Data Finder: Image Processing Using Python.

Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

Abstract

The growth of technology and its improvement is evaluating year by year. As a part of today technology, especially Digital image processing designed especially for study of theories, models and algorithms especially for the manipulation of various dimension of images (usually by computer). It dives into various categories which is related to image processing such as digitization, histogram manipulation, and compression. By this giant development in the technology which has made a great impact to transform from normal world to the full automated world. This paper also describes about the one of the automations carried out through Humans. According to the reports of "Human IQ" in 2019 it states that the 65% of humans has low IQ. In order to manage the data, Image processing of the particular human body parts visualized with the personal data stored in the particular part. Python is the most usable and popular language in the field of Image processing. The Data Finder is developed with the Python Language for instant and efficient display of its detection.

Keywords: Image processing, Intelligence Quotient (IQ), Classification, Facial Recognition, Security Planner, Gray Scale Image.

INTRODUCTION

The Modern World has automated in a different way in which image processing has taken vital role in the humans and computer interaction [1]. The computer to get identified itself and then initiates in different ways to find a way for the detection of the presence of the different waves in the initial stage has to be acknowledged. Several types of tools and techniques were defined and available in order to extract the images in the different ways. Image Processing has modified for multi-dimensional image detection for the data which is designed in Humans. In this Image Processing, Humans has made as a model in order to find the data which is designed as a personalized data. Different dimensional level of cameras was available in mobiles. So, it is of the personal things for today's humans. Digital Image Processing is one of the paradigms were humans especially their image plays a vital role. Several types of tools and various methods of extraction of images can be carried out. But this has modified his level of experiencing as multi-dimensional image detection so that particular part will be analysis easy. In those wider sense, performance images can also be rendered manually, such as by drawing, the art of painting, carving, rendered automatically by printing or through computer graphics.

[1]Department of Computer Science and Engineering SRM Valliammai Engineering College Chennai, India. koti555@gmail.com
[2]Department of Computer Science and Engineering SRM Valliammai Engineering College Chennai, India chandrujothi1094@gmail.com
[3]Department of Computer Science and Engineering SRM Valliammai Engineering College Chennai, India. bmssen@gmail.com
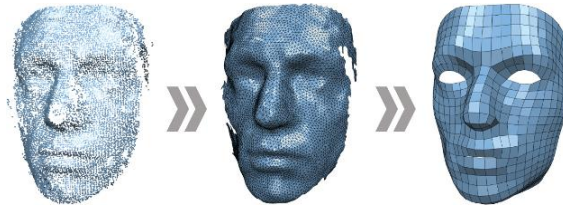
Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

Fig 1: Recognition of Facial Image.

DIGITAL IMAGE PROCESSING

The levels of Digital Image Processing which begins with the image processing which is captured in the digital Computer. In the Digital Computer the image can be detected through the Web Camera or through the camera in which the Image is captured [2]. In the Digital Computer image will be captured and viewed either in gray-scale or in the white. scale image but whose views is completely depending on the user's one perspective. In the digital Image Processing, each and every part of the image will be accessed via frames and each frames will be expressed as RGB Formats, while analyzing especially in python each and every parts will be labelled as arrays [3]. So each index will indicate depth of that particular image and also if they were seems to be an multiple image format means there will be multiple depth in it because each face has its own level of depth analysis a d they will be involved in order to validate whether they are taken into analysis content or not.

Image-An Idea behind it.

An image is structured in from of two-dimensional function as f (x, y).The location points of x, y is called spatial coordinates (or) it is also called as Intensity of Image at the particular coordinates [4]. So, in this system if the value of 'f' is set to finite means the captured image is defined as **Digital Image.**

Image Rotation and Representation

The extension of Image Processing, the Image which is captured in the form of matrix (no. of rows X no. of column). The performance of the image which is taken into part of the process because each pixel has it own nature of Gray Scale format and also they will be categorized into part of various systematic ways.
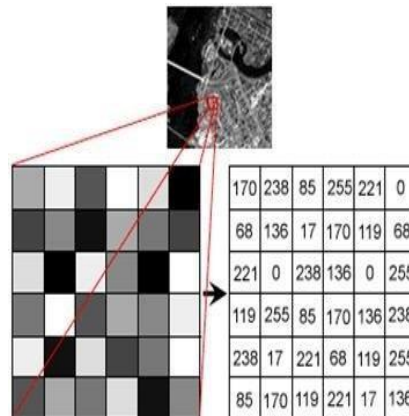

Fig 2: Grayscale image in matrix.

