Literature Survey

Project Title : DIGITAL NATURALIST

- AI Enabled tool for Biodiversity Researchers

Team Id	**:**	PNT2022TMID20804
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1.	**Paper title**	Ungulate Detection and Species Classification from Camera Trap Images Using RetinaNet and Faster R-CNN (2022)
	Problem definition	• First, if you enter the name of the targeted bird breed, the image will be collectedfrom 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	• It is used in various applications like the image recognition, video analysis,natural language processing, and drug discovery • The performances are improving annually.
	Disadvantages	• Birdwatching is a common hobby but to identify their species requires the assistance of bird books.

2.	**Paper title**	"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.
	Problem definition	• 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
	Methodology/ Algorithm	• Convolutional neural networks(CNN) • Matrix Multiple CNN (MMCNN) • Deep learning Convolutional neural network
	Advantages	• 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.
	Disadvantages	• The subsequent work of this research is to improve the network structure toimprove the recognition accuracy while reducing the computational complexity**.**

3.	**Paper title**	"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.
	Problem definition	• Image Classification is widely used in various fields such as Plant leaf disease classification, facial expression classification. • To make bulky images handy, image classification is done using the concept of a deep neural network.
	Methodology/ Algorithm	• Deep Neural Network • VGG , • Image Classification • Convolutional Neural Network (CNN)
	Advantages	• An initial interesting point is that the common design principles of the VGG models since it performed best in the competition called ILSVRC 2014[10] • It is very simple and easy to comprehend and implement this modularconstruction of the architecture.
	Disadvantages	• 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.

4.	**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 detectionis 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	• Wrong output means the images which are predicted a different name rather thanthe correct name of the given input image. • No output means it is not able to predict the given input images.