



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Special Issue 2, April 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Geospatial Event Detection by Grouping Emotion Contagion in Social Media

Jothika V¹, Kalaivani N¹, Pavithra P¹, S. Sridevi²

U. G Student, Department of Computer Science Engineering, Velammal Engineering College, Chennai, India.¹

Assistant Professor, Department of Computer Science Engineering, Velammal Engineering College, Chennai, India.²

ABSTRACT: Facial expression plays a crucial role in the analysis of emotions. Facial expression recognition involves the classification of various emotions like neutral, sad, anger, etc. This application is gaining importance in day-to-day life. There are different methods used for recognizing the emotions like machine learning and Artificial Intelligence techniques. Deep learning and image classification methods are used for recognizing expressions and classifying the expressions according to the images. Various datasets are used for training expression recognition models. In this project, we are using a Convolutional neural network.

KEYWORDS: Artificial Intelligence, Convolutional neural network, OpenCV, Keras, ReLU.

I. INTRODUCTION

Human beings communicate with each other in the form of speech, gestures and emotions. As such, systems that recognize the same are in great demand in many fields. Concerning artificial intelligence, a computer will be able to interact with humans much more naturally if they are capable of understanding human emotion. It would also help during counseling and other healthcare-related fields. Emotion is a mental state connected with the nervous system linked with a fling, perceptions, behavioral reactions, and a degree of pleasure or irritation. One of the present applications of Artificial Intelligence (AI) using neural networks is the recognition of faces in images. Most techniques process visual data and search for normal patterns present in human faces in images. Face detection can be used for surveillance purposes by law enacts as well as in crowd administration. In this paper, we present a method for identifying seven emotions such as neutral, anger, sad, disgust, fear, happiness and surprise using facial images. Previous used deep-learning technology to create models of facial expressions based on emotions to identify emotions.

II. RELATED WORK

Previously there were many approaches which were used to detect the emotions, some of them are “Socially-aware animated intelligent personal assistant agent”. In [1], 1:1 combination is observed for the classification i.e., one test image is tested with the one trained image for each expression, this demerits to obtain the best match for the expressions. The study of real-time testing of conventional and deep learning approaches in facial emotion recognition is explained in [2]. An average weighting method is proposed to avoid potential errors in real-time facial expression recognition based on the traditional convolutional neural network in [3]. In [4], the proposed system employs both detection and tracking algorithms together to make the system fast enough to perform accurately in real time. The model proposed by “Stanford University” professors[1] was able to display the emoji on the screen based on the emotion expressed by the subject through real-time video. The limitations of this model were any shadow on a subject’s face would cause an incorrect classification of ‘angry’.

The work in this paper includes Cohn-Kanade dataset, so the results give a valuable comparison. Gabor features, which is a linear filter used for edge detection, and Discriminant Nonnegative Matrix Factorization (DNMF), which focuses on the nonnegativity of the data to be handled, are the feature extractors techniques. To classify these features

multiclass support vector machine (SVM) and multi-layer perceptron (MLP) were used. The results over Cohn-Kanade are the following: Using a MLP with Gabor 91.6% and with DNMF: 86.7%. While using SVM it was 91.4%. Another corpus used was JAFFE.

III. METHODOLOGY

For large amount of data, Convolutional Neural Network (CNN) works well. . In a Convolutional Neural Network, multiple layer is used for feature extraction. For this the result of facial expression recognition is more effective and efficient. Steps of Convolutional Neural Network algorithm are mentioned below –

- Step 1: At first input the data for training dataset.
- Step 2: Pre-process the data for effective result in face detection.
- Step 3: Face is detecting in this step.
- Step 4: After face detection data is training using CNN model.
- Step 5: After training dataset face class is predicted by probability.

The networks operating on Python, using the keras learn library. The software also provides real-time feedback on training progress and performance, and makes the model after training easy to save and reuse. In CNN architecture initially we have to extract input image of 48*48*1. The network begins with an input layer of 48 by 48 which matches the input data size processed in parallel manner through two similar models that is functionality in deep learning, and then concatenated for better accuracy and getting features of images perfectly as shown in Figure 1.

