

Use case , dataset, data quality assessment



n02091635_3900.jpg



n02091635_3548.jpg



n02091635_3048.jpg



n02091635_1664.jpg



n02091635_1357.jpg



n02091635_1240.jpg



n02108915_7806.jpg



n02089973_4010.jpg



n02089973_1356.jpg



n02116738_6563.jpg



n02111129_372.jpg



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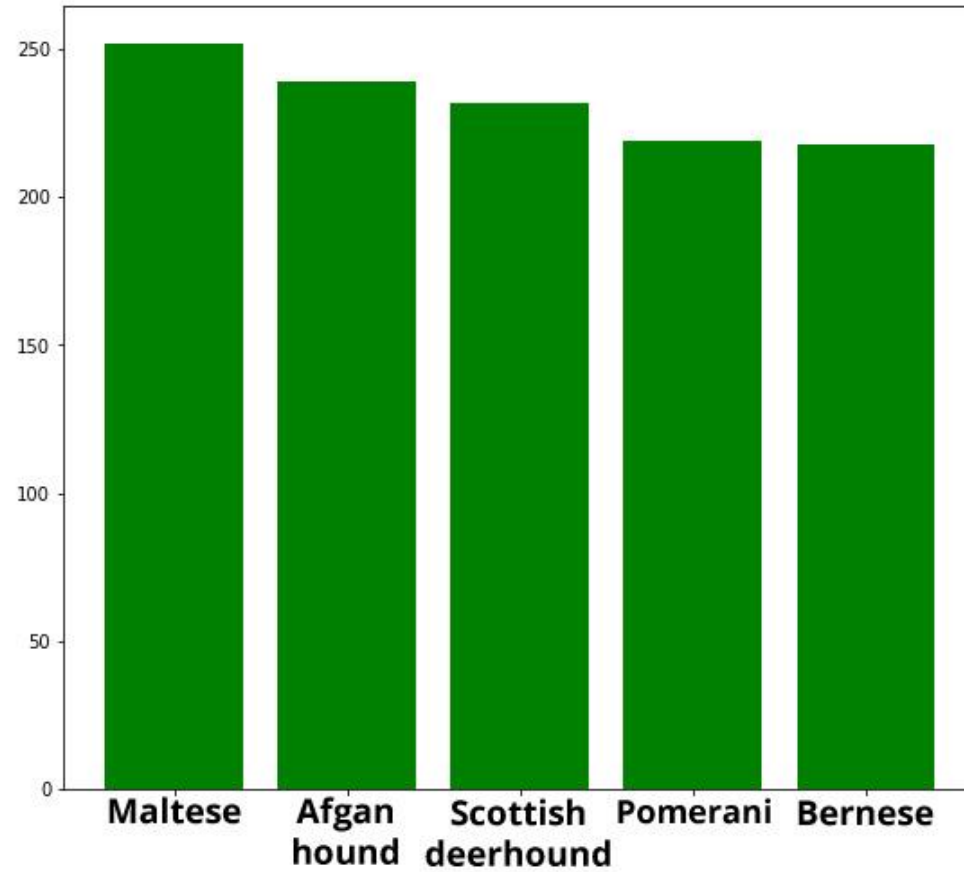
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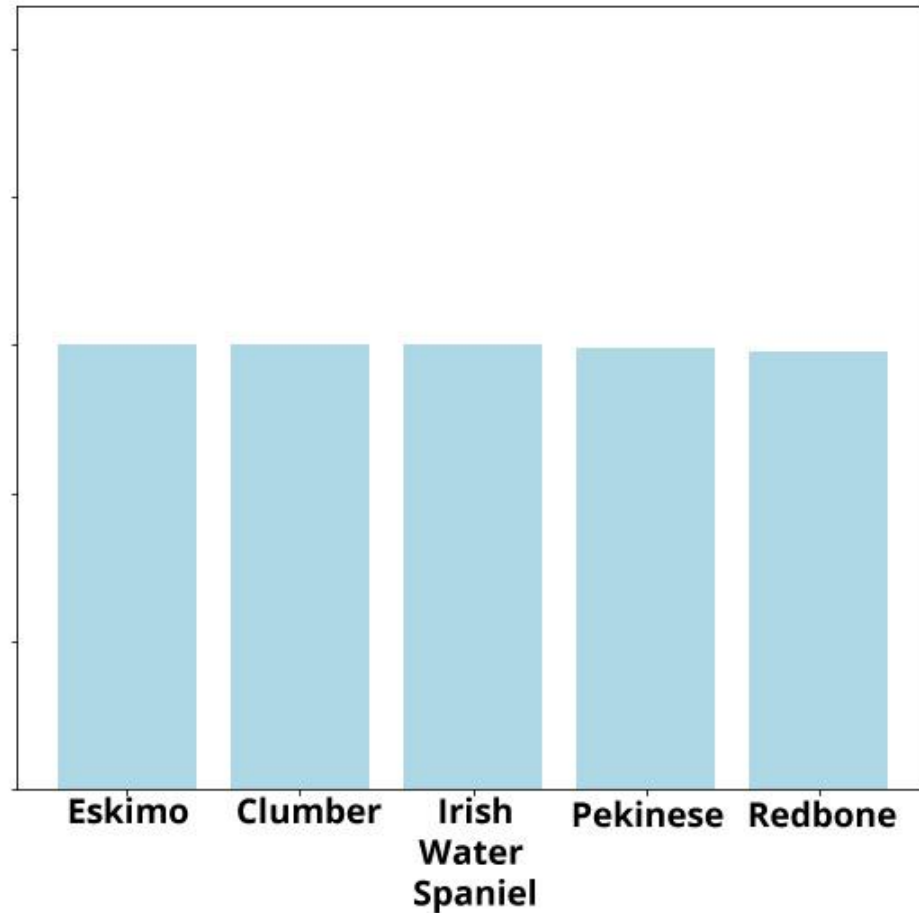
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Data exploration, data Visualization

