

Language: Python

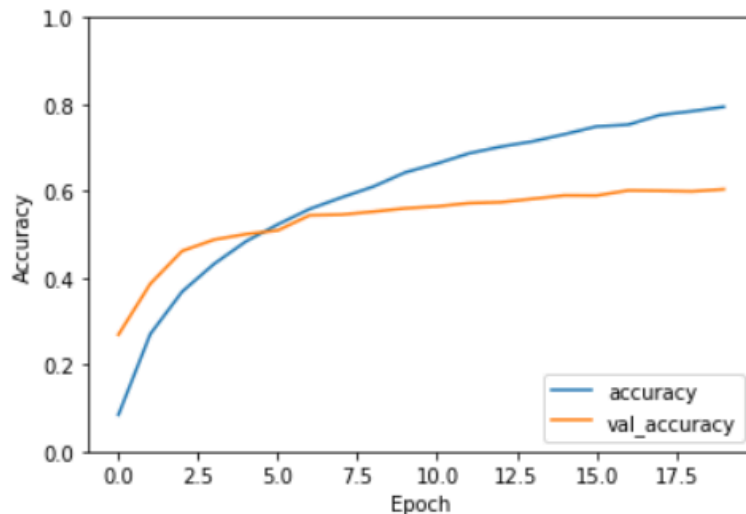
Libraries Used: cv2, keras, matplotlib, numpy, operator, os, sklearn, sys, tarfile, tensorflow

Description: A convolutional neural network that tries to identify the species of dogs shown in pictures. Due to the high number of dog species we are trying to encompass, 120, this model is built on top of a pre-trained image classification model called resnet50.

Link to dataset: <https://www.kaggle.com/c/dog-breed-identification/data>

Training Progression:

237/237 - 17s - loss: 1.8659 - accuracy: 0.6034 - 17s/epoch - 70ms/step



Accuracy for each of the 120 dog species:

'Shih': 0.896551724137931,
'toy_poodle': 0.7313432835820896,
'Airedale': 0.6811594202898551,
'malamute': 0.6774193548387096,
'Staffordshire_bullterrier': 0.6507936507936508,
'Rhodesian_ridgeback': 0.6349206349206349,
'Walker_hound': 0.631578947368421,
'collie': 0.6290322580645161,
'Italian_greyhound': 0.6,
'whippet': 0.5961538461538461,
'Brittany_spaniel': 0.5897435897435898,
'bloodhound': 0.5862068965517241,
'kelpie': 0.5849056603773585,
'Siberian_husky': 0.5740740740740741,
'Chihuahua': 0.5714285714285714,
'Saluki': 0.5671641791044776,
'Great_Pyrenees': 0.5657894736842105,
'Irish_wolfhound': 0.5614035087719298,
'Lhasa': 0.5555555555555556,
'Appenzeller': 0.546875,
'vizsla': 0.5441176470588235,

'giant_schnauzer': 0.5373134328358209,
'Weimaraner': 0.5294117647058824,
'Yorkshire_terrier': 0.5245901639344263,
'standard_poodle': 0.5245901639344263,
'miniature_schnauzer': 0.5217391304347826,
'Lakeland_terrier': 0.5147058823529411,
'standard_schnauzer': 0.5131578947368421,
'cairn': 0.509090909090909,
'Chesapeake_Bay_retriever': 0.5076923076923077,
'English_setter': 0.5072463768115942,
'black': 0.5,
'Australian_terrier': 0.49056603773584906,
'bluetick': 0.49056603773584906,
'Old_English_sheepdog': 0.4852941176470588,
'Eskimo_dog': 0.4827586206896552,
'basset': 0.47761194029850745,
'wire': 0.47692307692307695,
'miniature_poodle': 0.4745762711864407,
'Labrador_retriever': 0.4722222222222222,
'boxer': 0.4642857142857143,
'soft': 0.4626865671641791,
'German_shepherd': 0.46153846153846156,
'Gordon_setter': 0.45614035087719296,
'cocker_spaniel': 0.45161290322580644,
'Border_terrier': 0.4492753623188406,
'Doberman': 0.44285714285714284,
'German_short': 0.4406779661016949,
'Pembroke': 0.42857142857142855,
'curly': 0.42857142857142855,
'silky_terrier': 0.42857142857142855,
'Great_Dane': 0.4262295081967213,
'Norfolk_terrier': 0.423728813559322,
'redbone': 0.42105263157894735,
'pug': 0.4067796610169492,
'French_bulldog': 0.40625,
'bull_mastiff': 0.4032258064516129,
'miniature_pinscher': 0.4027777777777778,
'EntleBucher': 0.4,
'Irish_terrier': 0.390625,
'beagle': 0.3880597014925373,
'malinois': 0.3877551020408163,
'briard': 0.3783783783783784,
'Irish_setter': 0.37681159420289856,
'American_Staffordshire_terrier': 0.373134328358209,
'Tibetan_mastiff': 0.3709677419354839,
'toy_terrier': 0.3695652173913043,
'Welsh_springer_spaniel': 0.36923076923076925,
'Scottish_deerhound': 0.36666666666666664,
'borzoi': 0.36619718309859156,
'Bouvier_des_Flandres': 0.359375,
'English_foxhound': 0.3559322033898305,

'English_springer': 0.35384615384615387,
'West_Highland_white_terrier': 0.352112676056338,
'groenendael': 0.3492063492063492,
'Afghan_hound': 0.34545454545454546,
'Ibizan_hound': 0.3448275862068966,
'basenji': 0.3380281690140845,
'Dandie_Dinmont': 0.33333333333333333,
'Shetland_sheepdog': 0.33333333333333333,
'Tibetan_terrier': 0.33333333333333333,
'Pomeranian': 0.33333333333333333,
'Cardigan': 0.33333333333333333,
'Norwegian_elkhound': 0.32894736842105265,
'Kerry_blue_terrier': 0.3283582089552239,
'Norwich_terrier': 0.3188405797101449,
'Bedlington_terrier': 0.3142857142857143,
'affenpinscher': 0.30555555555555556,
'Maltese_dog': 0.30303030303030304,
'kuvasz': 0.3,
'flat': 0.29850746268656714,
'golden_retriever': 0.296875,
'Greater_Swiss_Mountain_dog': 0.288135593220339,
'Blenheim_spaniel': 0.2857142857142857,
'Newfoundland': 0.28125,
'otterhound': 0.27777777777777778,
'Pekinese': 0.27586206896551724,
'Boston_bull': 0.2714285714285714,
'chow': 0.26865671641791045,
'Bernese_mountain_dog': 0.26388888888888889,
'Irish_water_spaniel': 0.25,
'Saint_Bernard': 0.2413793103448276,
'papillon': 0.2328767123287671,
'Leonberg': 0.22580645161290322,
'clumber': 0.22413793103448276,
'dingo': 0.203125,
'Rottweiler': 0.19672131147540983,
'African_hunting_dog': 0.17543859649122806,
'Brabancon_griffon': 0.16417910447761194,
'Japanese_spaniel': 0.15873015873015872,
'Sussex_spaniel': 0.15254237288135594,
'Sealyham_terrier': 0.14754098360655737,
'Mexican_hairless': 0.14285714285714285,
'Scotch_terrier': 0.14035087719298245,
'Border_collie': 0.1323529411764706,
'komondor': 0.11764705882352941,
'keeshond': 0.1,
'dhole': 0.09090909090909091,
'Samoyed': 0.08620689655172414,
'schipperke': 0.07017543859649122}