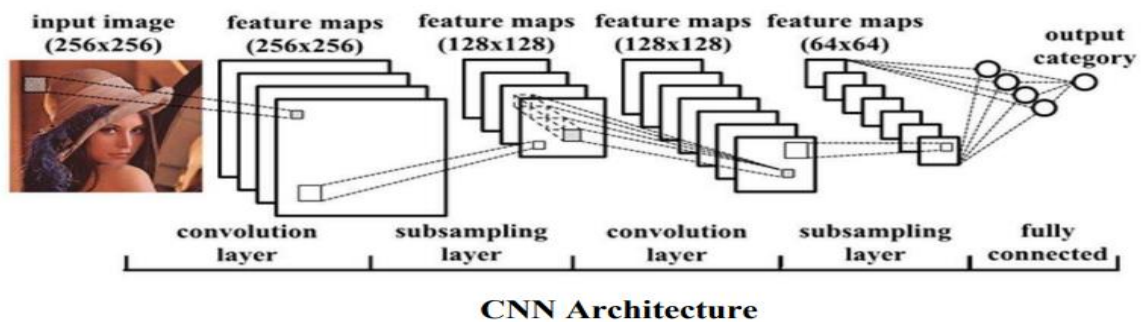


Figure 1- Convolutional Neural Network Architecture

There are two sub models for the extraction of CNN features which share this input and both have same kernel size. The outputs from these feature extraction sub-models are flattened into vectors and linked to one long vector matrix and transmitted to a fully connected layer for analysis before a final output layer allows for classification. This model contains convolutional layer with 64 filters each with size of [3*3], followed by a local contrast normalization layer, max-pooling layer, followed by one more convolutional layer, max pooling, flatten respectively. After that we concatenate two similar models and linked to a soft max output layer which can classify seven emotions. The image converted to 48 * 48 matrix in which each number represented a pixel value as shown in figure 2. We use dropout of 0.2 for reducing over-fitting. It has been applied to the fully connected layer and all layers contain units of rectified linear units (ReLU) activation function. First, we are passing our input image to convolutional layer which consists of 64 filters each of size 3 by 3, after that it passes through local contrast normalization can remove average from neighbourhood pixels leads to get quality of feature maps, followed by ReLU activation function. Here, we use batch normalization, dropout, ReLU activation function, categorical cross entropy loss, Adam optimizer, soft max activation

function in output layer for seven emotion classification. Input image size is adjusted to that 128*128*3. Furthermore, it is concatenated and passed through one more soft max layer for emotion classification and all procedure is same as above.



Figure 2 – Dataset Information

IV. EXPERIMENTAL RESULTS

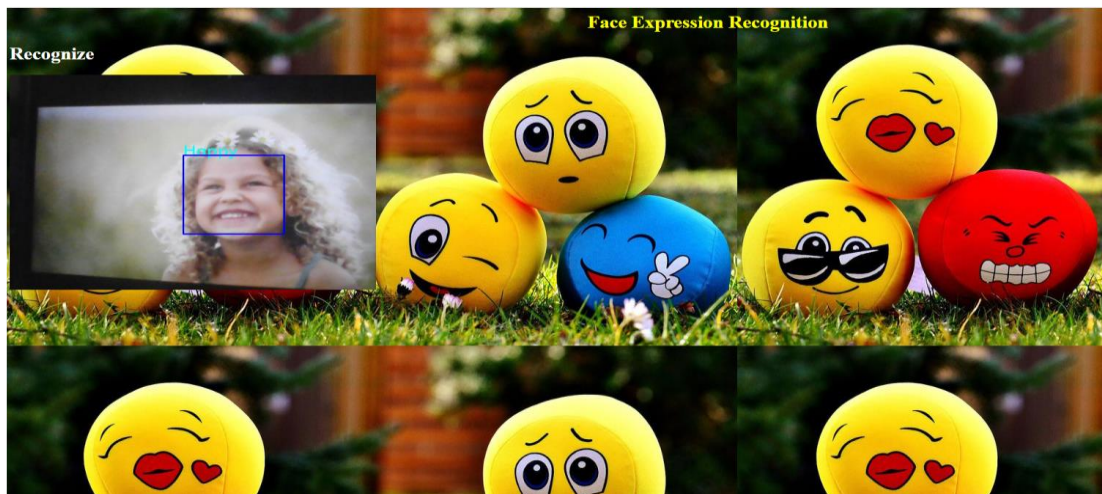


Figure 3 – Detection of emotion

V. CONCLUSION

Nowadays, optimizers work on a stochastic basis because of large datasets (millions of examples). However, this was true for our project. Given a limited dataset, trying on the whole dataset could have led to a better feature learning. Also, the use of some optimizers reported on this research would have had a different behavior. This behavior can be displayed on the loss curve having a smoother shape or by avoiding an early convergence. Finally, using full dataset for training, pre-training on each emotion, and using a larger dataset seem to have the possibility to improve the networks performance.

REFERENCES

- [1] Y. Matsuyama, A. Bhardwaj, R. Zhao, O. Romeo, S. Akoju, and J. Cassell, "Socially-aware animated intelligent personal assistant agent," in Proc. 17th Annu. Meeting Special Interest Group Discourse Dialogue, 2016, pp. 224-227.
- [2] D. McDuff, R. el Kaliouby, D. Demirdjian, and R. Picard, "Predicting online media effectiveness based on smile responses gathered over the Internet," in Proc. FG, April 2013, pp.



8th National Conference on Advanced Computing Technologies (NCACT'23)

Organized by

Department of CSE, Velammal Engineering College, Chennai, India

- [3] J. M. Girard, J. F. Cohn, M. H. Mahoor, S. Mavadati, and D. P. Rosenwald, "Social risk and depression: Evidence from manual and automatic facial expression analysis," in Proc. 10th IEEE Int. Conf. Workshops Autom. Face Gesture Recognit. (FG), April 2013, pp. 1_8.
- [4] T. Baltrusaitis, M. Mahmoud, and P. Robinson, "Cross-dataset learning and person-specific normalisation for automatic action unit detection," in Proc. 11th IEEE Int. Conf. Workshops Autom. Face Gesture Recognit. (FG), May 2015, pp. 1_6.
- [5] Jiannan Yang, Tiantian Qian, Fan Zhang, and Samee U. Khan, "Real-Time Facial Recognition Based on Edge Computing" in IEEE access volume 9, May 2021,pp.



SJIF: 8.423



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INTERNATIONAL CENTRE



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details