Digital Naturalist - AI Enabled tool for Biodiversity Researchers
LITERATURE REVEIW

Survey 1:
Simon Haykin (1994)
‘Bird classification using CNN’

This work presents a scenario with classification of birds using CNN technique based on color features. They used color images of birds with almost similar types. Image segmentation is carried in various stages. At first, the pixels are arranged and segmented on the basis of edges and spatial segmentation, where clustering is done. Next, the blocks are segmented using edge detection. The computational efficiency increases for image and training becomes easier. This approach provides with better and robust results for different images. Here they took sparrow for the case study and evaluated the features of it using the steps up listed. Their experimental results classify the effectiveness of proposed approach to improve the segmentation quality in aspects of precision and computational time.

Survey 2:
Paul Viola, Michael Jones (2001)
‘Classification and Grading of Image Using Texture Based Block-Wise Local Binary Patterns’

Paul Viola, Michael Jones et al., used global textural feature viz., Local Binary Pattern for feature extraction. Initially, an image is divided into k number of blocks. Subsequently, the texture feature is extracted from each k blocks of the image. The k value is varied and has been fixed empirically. In their approach experimentation purpose, the bird dataset is created using 4 different classes and experimentation is done for whole image and also with different blocks like 2, 4 and 8. Grading of Bird is done using Support Vector Machine classifier. Finally, the performance of the grading system is evaluated through metrics like accuracy, precision, recall and F-measure computed from the confusion matrix. Their experimental results show that most promising result is obtained for 8 blocks of the image.

Survey 3:

Gary Bradski and Adrian Kaehler (2008)

'Texture Classification from Random Features'

In this research they presented an approach for texture classification based on random projection, suitable for large texture database applications. A small set of random features are extracted from local image patches and those features are embedded into a bag-of-words model to perform texture classification.

Survey 4:

Schmid Huber, J. (2015)

'Adapted approach for Species Classification'

In this work, an adaptive approach for the identification of species is proposed and experimentally validated. Image processing technique is followed. In the first step K-Means clustering is used for image segmentation, in the second step some state of art features is extracted from segmented image, and finally images are classified under one of the classes by using multi-class support vector machine. The classification accuracy is achieved up to 89%.

Survey 5:

Haibing Wu and Xiaodong Gu (2015)

'Detection And Classification of images using Detection Line'

In this study, they present an application of neural networks and image processing techniques for detecting and classifying images. Images were segmented by a detection line (DL) method. Six geometric features (i.e., the principal axis length, the secondary axis length, axis number, area, perimeter and compactness of the image), 3 color features (i.e., the mean gray level of image on the R, G, and B bands. The methodology presented herein effectively works for classifying image to an accuracy of 90.9%.

REFERENCES

1. Simon Haykin, “Bird classification using CNN: a comprehensive foundation,” Prentice Hall PTR, 1994.
2. Paul Viola, Michael Jones, “Classification and Grading of Image Using Texture Based Block-Wise Local Binary Patterns” CVPR (1) 1 (2001), 511–518, 2001.
3. Gary Bradski and Adrian Kaehler. “Texture Classification from Random Features”, 2008.
4. Schmid Huber J, “Adapted approach for Species Classification: An Overview Neural Networks” 61: 85-117, 2015.
5. Haibing Wu and Xiaodong Gu, “Detection and Classification of images using Detection Line” 71,1–10, 2015.