IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 9, September 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.542

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

Artificial Intelligence Image Recognition Method Based on Convolutional Neural Network Algorithm

J.Priyadharshini[1] , Ms.E.Padma[2], Dr.S.Prabhadevi[3]

PG Scholar, Department of Computer Science and Engineering, Nandha Engineering College (Autonomous), Erode, Tamil Nadu, India[1]

Associate Professor, Department of Computer Science and Engineering, Nandha Engineering College (Autonomous), Erode, Tamil Nadu, India[2]

Professor, Department of Computer Science and Engineering, Nandha Engineering College (Autonomous), Erode, Tamil Nadu, India[3]

ABSTRACT: Convolutional Neural Network (CNN) has been widely used in the field of image processing and achieved good results. First, a recurrent neural network is introduced into the convolutional neural network, and therefore the deep features of the image are learned in parallel using the convolutional neural network and the recurrent neural network. Secondly, consistent with the thought of ResNet's skip convolution layer, a replacement residual module ShortCut3-ResNet is made. Then, a dual optimization model is established to understand the integrated optimization of the convolution and full connection process.

KEYWORDS: Convolutional Neural Network, Artificial Intelligence, Image Recognition.

I. INTRODUCTION

1.1 Artificial Intelligence

Artificial intelligence is the replication of human intelligence processes by machines, mostly computer systems. Some applications of AI include expert systems, tongue processing, machine vision and speech recognition. AI systems work by ingesting huge amount of labeled training data, analyzing the information for correlations and patterns, and using these patterns to form predictions about future states.

1.2 Convolutional Neural Network (CNN)

Artificial Intelligence has been noted a majestic growth in cross over the gap between the capabilities of humans and machines. Researchers and followers alike, work on various areas of the sector to form amazing things happen. One among many such areas is that the area of Computer Vision. The agenda for this field is to authorize machines to look at the planet as humans do, grasp it during a similar manner and even use the knowledge for a mess of tasks like Image & Video recognition, , Media Recreation, Recommendation Systems, tongue Processing, Image Analysis etc. The development in Computer Vision with Deep Learning has been made and perfected with time, fundamentally over one particular algorithm — a Convolutional Neural Network.

1.2.1 Introduction –CNN

A Convolutional Neural Network also known as a Deep Learning algorithm which contains an input image, assign significance to varied aspects and objects within the image and be ready to differentiate one from the opposite . The initialization process required during a ConvNet is far less as compared to other classification algorithms. While in basic methods filters are come up with ample training, ConvNets have the facility to hunt out these filters and features.

1.2.2 Image Classification Using Convolutional Neural Networks

Image classification involves the extraction of features from the image to watch some patterns within the dataset.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

Using an ANN for the aim of image classification would find you being very costly in terms of computation since the trainable parameters become extremely large. Filters help us exploit the spatial locality of a specific image by enforcing an area connectivity pattern between neurons. Convolution basically means some extent wise multiplication of two functions to supply a 3rd function. Slide the filter over the image and obtain the scalar product of the 2 matrices. The resulting matrix is named an "Activation Map" or "Feature Map".

II. LITERATURE SURVEY

Yu Zhao , Rennong Yang , Guillaume Chevalier ,Ximeng Xu , and Zhenxing Zhang[1], proposed "Deep Residual Bidir-LSTM for Human Activity Recognition Using Wearable Sensors " which studies Aeronautics and Astronautics, analyzes the act recognition (HAR) topic in research due to its wide application. With the event of deep learning, new ideas have seemed to address HAR problems. Here, a deep specification using residual bidirectional long STM (LSTM) is proposed. The benefits of the new network include that a bidirectional connection can concatenate the positive time direction (forward state) and therefore the negative time direction (backward state).

Lianli Gao, Zhao Guo, Hanwang Zhang, Xing Xu, and Heng Tao Shen[2], proposed "Video Captioning With Attention-Based LSTM and Semantic Consistency", which is a recent progress in using long STM (LSTM) for image captioning has influenced the exploration of their applications for video captioning. Taking video as a sequence of features, an LSTM model is employed on video sentence pairs and makes a video to a sentence. Existing methods usually model the translating bugs, but ignore the correlations among sentence semantics and visual content. To handle these issues, a totally distinctive end-to- end framework named aLSTMs, an attention-based LSTM model is proposed with semantic consistency, to transfer videos to natural sentences.

