  9.9963772e-01  0.0000000e+00  3.6223623e-04  0.0000000e+00  1.0139613e-11  0.0000000e+00  0.0000000e+00  4.1359097e-17  3.1870651e-21  ] | automobile |