Deep learning for animal recognition

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Propositions accompanying the Thesis

Deep Learning for Animal Recognition

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1. Smaller deep learning models with reduced numbers of neurons/layers can obtain similar accuracies as more complex deep learning models with a reduced computational cost (this thesis, pp. 29, 31, 46).

2. Deep learning can also work well on datasets with small amounts of labeled data as opposed to the common assumption that the success of deep learning models is mainly dependent on large amounts of labeled data (this thesis, pp. 29, 52, 102, 104, 120).

3. Deep learning can work better than classical computer-vision methods, even with small image datasets, with an additional advantage of easy transfer to variants of a problem (this thesis, pp. 29, 52, 102, 104).

4. Using black and white image versions of original RGB images is harmful to classification performance (this thesis, pp. 105).

5. Data augmentation using graded rotations as opposed to simple axis flipping alone is very useful for making deep learning models robust to rotational variation (this thesis, pp. 52, 71, 73, 75).

6. Data augmentation using color-constancy is very useful for making deep learning models robust to illumination variation (this thesis, pp. 71, 73, 75).

7. Deep learning techniques can detect the location and subclassify different individuals of one kind of animal in spite of their similarity in color information, appearance, and their presence in different environmental conditions (this thesis, pp. 120).

8. The downside of doing research in a quickly developing field is that the targets are moving fast.