



EMOTION DETECTION THROUGH VIBRATION

T. Prasanth¹, Hema Priya A², Jeba Lara³, Keerthana N⁴, Manoj Kumar V⁵

1- Associate Professor, Reva University, Bangalore - dr.tprasanth@gmail.com,

2,3,4,5 - UG Scholar, Reva University, Bangalore

Abstract: Facial Expression conveys non-verbal cues, which play important roles in interpersonal relations. The general overview of the proposed system and its implementation for the application of object recognition for the blind people is also introduced. emotional state of a person. In this system, the captured image is compared with the trained dataset available in database and then emotional state of the image will be displayed. Using Convolutional Neural Network (CNN) in Deep Learning, which can recognize images or objects. Face changes during communication are the first signs that transmit the emotional state. The *visually impaired* (partially or completely blind) and *Alexithymia* suffer from unable to recognize the emotions of loved ones. Automatic emotion recognition is a large and important research area that addresses two different subjects, which are psychological human emotion recognition and artificial intelligence (AI).

Key Words: CNN, Deep Learning, alexithymia, AI

1. INTRODUCTION:

Facial Expression conveys non-verbal cues, which play important roles in interpersonal relations. The Facial Expression Recognition system is the process of identifying the emotional state of a person. In this system the captured image is compared with the trained dataset available in database and then emotional state of the image will be displayed.

To overcome *visually impaired* (partially or completely blind) and *Alexithymia* who suffer from interaction with society. Implement a code for emotion detection through vibration [1].

1.1 Overview and motivation:

Background:

The study shows that 55% of emotional information was visual, 38% vocal and 7% verbal. Face changes during communication are the first signs that transmit the emotional state. The visually impaired (partially or completely blind) and Alexithymia suffer from unable recognize the emotions of loved ones [2].

Automatic emotion recognition is a large and important research area that addresses two different subjects, which are psychological human emotion recognition and artificial intelligence (AI).

The emotional state of humans can be obtained from verbal and non-verbal information captured by the various sensors, for example from facial changes.

Motivation:

Face changes during communication are the first signs that transmit the emotional state.

The visually impaired (partially or completely blind) and Alexithymia suffer from not being able to recognize the emotions of loved ones.

Alexithymia is a subclinical phenomenon involving a lack of emotional awareness or, more specifically, difficulty in identifying and describing feelings and in distinguishing feelings from the bodily sensations of emotional arousal.

Objectives:

Design a webpage to help *visually impaired* people and one those who suffer from *alexithymia*. Develop a system for emotion detection by face recognition.

Implementation of Convolutional Neural Network (CNN). Simulate CNN(convolution neural network) and dataset if a person is happy the CNN analyses the pattern from dataset and vibration accordingly. To help blind people and alexithymia have a good interaction with society [3].

Deep Learning:

Deep learning is part of a broader family of machine learning methods based on artificial neural networks with representation learning. Learning can be supervised, semi-supervised or unsupervised. Learning can be supervised, semi-supervised or unsupervised.

Solve real world problems by Machine Learning using neural network that stimulate human decision making.

Image processing:

It is like a method to perform some operation on an image in order to get an enhanced image to extract some information from it. It is the type of signal process in which input is an image and output is a characteristic feature

The three steps are involves: Importing the image via image acquisition tools

Analyzing and manipulating the image and finally get output in which result can be altered image

Experimental Setup:

PC - i5-10300H CPU @ 2.50GHz 2.50 GHz Processor, 7.83 GB Storage, Windows OS, 8GB RAM.

2. LITERATURE REVIEW:

The Table-1 explains the literature survey.

Author Name, Publisher, Journal Name, Year	Objectives	Current Study (Algorithm/ Methodology)	Accuracy / Performance (Result Analysis)	Gap Analysis
Ayush Dewan, Likhith Ashwin D , Janardhana IEEE Mysore Sub Section International Conference (MysuruCon), 2022	Face identification and detection of emotions in real-time from photographs or videos. Removing the background from image.	Convolution neural network(CNN) Face emotion recognition mechanism (FERC)	The model outperformed with 98% of accuracy.	Instead of focusing on photography and videos, it's better to go with the individual (person's face recognition and match the pattern using algorithm).
Wafa Mellouk ,Wahida Handouzi Future internet of everything(FIOE) 2020	To achieve an accurate detection of human emotion, Help people with social anxiety	Convolution neural network(CNN) Recurrent neural network(RNN)	Over than 95% accuracy	This cannot be used for an individual with social anxiety.
Jun Kong, Minchen IEEE 2018	Test results show that the CSGF (2D) 2 PCANet is more robust to the variation of occlusion, illumination, pose, noise, and expression, which is a promising method in face recognition.	PCA Neural Network	Accuracy is 99.63%	Time consumption is high

Table -1

Libraries used:

OpenCV - It is an open source library for the computer vision. It provides the facility to the machine learning to recognize the faces or object. It more than 2500 algorithm includes both basic and state of the art computer vision and ml algorithm.

Numpy – It is a library for the Python programming language, adding support for large. Multi-dimensional arrays and matrices, along with a large collection of high level mathematical functions to operate on these arrays

Pandas – It is a software library written for the Python programming language for data manipulation and analysis

Keras – It is an open-source software library that provides a python interface for artificial neural networks

Matplotlib – It is a plotting library for the Python programming language and its numerical mathematics extension Numpy

Steps to Execute the Project

1. Download the Dataset and code from description box or you can create your own dataset
2. Insert the Dataset in Python Notebook
3. Install the required Packages and run the code in Python integrated environment
4. Insert an image and check if its correctly detecting the emotion
5. Then run the videotester.py code in Visual Studio code
6. Then you can finally detect the emotion through webcam

3. RESULTS:

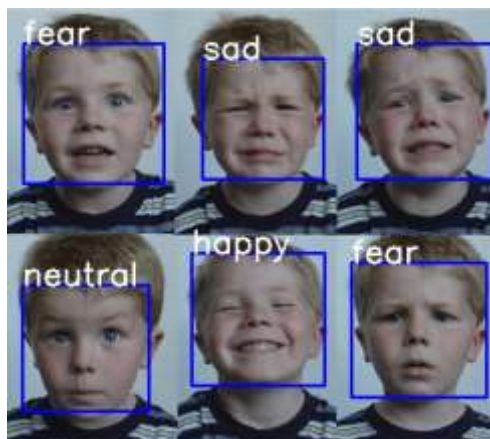


Figure -1

3 CONCLUSION:

An overview of the evolution of the techniques used for object detection. Beginning from the hand engineered feature-based classifiers to the convolutional network-based classifiers in deep learning.

To help visually impaired people and one those who suffer from alexithymia. It also presents the dataset which is commonly used in order to train, test and validate the object detected by the new models. The general challenges faced during object detection are also briefly described.

It will help visually impaired people and *alexithymia* to have better interaction with society.

REFERENCES:

- [1] Ayush Dewan, Likhith Ashwin D , Janardhana, "Face identification and real-time emotion tracker", (MysuruCon),17-10-2022
- [2] Wafa Mellouk ,Wahida Handouzi, "Facial emotion recognition using deep learning", Future internet of everything(FIOE),09-12-2020
- [3] Jun Kong, Minchen, "Face Recognition based on CSGF(2D)", IEEE, 2018