Anamika Dhillon and Gyanendra K. Verma[3], proposed "Convolutional neural network: a review of models, methodologies and applications to object detection", a study which uses Deep learning, which was developed as an efficient machine learning method that takes in numerous layers of features or representation of the info and provides state-of-the-art results. The appliance of deep learning has shown impressive performance in various application areas, particularly in image classification, segmentation and object detection. Recent progress of deep learning method brings good performance to fine-grained image classification which I used to differentiate lower-level categories. This task is extremely challenging thanks to high intra-class and low inter-class variance. In this paper, it is given an extensive review of varied deep architectures and model highlighting features of particular model.

Geetharamani G, Arun Pandian[4], proposed "Identification of plant leaf diseases using a nine- layer deep convolutional neural network", a completely unique plant disease identification model supported a deep convolutional neural network (Deep CNN). Six sorts of data augmentation methods were used: image flipping, principal component analysis (PCA) color augmentation, gamma correction, noise injection, rotation, and scaling. It is noticed that using data augmentation can increase the performance of the model. After an in depth simulation, the proposed model achieves 96.46% classification accuracy. This accuracy of the proposed work is bigger than the accuracy of traditional machine learning approaches. The proposed model is additionally tested with reference to its consistency and reliability Muhammad Aziz, Rawish Fatima, Charles Dong, Wade Lee-Smith and Ali Nawras[5], presents "The impact of deep convolutional neural network-based artificial intelligence on colonoscopy outcomes which is a systematic review with meta-analysis", the advantage of AI in colonoscopy which has gained popularity in recent times. Recent trials have estimated the efficiency of deep convolutional neural network (DCNN)-based AI system in colonoscopy for good adenoma detection rate (ADR) and polyp detection rate (PDR). It is explained that to form a scientific survey and meta-analysis of the given studies to assess the impact of DCNN-based AI-assisted colonoscopy in improving the detection rates. Our outcomes included ADR and PDR. Risk ratios (RR) with 95% confidence interval (CI) were calculated using random effects model and DerSimonian–Laird approach for every outcome.

Du Guiming, Wang Xia, Wang Guangyan, Zhang Yan and Li Dan[6], proposed "Speech Recognition Based on Convolutional Neural Networks", which is a Speech recognition, because the man-machine interface, plays a really important role within the field of AI .Traditional speech recognition methods are shallow learning structure, and have their limitations. This paper uses the Convolution Neural Networks (CNNs) to understand speech recognition. It's an alternate sort of neural network which will reduce spectral variation and model spectral correlations which exist in signals. Besides the paper uses Back Propagation to coach the neural network. During the entire experiment, the paper uses a gaggle of speech that recorded by us as training data, and it uses the others to check the neural network.

Hae-Jung Kim [7] proposed "Image-Based Malware Classification Using Convolutional Neural Network", a malware

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

analysis method that checks the images learned by AI deep learning to enable protection of massive data by quickly detecting malware, which includes ransom ware. First, quite 2,400 datasets frequently employed by malware are analyzed to seek out and image data with a convolutional neural network. Data are then converted into an abstract image graph and parts of the graph extracted to seek out the group where malware exist. Results obtained shows that use of AI deep learning can enable fast and exact malware detection by categorizing malware through imaging.

Chih-Chung Hsu and Chia-Wen Lin [8], proposed "CNN-Based Joint Clustering and Representation Learning with Feature Drift Compensation for Large-Scale Image Data" given an outsized unlabeled set of images, the way to expertly and successfully group them into collection supported extracted visual representations remains a major problem. To deal with this problem, a convolutional neural network (CNN) is employed to solve both clustering and representation learning in an repetitive manner. From the proposed method, given an input image set, first take some k samples and extract their features as initial cluster centroids using the proposed CNN with an initial model pre qualified from the ImageNet dataset. Experimental results illustrate the proposed method outperforms start-of-the-art clustering technique in terms of correctness and storage complexity on large-scale image sets containing many images.