Most common dog breeds in dataset



Least common dog breeds in dataset



Feature engineering

1. Data augmentation



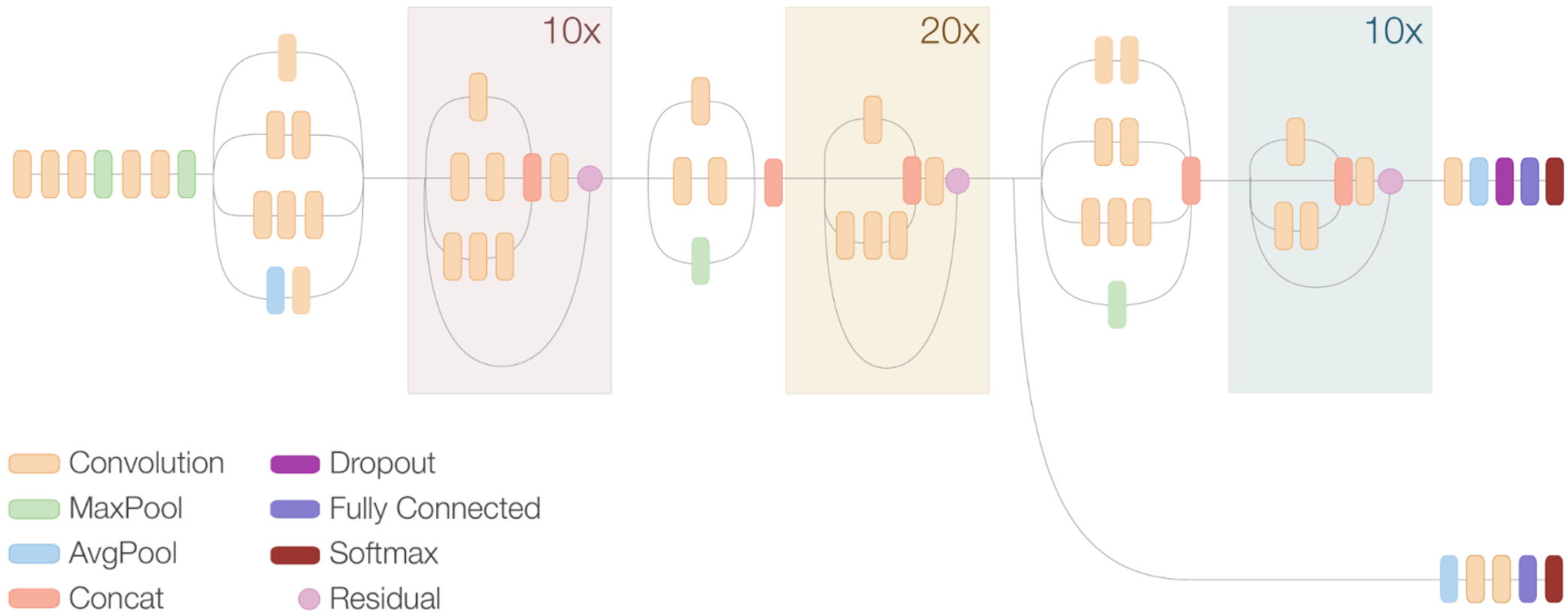