Components of Digital Image Processing

The level of human evolution and there level of growth are extremely connected today technically developed because, there each parts are potentially involved in digital process and then they categorized based upon evolution factors.

Digital Computer: Computer is the image processing system which va ries from PC to a Super Computer [5]. Sometimes most prominent computers are used for betterment of results.

Image Display: The purpose of this display is to find the data which is stored in the part of the model i.e., Human. It sets to the display unit of the computer.

Mass Storage: The storage is configured as:
Short-term storage are involved in processing image data.
On-line storage for relatively fast recall.
Archival storageare used for characterization also for enabling frequent access.

Keyboard: This component is linked into the system for the selection of frames of data which is stored in the database for the instant replay for the presence of data in the body.

Digitizer: The digitizer plays an important role in the image processing. It just converts the image into the **pixels(Image representation).** So each part of the image is configured in the form of pixels.
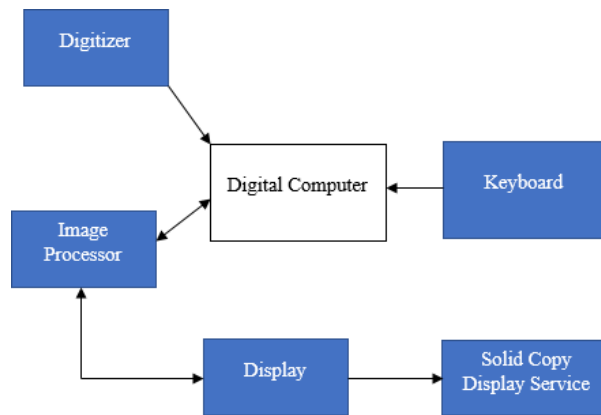

Fig 3: Components of Digital Image Processing.

Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

Each and every part of the Digital Image Processing system will be involved in analyzing the image of a personsbut when it comes to deployment part the level of acceptance and its correspondence will be validated for analyzing reaction of the face [6]. So the digital Image of the person who has involved in process of driving then the process will be initiated with basic and effective security and that will be first pass for initiating driving sequence. Since the level of the image and its in-depth analysis part are present in the array and especially in 1D array then this will be taken into account for various part of analysis and then it will be displayed in the projected screen of the system.
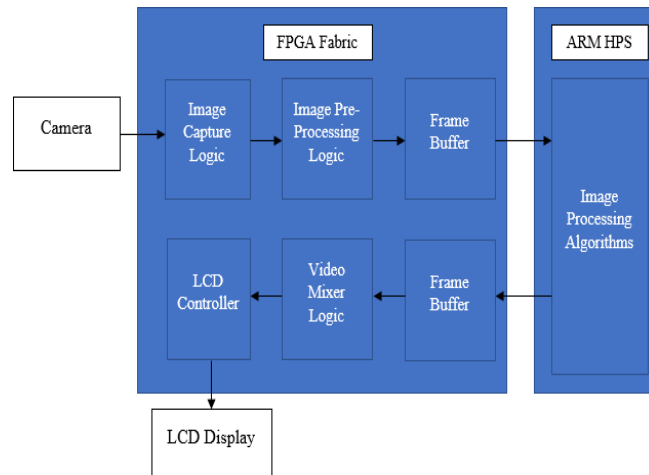
SYSTEM ARCHITECTURE

Fig 4: System Architecture- Data Finder

Fig 4 shows the structure of the Data finder in which the system is designed with the 3 stages.
Front Stage- FPGA Fabric Processing Stage-Intermediate Stage Back End- Data base

Front Stage-FPGA Fabric:
The system is designed to capture the image through the web cam or through the cameras of different dimensions. In this the data which is analyzed with the parts of the humans. So, the image of the human part were taken as pixels. Once the process of image logic is completed, then it will be pre- processed with the trained images [7]. After the detection of the human parts from the video (or) the image, then that will be moved to the processing stage of the image.

Processing Stage-An Intermediate Stage:
The stage is designed for the image processing and the image recognition and the data which stored in particular humans. The images (or) humans were considered as a starting stage of the image recognition [8]. Whenever the image is detected with the camera which is a front-end entry, then image processing algorithms were performed. Sometimes the image recognition can be carried out in the photographic model, because in case of immediate data the system is configured out with the photographic model [9].

