

Literature Survey

**Project Title : DIGITAL
NATURALIST**

**- AI Enabled tool
for Biodiversity
Researchers**

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- **Paper title**

Ungulate Detection and Species Classification from Camera Trap
Images Using
RetinaNet and Faster R-CNN (2022)

Problem definition

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- First, if you enter the name of the targeted bird breed, the image will be collected from the Web using the image crawl.
- To refine the collected images into the training dataset, the corrupted image is corrected and deleted, the outlier is removed, and finally the image is expanded to obtain the refined training data.

Methodology/Algorithm

- Convolutional Neural Network (CNN)
- Tensorflow Framework
- Back Propagation

Advantages

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- It is used in various applications like the image recognition, video analysis, natural language processing, and drug discovery
- The performances are improving annually.

Disadvantages

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- Birdwatching is a common hobby but to identify their species requires the assistance of bird books.
- **Paper title**

Problem definition

Methodology/Algorithm

“Rare Animal Image Recognition Based on Convolutional Neural Networks” .Hao, Xinyu, Guangsong Yang, Qiubo Ye, and Donghai Lin. In 2019 12th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics (CISP-BMEI), pp. 1-5. IEEE, 2019.

- Rare animal image recognition based on the basic model of CNNs, by which to autonomously extract the image features in the training set
- Construct an image recognition system to identify rare animals
- Convolutional neural networks(CNN)
- Matrix Multiple CNN (MMCNN)
- Deep learning Convolutional neural network

Advantages

Disadvantages

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- Compared with ordinary neural networks, the advantages of simple operation and small computational complexity are very beneficial for the application Compared with ordinary neural networks

- the advantages of simple operation and small computational complexity are very beneficial for the application and promotion of many industries.
- The subsequent work of this research is to improve the network structure to improve the recognition accuracy while reducing the computational complexity.
- The subsequent work of this research is to improve the network structure to improve the recognition accuracy while reducing the computational complexity.
- **Paper title**

Problem definition

Methodology/Algorithm

“Image Classification Using Deep Neural Network”. Tiwari, Vaibhav, Chandrasen Pandey, Ankita Dwivedi, and Vrinda Yadav. In 2020 2nd International Conference on Advances in

Computing, Communication Control and Networking (ICACCCN), pp. 730-733. IEEE, 2020.

- Image Classification is widely used in various fields such as Plant leaf diseaseclassification, facial expression classification.
- To make bulky images handy, image classification is done using the concept of adeep neural network.
- Deep Neural Network
- VGG ,
- Image Classification
- Convolutional Neural Network (CNN)

Advantages

Disadvantages

-
- An initial interesting point is that the common design principles of the VGGmodels since it performed best in the competition called ILSVRC 2014[10]

- It is very simple and easy to comprehend and implement this modular construction of the architecture.
- It is extremely expensive to train due to complex data models.
- Moreover deep learning requires expensive GPUs and hundreds of machines. This increases cost to the users.
- **Paper title**

Ungulate Detection and Species Classification from Camera Trap Images Using RetinaNet and Faster R-CNN (2022)

Problem definition

- RetinaNet to create a neural network
- Far-R-CNN to optimise the CNN
- The detection is done by using a pre-trained coco dataset from darknet.

Methodology/Algorithm

- Retinanet
- Convolutional network
- Detector
- Opencv

Advantages

The image which are predicted correct type of animal name

Disadvantages

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- Wrong output means the images which are predicted a different name rather than the correct name of the given input image.
- No output means it is not able to predict the given input images.