2. One-hot encoding

Breed
Labrador
Poodle
Bulldog



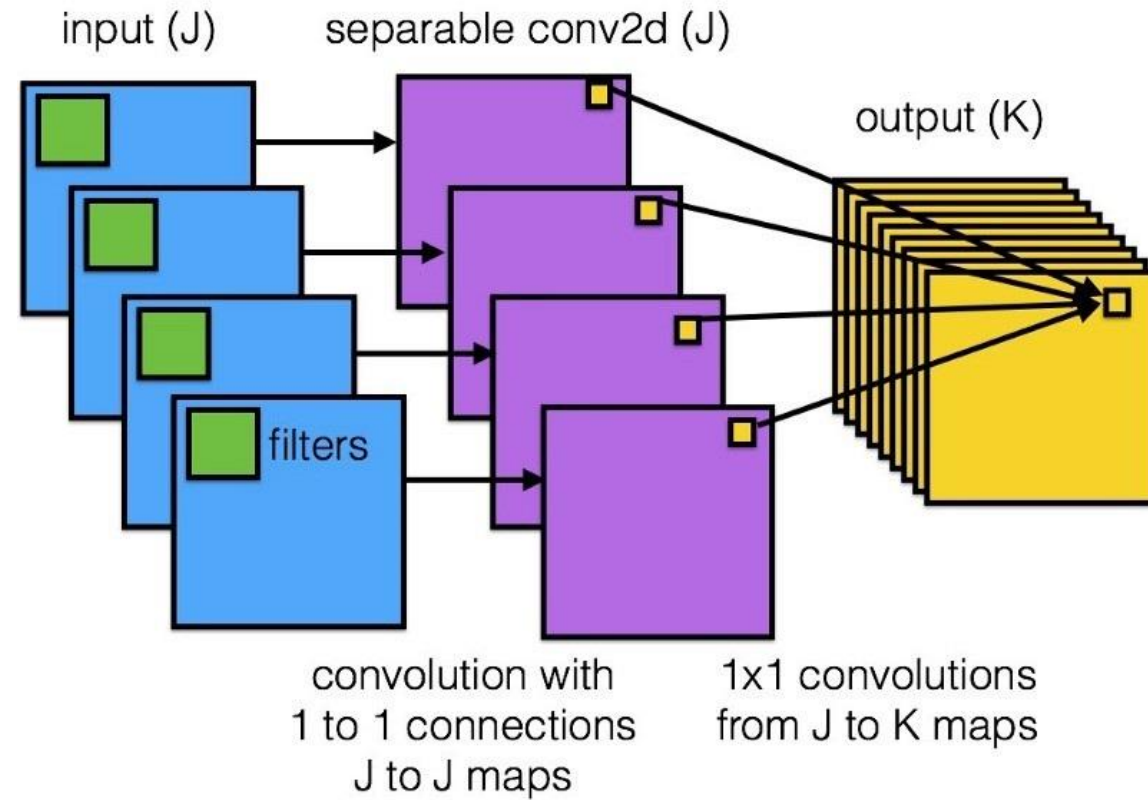
Labrador	Poodle	Bulldog
1	0	0
0	1	0
0	0	1