Back End- Data base:
In this system the back end is configured with the data base for the storage of the data along with the reference images of

the particular person who has intimated the system for the memorization. Sometimes the image of the photographic model of the person also plays a vital role, so along with the reference parts of the humans, the photographic model also upgraded with this original model. Whenever the face is detected means, the system is started to measure the coordinates of the detected face [10]. With the help of the coordinates, it predicts to set whether display the data or not that will be carried out with the plotting of measured data. The performance of the validation system will be taken into consideration for the System data which is stored in databases.

PYTHON- HIGH LEVEL LANGUAGE

Python is developed as an interpreter and one of the high- level languages which is created by the Guido Van Rossum and it is first released in the 1991. The python language is developed with code reusability, with high significant of white spaces. It is also configured to support object-oriented programming concepts such as class, object, inheritance, encapsulation, abstraction etc.., Since python is developed with the lot of packages and different types of plugins were available for the different algorithms. Python consists of different interpreters for different types of operating systems, which is designed for the system to work out for the different machines. In normal cases the python codes were designed to run in virtual environment (victualing).

OPENCV:IMAGE PROCESSING MODULE

OpenCV (Open-Source Computer Vision Library) is one of the leading package in python which is designed as open- source modules for image Processing. It is a modular structure which is designed to include shared and Static library and also used to solve computer vision problems [11]. Some of the Features of this modules are:

Core: One of the designed compact modules defining the basic data structure and defining the dense multi-dimensional array.

Import: It is designed personally for the Image processing and it includes recognition of linear and non-linear image filtering and image transformation (resize, affine and perspective warping, table-based remapping) and so on.

Video: This part is mainly designed to detect the motion detection of the materials using object tracking algorithms.

High-GUI: An easy user-interface for video capturing and able to design simple UI capabilities.

OpenCV handles all the memory automatically which is defined that the allocation and deallocation of memory for the particular defined functions. So, if the function has one or more input arrays and output arrays, the output arrays are automatically allocated or reallocated [12]. so If the functions want extra parameters that helps to figure it out for the output array parameters.

Image-Processing,OpenCV: As a python language is concerned OpenCV is also called Computer Vision Library, which deals with image pixels that are often encoded in a compact 8 (or) 16 bit per channels. In Image processing, Computer reads the images in form of Visual Matrix which values are ranges from 0 to 255.[13]

Coloured Images representation: For the coloured images their will be a 3 Channels is called as RED, GREEN, BLUE.
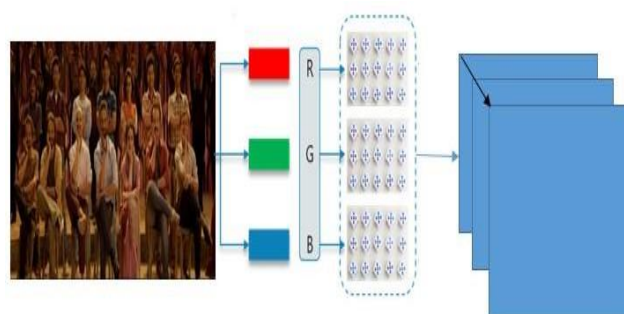
Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

Fig 5: Reading image by Computer.

R- represents the Red Channel of an Image **G-** represents the Green Channel of an Image **B-** represents the Blue Channel of an Image

So totally, there are 3 Channels, so the size of the image will be **B x A x 3** which also defines the no of pixels the image is captured. In case of Black and white only the pixels will be explained in the form array [14].