Ben Fielding and Li Zhang[9], proposed "Evolving Image Classification Architectures With Enhanced Particle Swarm Optimisation", a Convolutional Neural Networks (CNNs) which became the de facto technique for image feature extraction now a days. However, their design and construction remains a sophisticated task. As more developments are made in progressing the interior components of CNNs, the task of assembling them effectively from core components becomes even more arduous. In order to beat these barriers, the Swarm Optimized Block Architecture is proposed, combined with an enhanced adaptive particle swarm optimization (PSO) algorithm for deep CNN model evolution. It attains a mistake rate of 4.77% on the CIFAR-10 image classification task, with 32 hours of combined optimization and training, and a mistake rate of 25.41% on the CIFAR-100 image data set in 35 hours. All experiments and research were performed on one NVIDIA GTX 1080Ti consumer GPU.

Xinyu Lei, Hongguang Pan , and Xiangdong Huang [10] presents "A Dilated CNN Model for Image Classification", the dilated convolution algorithm, which is widely used for image segmentation, is applied within the image classification held during this paper. However, the classical CNN has the matter of consuming an excessive amount of computing resources. to unravel this problem first, this paper proposed a dilated CNN model which is made through replacing the convolution kernels of traditional CNN by the dilated convolution kernels, and then, the dilated CNN model is being tested on the tool Mnist handwritten digital recognition data set. Second, to unravel the detail loss problem within the dilated CNN model, the hybrid dilated CNN (HDC) is made by stacking dilated convolution kernels with different dilation rates. Hence, the dilated CNN and HDC model made during this paper can remarkably improve the image classification performance.

Mariia Dobko, Bohdan Petryshak and Oles Dobosevych[11], proposed "CNN-CASS: CNN for Classification of Coronary Artery Stenosis Score in MPR Images" a way to decrease patient waiting time for diagnosis of the arteria coronaria Disease, automatic methods are applied to spot its severity using Coronary computerized tomography Angiography scans or extracted Multi planar Reconstruction (MPR) images, giving doctors a second-opinion on the priority of every case. Here the limitations are overcome by applying a special automated approach supported ShuffleNet V2 specification and testing it on the proposed collected dataset of MPR images, which is greater than the other utilized in this field before. For Stenosis score classification, the tactic shows improved performance comparing to previous works, achieving 80% accuracy on the patient level. Our code1 is publicly available.

Ainul Anam Shahjamal Khan, Aditya Ranjan Chowdury, MD. Shahriar Haque [12], proposed "Monitoring and Detecting Health of a Single Phase Induction Motor Using Data Acquisition Interface module with Artificial Neural Network", which deals with the matter of identification of induction motor incipient faults and usefulness of Artificial Neural Network (ANN). The research work diagnoses the four major faults like stator inter-turn faults, bearing faults and misalignment faults and Thrust Fault using some measurable parameters (motor intake current, speed and body temperature). The experimental data for 4 measurable guidelines were generated within the laboratory on connected single phase induction motor. Experimental results show that it's a really good selection to detect incipient faults in single phase induction motor using an ANN algorithm.

Jayanthi Raghavan and Majid Ahmadi[13] proposed "A MODIFIED CNN-BASED FACE RECOGNITION SYSTEM", a deep CNN based model are used for face recognition. CNN is used to extract unique countenance and softmax classifier is applied to classify facial images during a fully connected layer of CNN. The tests are done in Extended YALE B database and FERET database for smaller batch sizes and low value of learning rate, showed that

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

the proposed model has improved the face recognition accuracy rate. Accuracy rates of up to 96.4% are attained by using the proposed model in Extended Yale B database. To reinforce the accuracy rate more, techniques like SQI, HE, LTISN, GIC and DoG are applied, where the accuracy irate is improved to 76.4%.

Thibaut Perol, Michaël Gharbi and Marine Denolle[14], proposed "Convolutional neural network for earthquake detection and location", the current evolution of seismicity in Central us which have exhaustive catalogs to improve seismic hazard assessment. Over the last few years, the quantity of seismic data has increased expeditiously, creating a requirement for efficient algorithms to accurately detect and locate earthquakes. Currently the most elaborate methods scan through the plethora of continuous seismic records, checking out iterative seismic signals. Our algorithm is orders of magnitude which is faster than other methods.

