Digital Naturalist - AI Enabled tool for Biodiversity Researchers

LITERATURE SURVEY

Survey 1:
Paul Viola, Michael Jones (2001)

"Classification and Grading of Images Using Block-Wise Local Binary Patterns Based on Texture"

Paul Viola, Michael Jones, and others employed the local binary pattern, a global textural feature, to extract features. An image is initially broken up into k number of blocks. The texture feature is then retrieved from each of the image's k blocks. The range of the k value includes

be empirically fixed. The bird dataset is built for their approach experimentation purposes utilising 4 different classes, and experimentation is done for the entire image as well as for other blocks like 2, 4, and 8. Utilizing a support vector machine classifier, Bird is graded. Finally, metrics such as accuracy, precision, recall, and F-measure calculated from the confusion matrix are used to assess the performance of the grading system. Their experimental findings demonstrate that the most encouraging outcome is attained for 8 blocks.

Survey 2:
Gary Bradski and Adrian Kaehler (2008)

"Texture classification using arbitrary features"

In this study, they presented a texture classification method based on random projection that is appropriate for use with huge texture databases. To accomplish texture classification, a small number of random features are taken from local image patches and added to a bag-of-words model.

Survey 3:

Simon Haykin (1994)

"Using CNN, classify birds"

In this paper, a scenario involving bird classification utilising the CNN technique based on colour features is presented. Images of birds in colour that were almost identical in type were used. There are several processes involved in image segmentation. Prior to clustering, the pixels are first sorted and segmented using edges and spatial segmentation. The blocks are then divided into segments using edge detection. Training is made simpler and image computation becomes more efficient. This method offers more accurate and reliable results for various photos. Here, they used a sparrow as a case study and used the procedures outlined above to analyse its attributes. The efficiency of the suggested strategy to increase segmentation quality in terms of precision and computing speed is categorised by their experimental findings.

Survey 4:
Haibing Wu and Xiaodong Gu (2015)

"Using the detection line, pictures are detected and classified"

In this paper, they demonstrate how to recognise and classify images using neural networks and image processing methods. Using the detection line (DL) approach, images were segmented. The methodology described here effectively works for classifying images to an accuracy of 90.9% using six geometric features (i.e., the principal axis length, the secondary axis length, axis number, area, perimeter, and compactness of the image), and three colour features (i.e., the mean grey level of the image on the R, G, and B bands).

Survey 5:
Schmid Huber, J. (2015)

"Species classification using an adapted technique"

This study proposes and empirically validates an adaptive strategy to species identification. The image processing method is used. Images are segmented using K-Means clustering in the first phase, some cutting-edge features are extracted from segmented images in the second step, and then images are categorised under one of the classes using multi-class support vector machines in the third and final step. Up to 89% categorization accuracy is attained.

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.