Face Detection and recognition process: Face detection is one of the easiest ways to detect with the webcam. So, in order to intimate the detection, we define the **Cascade Classifier.** The purpose of the cascade classifier which contains the features of the detected faces. This is the initial step.
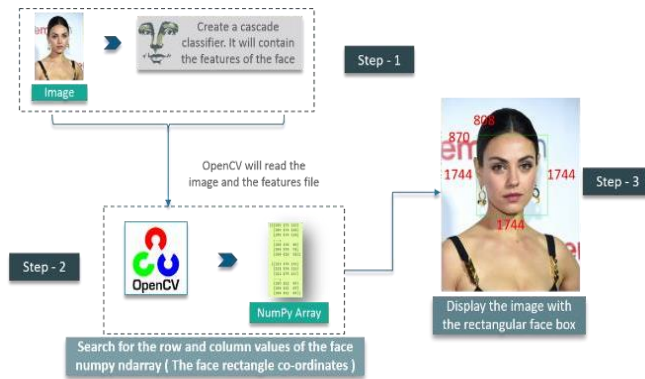
Fig 6: Face Detection steps

Now the OpenCV will read the image and the feature of the face. Now we designed to detect the face with rectangle as **cv2.rectangle (frame_1, (x, y), (x+w, y+h), (255,0, 0),2).** Now we need to search the row and column values of the face **NumPy-Nd-array (the face rectangle co-ordinates).** The system will ready to detect the face of the image with the shape of the rectangle in the image.[15] This is the final step. This property can be applied to detect the face under the live stream of video coverage.

RESULT AND DISCUSSION

The data finding process is initiated in the system in order to find the data which is stored in the system.

Fig 7: Register Window

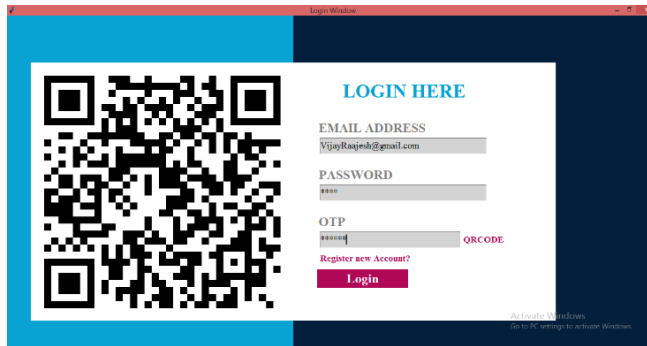The purpose of taking the registration process is to take up those data from the user.

Fig 8: Login Window

During the login process where the user will be able to gather through the login which will take those login credentials and those will be validated with the database.
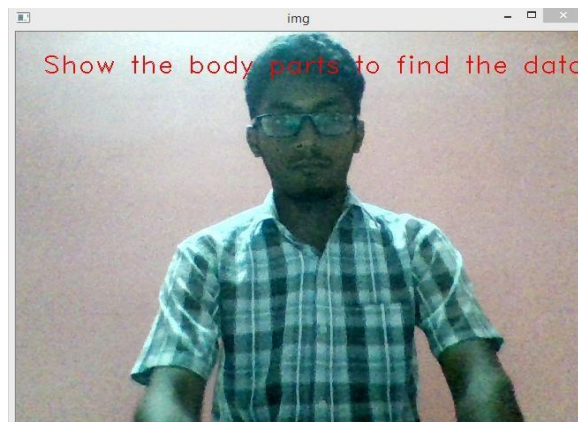

Fig 9: Initiating to show parts of body.

In the first step the system initiates to ask the parts of the body to which the data is stored. Getting of data is completely based on the system configuration, in case of 32-bit system the video quality and data retrieval is very low when compared with the 64-bit system.
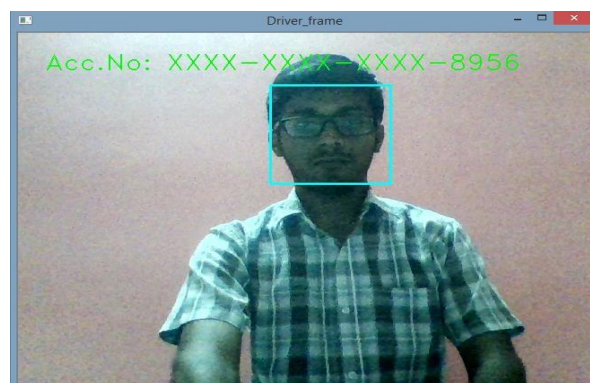

Fig 10: Face detection and Display of stored data.

Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

In the next step the data which is stored for the face, then the data for the corresponding persons is displayed through the medium i.e., computer display. In order to identify the person images and its authentication, Gray scale Image which is generated with the color images are taken as a reference one. In this gray scale this only initia ted for the reference. Whenever the system detects face then the system is designed to records their coordinates in order to store and refer their ordinary of the image.