Youhoi Tian[15], proposed "Artificial Intelligence Image Recognition Method Based on Convolutional Neural Network Algorithm", an algorithm with good performance, convolutional neural network has been widely utilized in the sector of image processing and achieved good results by counting on its own local receptive fields, weight sharing, pooling, and sparse connections. First, a recurrent neural network is introduced into the convolutional neural network, and therefore the reform the deep features of the image are learned in parallel using the convolutional neural network and the recurrent neural network. Secondly, consistent with the thought of ResNet's skip convolution layer, a replacement residual module ShortCut3-ResNet is made . Experimental results show that the various feature of the image, and improve the accuracy of feature extraction and image recognition ability of the convolutional neural network.

Wei Wang, Ming Zhu[16], proposed "Malware Traffic Classification Using Convolutional Neural Network for Representation Learning", which is the traffic classification is that the initiative for network anomaly detection or network based intrusion detection system and plays a crucial role in network security domain. In this paper first presented a replacement taxonomy of traffic classification from a man-made intelligence perspective, then proposed a malware traffic classification method using convolutional neural network by taking traffic data as images. The simplest sort of traffic representation is session with all layers through eight experiments. The tactic is validated in two scenarios including three sorts of classifiers and therefore the experiment results show that our proposed method can satisfy the accuracy requirement of application.

Hiroya Ueyama, Yoichi Akazawa, Noboru Yatagai, Hiroyuki Komori, Kohei Matsumoto, Kumiko Ueda, Kenshi Matsumoto, Mariko Hojo, Takashi Yao, Akihito Nagahara and Tomohiro Tada [17], proposed "Application of artificial intelligence employing a CNN for diagnosis of gastric cancer supported magnifying endoscopy with narrow-band imaging", the large endoscopy with narrow-band imaging (ME-NBI) has made a huge contribution to clinical area. However, obtaining skill at ME-NBI diagnosis of early gastric cancer (EGC) needs good experience and power. Currently, AI (AI), using deep learning and a convolutional neural network (CNN), has made an honest progress in various medical fields. An AI-aided CNN computer-aided diagnosis system is made , supported ME-NBI images, to diagnose EGC and aproximated the diagnostic precision of the AI-assisted CNN-CAD system.

Ivan Lorencin ,Nikola Anđelić , Vedran Mrzljak and Zlatan Car[18], proposed "Marine Objects Recognition Using Convolutional Neural Networks", which is one of the challenges of maritime affairs is automatic object recognition from aerial imagery. This challenge can be obtained by utilizing a Convolutional Neural Network based algorithm. For purposes of these research a dataset of 5600 marine object images is collected by using Google satellite imagery and Google Image Search. For identification of marine objects, an algorithm constructed with 3 CNNs is proposed. The very first CNN for grouping on the main classes gains accuracy of 92.4 %. Here this research has shown that CNN is suitable artificial intelligence (AI)method for marine object identification from aerial imagery.

M. Vardhana , N. Arunkumar , Sunitha Lasrado , Enas Abdulhay and Gustavo Ramirez- Gonzalez[19], proposed "Convolutional neural network for bio-medical image segmentation with hardware acceleration", a research work carried out in various fields of biomedical image processing, for the identification of brain tumors, etc. Image processing techniques for enhancement of brain tumor patterns are discussed in Verma, Mehrotra, Pandey, and Singh (2013). It presents the various techniques used for identification of the brain tumor. Comparative study on different edge detection techniques has been discussed in Panigrahi, Mahakud, Samantaray, and Mohapatra (2014). Ant colony optimization is an algorithm based on behavior of ants (Rahebi & Tajik, 2011). It proposes a new technique, where artificial neural network with supervised learning along with momentum to improve edge detection based on antcolony optimization.

Yuan Yao, Yang Yang, Yanpeng Wang, Xuefeng Zhao[20], proposed "Artificial intelligence- based hull structural

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

plate corrosion damage detection and recognition using convolutional neural network", with the help of big data and GPU acceleration training, the artificial intelligence technique with deep learning as its core is developing so fast and has been widely used in many areas. At an equivalent time, feature extraction operations are required by the present image-based corrosion damage detection method within the field of ships, with little effect but taking the massive amount of manpower and financial resources. A new method is preferred for hull structure corrosion damage detection and for the recognition based on AI using convolutional neural network. The convolutional neural network model is formed through an massive number of classified corrosion damage images to make a classifier model.