Inception Resnet V2 Network, compressed view



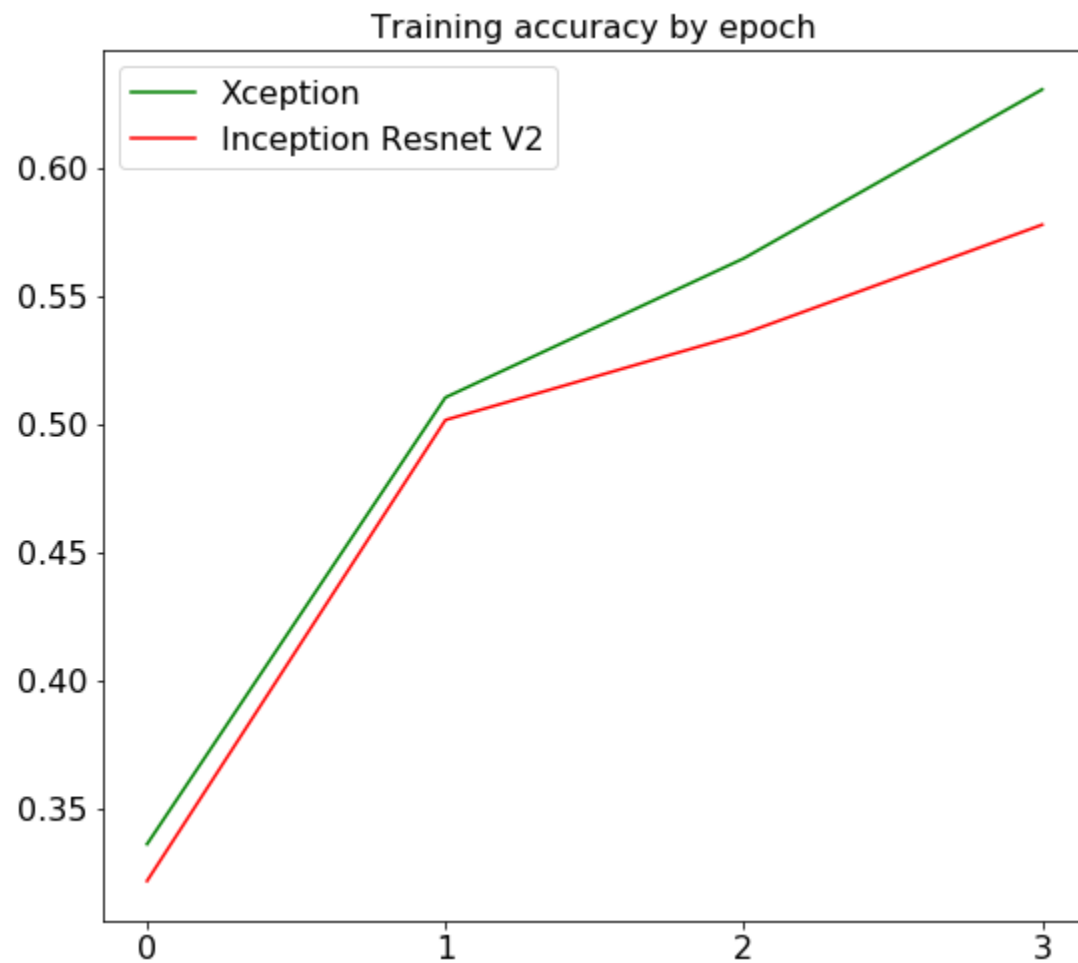
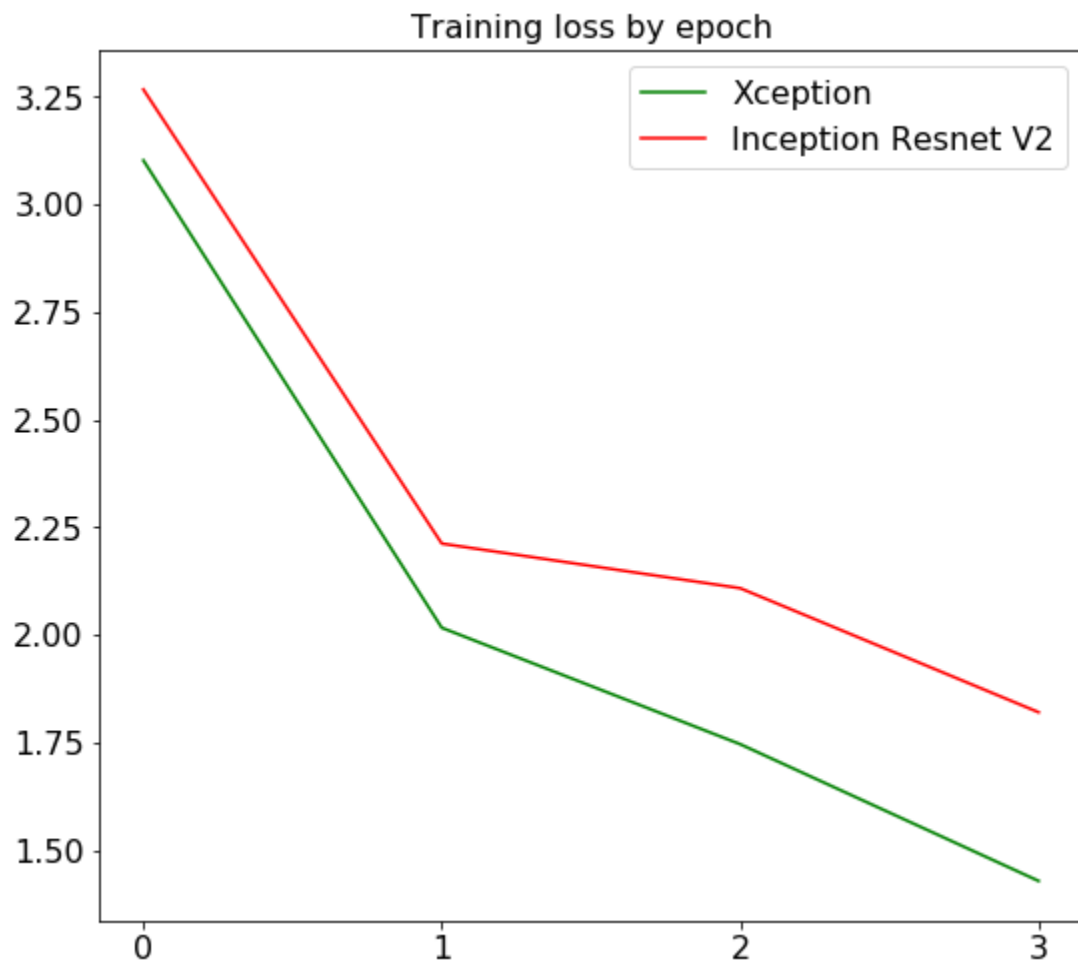
Source: Google AI Blog, <https://ai.googleblog.com/2016/08/improving-inception-and-image.html>