Fig 11: Face Co-ordinates for webcam detection.

Fig 12: Array Index of Data

The face coordinates and the captured image get compared with the index of the array which is stored in the database. Then the corresponding data which is present in the database can be delivered in the monitoring screen. In case, if the person is absent means, then the person's photo can also make the system to detect the data for the initiated person.
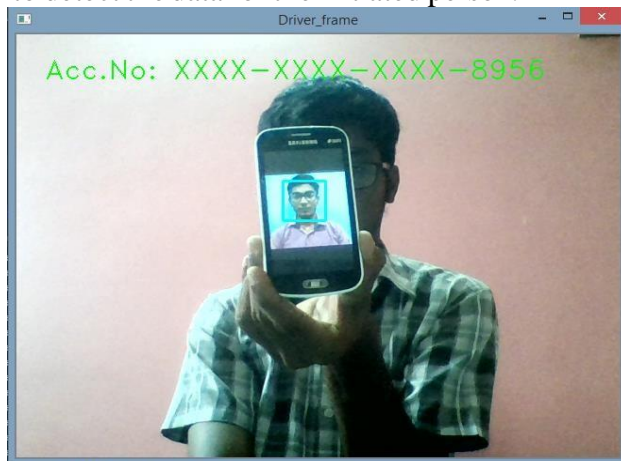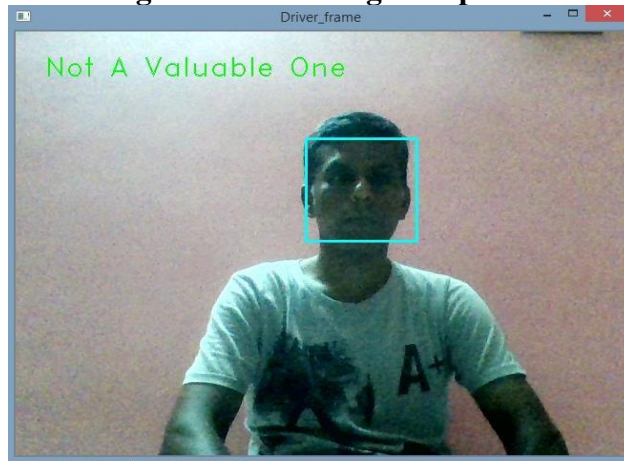
Fig 13: Data finding with photo

Fig 14: Face Co-ordinates for photo detection.

Then in the similar way, the coordinates of the photograph will be recorded for reference.
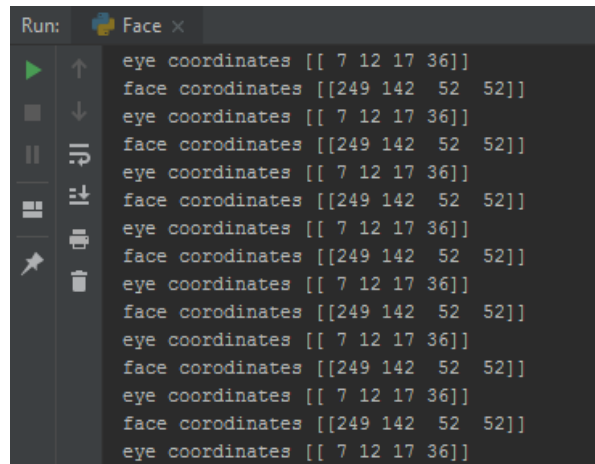

Fig 15: Face Detection of Unknown Person.