III. COMPARITIVE ANALYSIS

Title	Techniques &Mechanisms	Parameter Analysis	Future Work
Deep Residual Bidir-LSTM for Human Activity Recognition Using Wearable Sensors	K-nearest neighbor algorithm	significance of HAR, Different methods of recognition.	Explore a more efficient way to tune Parameters.
Video Captioning With Attention-Based LSTM and Semantic Consistency	Attention mechanism, fast reference frame Selection algorithm.	Ignore the correlations between sentence semantics and visual content	In the future, we will modify our model to work on domain specific Data sets, e.g., movies.
CNN: review of models, methods and applications to detect objects.	Deep Learning algorithm, gradient- based learning algorithms.	High intra-class and low inter-class variance	Further improvement in the baseline Election, optimize the object detection problems.
Identification of plant leaf diseases using a nine-layer deep convolutional neural network	K-nearest neighbours, logistic regression, Decision tree, support vector machine.	Increase the performance, Training epochs, batch sizes and dropouts.	The feature work will be to extend our plant disease identification objective from plant leaves to other parts of the plants.
The impact of deep convolutional neural network-based artificial intelligence on colonoscopy outcomes: A systematic review with meta- analysis.	DCNN algorithms	Adenoma detection rate and polyp detection rate.	Reducing incident colorectal cancer
Speech Recognition Based on Convolutional Neural Networks	Back Propagation Algorithm	Traditional speech recognition methods are shallow learning structure, and have their limitations	In future extraction, speech is analyzed using Hamming windows.
Image-Based Malware Classification Using Convolutional Neural Network	t-SNE algorithm	Detecting malware, including ransom ware.	Artificial intelligence deep learning recognizes the pattern of malware and learns from data autonomously

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

CNN-Based Joint Clustering and Representation Learning with Feature Drift Compensation for Large-Scale Image Data	Agglomerative clustering.	A large unlabeled set of images are given, need is to efficiently and effectively group them into clusters based on extracted visual representations remains a challenging problem.	Drift compensation scheme to avoid the performance degradation due to feature drifting in the mini batch based iterative process
Evolving Image Classification Architectures With Enhanced Particle Swarm Optimization	Particle swarm optimization algorithm, Genetic Algorithm, REINFORCE algorithm	The task of assembling them Effectively from core components becomes even more arduous	Hybrid evolutionary hand-design methods
A Dilated CNN Model for Image Classification	The dilated convolution algorithm, image classification algorithms, Adam algorithm	The classical CNN has the problem of consuming Too much computing resources	The training and testing accuracy of HDC model are both higher, and the time consuming is less than those of dilated CNN model on the remote sensing image data set.
CNN-CASS: CNN for Classification of Coronary Artery Stenosis Score in MPR Images	Machine learning algorithms	Lack of large set of data that Could guarantee their reliability, handcrafted features requiring manual preprocessing, such as centerline extraction.	By applying adifferent automated approach based on ShuffleNetV2 network architecture and testing it on the proposed collected dataset of MPR images, which is bigger than any other used in this field before.
Monitoring and Detecting Health of a Single Phase Induction Motor Using Data Acquisition Interface (DAI) module with Artificial Neural Network	Neural network algorithm, ANN algorithm, gradient decent Algorithm, Levenberg-Marquardt Algorithm, Back-propagation Algorithm	The three major faults such as stator inter-turn faults, bearing faults and misalignment faults using some measurable parameters (motor intake current, speed and body temperature).The measurable parameters were obtained by a Data Acquisition Interface module	In future, more faults will be analyzed and detected both in single phase and three phase induction motors for which the proposed method is believed to be similarly effective.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

