TaxonomyNet: A Consistent and Efficient Model for Taxonomic Rank Identification in Wildlife Images

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Prediction Performance Details for Each Taxonomic Rank Model

Table 1. Detailed Validation Performance of Genus Rank

Genus Name	No. of Incorrect Predictions	Acc.	Conf. Score
01-Dromaius	2	94.44%	0.833
02-Macropus	0	100.00%	0.928
03-Phascolarctos	1	96.77%	0.889
04-Tursiops	0	100.00%	0.630
05-Threskiornis	2	96.36%	0.520
06-Gymnorhina	3	92.11%	0.821
07-Platycercus	2	94.74%	0.803
08-Cacatua	1	97.62%	0.729
09-Chroicocephalus	3	91.18%	0.873
10-Thalasseus	3	90.63%	0.886
11-Vanellus	6	84.21%	0.750
12-Anas	3	93.33%	0.690
13-Chenonetta	1	97.50%	0.786
14-Cygnus	8	80.95%	0.748
15-Wallabia	3	90.63%	0.857
16-Trichosurus	7	81.58%	0.739
17-Pteropus	1	97.44%	0.728
18-Rattus	2	94.44%	0.831
19-Vulpes	1	96.77%	0.921
20-Canis	3	90.63%	0.885
21-Mirounga	4	91.30%	0.682
22-Tiliqua	2	93.94%	0.818
23-Mus	5	85.71%	0.789
24-Ctenophorus	2	94.29%	0.832
25-Pogona	1	97.56%	0.716
26-Chelonia	2	93.94%	0.886
27-Eretmochelys	2	93.55%	0.908
28-Litoria	3	95.08%	0.928
29-Ranoidea	4	88.57%	0.809
30-Crinia	3	91.43%	0.803
31-Carcharhinus	17	54.05%	0.664
32-Galeorhinus	14	67.44%	0.683
33-Bathytoshia	9	75.68%	0.795
34-Dicathais	2	94.29%	0.863

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Genus Name	No. of Incorrect Predictions	Acc.	Conf. Score
35-Conus	9	87.84%	0.836
36-Heliocidaris	0	100.00%	0.833
37-Pseudonaja	0	100.00%	0.713
38-Camelus	0	100.00%	0.624
39-Sarcophilus	12	76.00%	0.577
40-Ornithorhynchus	8	78.95%	0.684
41-Vombatus	3	90.63%	0.884
42-Dasyurus	4	88.57%	0.801
43-Dacelo	5	88.64%	0.760
44-Trichonephila	0	100.00%	0.936
45-Tachyglossus	1	96.77%	0.904
46-Pastinachus	7	81.08%	0.649
47-Casuarius	1	97.06%	0.860

Table 2. Detailed Validation Performance of Order Rank

Order Name	No. of Incorrect Predictions	Acc.	Conf. Score
01-Casuariiformes	3	95.45%	0.879
02-Diprotodontia	8	95.06%	0.874
03-Artiodactyla	0	100.00%	0.732
04-Pelecaniformes	1	97.56%	0.663
05-Passeriformes	3	91.43%	0.883
06-Psittaciformes	1	98.61%	0.818
07-Charadriiformes	4	96.00%	0.857
08-Anseriformes	6	94.55%	0.818
09-Chiroptera	0	100.00%	0.787
10-Rodentia	0	100.00%	0.913
11-Carnivora	3	96.97%	0.890
12-Squamata	1	99.29%	0.797
13-Testudines	0	100.00%	0.943
14-Anura	2	98.36%	0.923
15-Carcharhiniformes	14	80.00%	0.660
16-Myliobatiformes	7	89.86%	0.774
17-Neogastropoda	3	96.94%	0.902
18-Camarodonta	0	100.00%	0.854
19-Dasyuromorphia	12	83.56%	0.737
20-Monotremata	6	91.18%	0.805
21-Coraciiformes	5	88.10%	0.787
22-Araneae	0	100.00%	0.856

Table 3. Detailed Validation Performance of Class Rank

Class Name	No. of Incorrect Predictions	Acc.	Conf. Score
01-Aves	14	96.92%	0.846
02-Mammalia	9	98.35%	0.871
03-Reptilia	2	98.98%	0.880
04-Amphibia	2	98.36%	0.921
05-Elasmobranchii	10	92.75%	0.743
06-Gastropoda	1	98.95%	0.932
07-Echinoidea	0	100.00%	0.908
08-Arachnida	0	100.00%	0.878

Table 4. Detailed Validation Performance of Phylum Rank

Phylum Name	No. of Incorrect Predictions	Acc.	Conf. Score
01-Chordata	1	99.86%	0.868
02-Mollusca	1	97.89%	0.919
03-Echinodermata	0	100.00%	0.911
04-Arthropoda	0	100.00%	0.890