Xception Network, compressed view

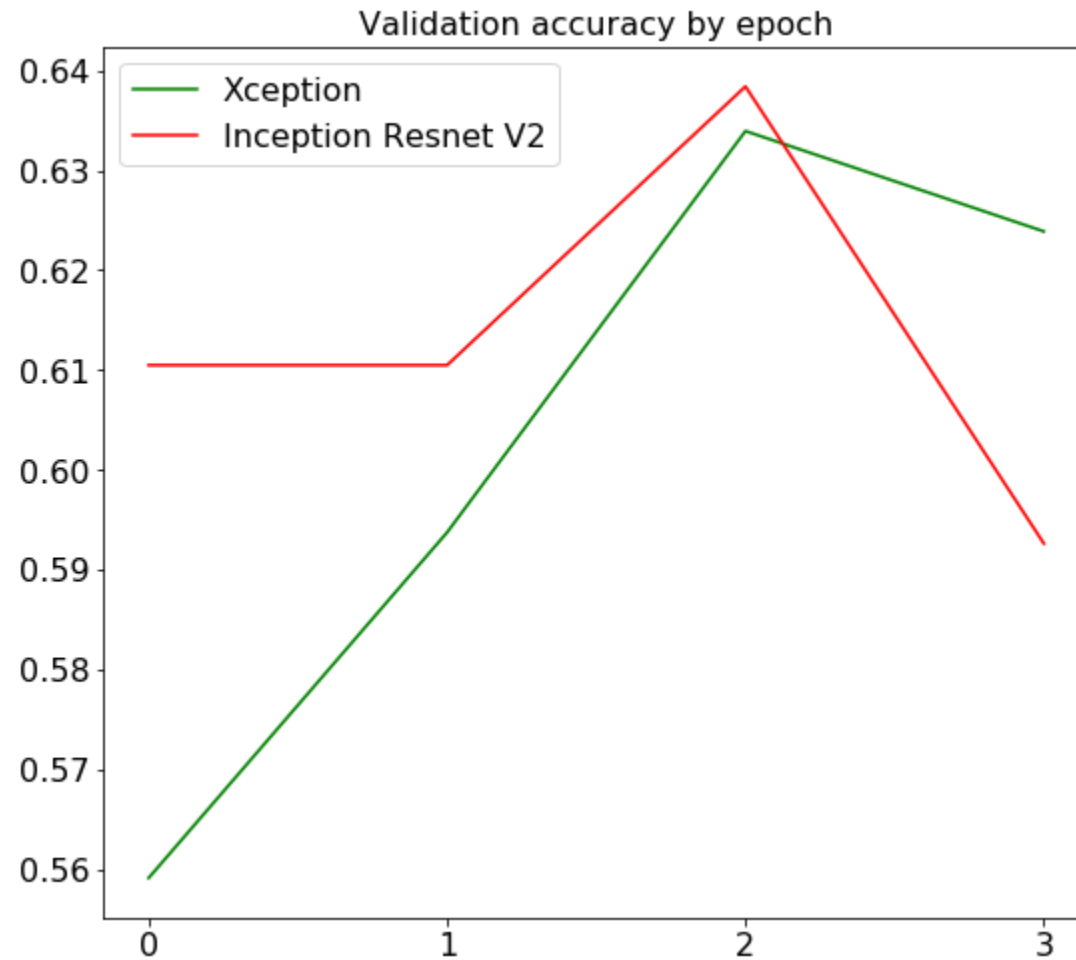


Source: Topbots, <https://www.topbots.com/a-brief-history-of-neural-network-architectures/>

Model evaluation



Model evaluation



Selected model performance indicator: categorical accuracy

Model misclassification cases:

Predicted: airedale
Actual: irish_terrier



Predicted: standard_schnauzer
Actual: miniature_schnauzer



Predicted: cardigan
Actual: pembroke



Predicted: brittany_spaniel
Actual: welsh_springer_spaniel



Predicted: standard_schnauzer
Actual: irish_terrier



Predicted: pug
Actual: bull_mastiff



Predicted: bernese_mountain_dog
Actual: appenzeller



Predicted: doberman
Actual: gordon_setter



Predicted: irish_wolfhound
Actual: scottish_deerhound



Predicted: airedale
Actual: irish_terrier



Predicted: standard_schnauzer
Actual: irish_terrier



Predicted: irish_wolfhound
Actual: scottish_deerhound



Model misclassification cases:

1. Can only see head on the picture

Predicted: brittany_spaniel
Actual: welsh_springer_spaniel



Predicted: bernese_mountain_dog
Actual: appenzeller



Model misclassification cases:

1. Can only see head on the picture
2. Derivatives of the same breed

Predicted: cardigan
Actual: pembroke



Predicted: pug
Actual: bull_mastiff



Model misclassification cases:

1. Can only see head on the picture
2. Derivatives of the same breed
3. Breed's main difference is size

Predicted: airedale
Actual: irish_terrier



Predicted: standard_schnauzer
Actual: miniature_schnauzer



Predicted: cardigan
Actual: pembroke



Predicted: brittany_spaniel
Actual: welsh_springer_spaniel



Predicted: standard_schnauzer
Actual: irish_terrier



Predicted: pug
Actual: bull_mastiff



Predicted: bernese_mountain_dog
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Predicted: doberman
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Predicted: irish_wolfhound
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