A MODIFIED CNN-BASED FACE RECOGNITION SYSTEM	Image enhancement algorithms, grayscale image enhancement algorithm, back propagation algorithm	The experiments conducted in Extended YALE B and FERET databases for smaller batch sizes and low value of learning rate, showed that the proposed model has improved the face recognition accuracy.	After the application of preprocessing techniques, the improved accuracy of 99.8% is achieved with deep CNN model for the YALE B Extended DB.
Convolutional neural network for earthquake detection and location	state-of-the-art algorithms, K-means algorithm, ConvNetQuake, gradient descent algorithm, ADAM algorithm	The detection accuracy is the percentage of windows correctly classified as events or noise.	Orders of magnitude are more faster than the already established methods
Artificial Intelligence Image Recognition Method Based on Convolutional Neural Network Algorithm	Convolutional neural network algorithm, forward propagation and back propagation error algorithms, optimization algorithm	In order to improvise the speed of the convergence and accuracy in recognizing the images, a new convolutional neural network algorithm is proposed.	convolutional neural network algorithm can improve the feature extraction accuracy and image recognition ability of convolutional neural network
Malware Traffic Classification Using Convolutional Neural Network for Representation Learning	Traffic classification methods are port based, Deep packets inspection-based, statistical-based, and behavioral-based	The traffic size and classes number are certainly not fixed in real applications, so in machine learning terms, the generalization capability of our approach need to be further validated.	The capability of identify unknown malware traffic is very important to a NIDS, how to add Capability of unknown malware traffic to our approach needs to be further studied
Application of artificial intelligence using a convolutional neural network for diagnosis of early gastric cancer based on magnifying endoscopy with narrow-band imaging	endoscopy simple diagnostic algorithm for EGC, the vessel plus surface classification system algorithm	All misdiagnosed images of EGCs were of low- quality or of superficially depressed and intestinal-type intramucosal cancers that was difficult to distinguish from gastritis.	This system may have great potential for future application to real clinical settings, which could facilitate ME-NBI diagnosis of EGC in practice
Marine Objects Recognition Using Convolutional Neural Networks	CNN-based algorithm, marine objects recognition algorithm	One of the challenges of maritime affairs is automatic object recognition from aerial Imagery	Universal CNN-based algorithm for marine objects recognition can be utilized.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

Convolutional neural network for bio-medical image segmentation with hardware acceleration	Sobel and Prewitt algorithms	Power is one of the main parameters that have to be considered while dealing with biomedical instruments.	The proposed architecture for edge detection is synthesizable and can be deployed into hardware.
Artificial intelligence- based hull structural plate corrosion damage detection and recognition using convolutional neural network	Overlap scanning sliding window algorithm, Stochastic gradient descent algorithm.	A new method for hull structural plate Corrosion damage Detection and recognition based on artificial intelligence using convolutional neural network is proposed	Improve the recognition accuracy of corrosion areas at sliding window boundaries

IV. CONCLUSION

To improve the power of the convolutional neural network to classify and recognize two- dimensional images and speed up the convergence of the algorithm, this paper proposes a replacement convolutional network algorithm. First, a recurrent neural network is introduced into the CNN, and therefore the refore the deep features of the image are learned in parallel using the convolutional neural network and the recurrent neural network. Secondly, consistent with ResNet's idea of skipping convolutional layers, construct a replacement residual module ShortCut3-ResNet. Finally, the convolutional layer and therefore the full connection process are optimized.

REFERENCES

[1] Yu Zhao , Rennong Yang , Guillaume Chevalier ,Ximeng Xu , and Zhenxing Zhang "Deep Residual Bidir-LSTM for Human Activity Recognition Using Wearable Sensors" Journal of Hindawi ,Mathematical Problems in Engineering,Volume 2018, Article ID 7316954.

[2] Lianli Gao, Zhao Guo, Hanwang Zhang, Xing Xu, and Heng Tao Shen, Senior Member, IEEE "Video Captioning With Attention-Based LSTM and Semantic Consistency" IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 19, NO. 9, SEPTEMBER 2017

[3] Anamika Dhillon and Gyanendra K. Verma "Convolutional neural network: a review of models, methodologies and applications to object detection" Progress in Artificial Intelligence https://doi.org/10.1007/s13748-019-00203-0.

[4] Geetharamani G., Arun Pandian "Identification of plant leaf diseases using a nine-layer deep convolutional neural network" Computers and Electrical Engineering 76 (2019) 323–338.

[5] Muhammad Aziz, Rawish Fatima, Charles Dong, Wade Lee-Smith and Ali Nawras "The impact of deep convolutional neural network-based artificial intelligence on colonoscopy outcomes: A systematic review with meta-analysis" META ANALYSIS AND SYSTEMATIC REVIEW doi:10.1111/jgh.15070

[6] Du Guiming, Wang Xia, Wang Guangyan, Zhang Yan and Li Dan" Speech Recognition Based on Convolutional Neural Networks" 2016 IEEE International conference on Signal and Image Processing.

[7] Hae-Jung Kim "Image-Based Malware Classification Using Convolutional Neural Network" Department of Cyber Security, Kyungil University, Daegu 38428, Republic of Korea.

[8] Chih-Chung Hsu and Chia-Wen Lin "CNN-Based Joint Clustering and Representation Learning with Feature Drift Compensation for Large-Scale Image Data" Senior Member, IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 20, NO. 2, FEBRUARY 2018

[9] Ben Fielding nd Li Zhang , (Member, IEEE) "Evolving Image Classification Architectures With Enhanced Particle Swarm Optimisation" Digital Object Identifier 10.1109/ACCESS.2018.2880416

[10] Xinyu Lei, Hongunng Pan and Xiangdng Huang "A Dilated CNN Model for Image Classification" Digital Object Identifier 10.1109/ACCESS.2019.2927169

[11] Mariia Dobko, Bohdan Petryshak and Oles Dobosevych "CNN-CASS: CNN for Classification of Coronary Artery Stenosis Score in MPR Images" 25th Computer Vision Winter Workshop Domen Tabernik, Alan Lukeži˘c, Klemen Grm (eds.) Rogaška Slatina, Slovenia, February 3–5, 2020

[12] Ainul Anam Shahjamal Khan, Adittya Ranjan Chowdury, MD. Shahriar Haque "Monitoring and Detecting Health of a Single Phase Induction Motor Using Data Acquisition Interface (DAI) module with Artificial Neural Network" WSEAS TRANSACTIONS on SYSTEMS and CONTROL.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 9, Issue 9, September 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0909031 |

[13] Jayanthi Raghavan and Majid Ahmadi "A MODIFIED CNN-BASED FACE RECOGNITION SYSTEM" International Journal of Artificial Intelligence and Applications (IJAIA), Vol.12, No.2, March 2021.
[14] Thibaut Perol, Michaël Gharbi and Marine Denolle "Convolutional neural network for earthquake detection and location" American Association for the Advancement of Science. No claim to original U.S. Government Works. Distributed under a Creative Commons Attribution NonCommercial License 4.0 (CC BY-NC).
[15] Youhui Tian "Artificial Intelligence Image Recognition Method Based on Convolutional Neural Network Algorithm" Digital Object Identifier 10.1109/ACCESS.2020.3006097
[16] Wei Wang, Ming Zhu "Malware Traffic Classification Using Convolutional Neural Network for Representation Learning" Department of Automation, University of Science and Technology of China Hefei, China.
[17] Hiroya Ueyama,Yusuke Kato, Yoichi Akazawa, Noboru Yatagai, Hiroyuki Komori, Tsutomu Takeda, Kohei Matsumoto, Kumiko Ueda, Kenshi Matsumoto, Mariko Hojo, Takashi Yao, Akihito Nagahara and Tomohiro Tada "Application of artificial intelligence using a convolutional neural network for diagnosis of early gastric cancer based on magnifying endoscopy with narrow-band imaging"doi:10.1111/jgh.15190.
[18] Ivan Lorencin ,Nikola Anđelić , Vedran Mrzljak and Zlatan Car "Marine Objects Recognition Using Convolutional Neural Networks" DOI 10.17818/NM/2019/3.3 UDK 004.89:629.5 Preliminary communication / Prethodno priopćenje Paper accepted / Rukopis primljen: 24. 4. 2019.
[19] M. Vardhana , N. Arunkumar , Sunitha Lasrado , Enas Abdulhay and Gustavo Ramirez-Gonzalez "Convolutional neural network for bio- medical image segmentation with hardware acceleration" Received 3 February 2018; accepted 13 March 2018 Available online 17 March 2018
[20]Yuan Yao, Yang Yang, Yanpeng Wang, Xuefeng Zhao "Artificial intelligence-based hull structural plate corrosion damage detection and recognition using convolutional neural network" Applied Ocean Research 90 (2019) 101823.

INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 7.542

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details