The detected faces coordinates can be compared with the face coordinates and photo stored in the system database. If they were seeming to be similar one means the data stored in the system will be delivered in the system. So due to presence of near and close to the original data then it will be present in the screen as a stored data. In case of security purpose if some person wants to take your data from your personal system, then the system is configured as a **"Not A Valuable One"**. In order to find out take an irrelevant photo which is not yet trained by the system, so the system might be able to depict the message as a **"Not A Valuable One".** Those physical data which were provided to the system with the human image as a reference. Especially, those performance they will be taken into validation and those indices will be compared with the structured database. As a normal process it detects and prints the coordinates of the detected unknown faces which is considered to be an unassociated towards the database which is defined in it for the detection towards the face.
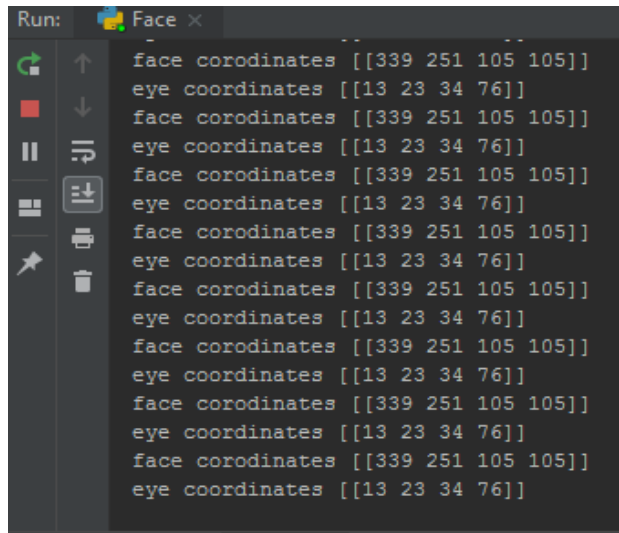
Dr.V. Dhanakoti[1], J. Chandru[2], Dr.B. Muthu Senthil[3]

Fig 16: Unknown Persons Coordinates.

Fig 17: Unknown Person Database.

Similar process of comparing the array Index of the fraudulent person, Since the database contain only null data at Array Index, here the fraudulent data will be provided to the invalid person. So, each and every part of the face along with those coordinates into consideration for providing the fraud data as "Not a Valuable one". When it comes to viewing of data especially when the human data or taken care under the view of data there will be some part of system
For which the person which tagged as a wrong person it's because of the invalid or some part of mismatch of index value. [5]. Viola P, Jones MJ, Snow D, "Detecting pedestrians using patterns of motion and appearance", *International Journal of Computer Vision*,Vol:63, Issue:2, pp:153-161, 2005.

CONCLUSION

The system is designed to train the earned person's details and image recognition, then there will be a well-defined way of detecting the valuable data will be displayed in your display. So, this system may reduce the level of loss of memory, if a particular human is concerned. This system is based on the different of learning basis and the training basis, but due to different type of picture sometimes the system can be able to detect the picture, but due to continuous training of the same faces then the system then well efficient of fetching and producing of data from the database.
With the results of this report, and their corresponding results and gathered and inaugural in a significant pa rt of small and medium-sized images. A number of combination of various pixels and those advantages and issues of the use of electronic cameras in this examination. Internet progress and thus the usage of stimulated cameras in SMEs was primarily used for general

exercises, such as exhibiting and publicizing.

REFERENCES

[1]. C. Thirumarai Selvi and J. Amudha, "Automatic Video Surveillance System for Pedestrian Crossing Using Digital Image Processing", *Research Gate* Vol:12, Issue:2, pp:1-6, 2019.

[2]. Alvarez JM, Gevers T, Le Cun Y, Lopez AM, "Road scene segmentation form a single image", *International Research Journal of Engineering and Technology* (IRJET),Vol:8,Issue:4,pp.76-89, 2012.

[3]. Liu X, Zhang Y, Li Q, "Automatic pedestrian crossing detection and impairment analysis based on mobile mapping system. ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences", *International Research Journal of Engineering and Technology* (IRJET), Vol:5, Issue:4 pp:8-22, 2017.

[4]. Ramzan H, Fatima B, Shahid AR, Ziauddin S, Safi AA, "Intelligent pedestrian detection using optical flow and HOG. (IJACSA) *International Journal of Advanced Computer Science and Applications*", Vol:7, Issue:9, pp:8-17,2016.

[6]. Jangala Sasi Kiran, N Vijaya Kumar, N Sashi Prabha and M Kavya , "A Literature Survey on Digital Image Processing Techniques in Character Recognition of Indian Languages", *International Journal of Computer Science and Information Technologies*,Vol:2, Issue:6,pp: 340-345, 2015.

[7]. Dipen Saini, "Assembling of Human Beings in an Image to Detect a Group on the basis of Distance using Digital Image Processing", *International Journal of Current Engineering and Technology*", Vol:6, Issue:2, pp:462-466, 2016.

[8]. P Prabhu, "Digital Image Processing Techniques – A Survey, Golden Research Thoughts", *International Research Journal of Engineering and Technology* (IRJET), Vol:6, Issue:2,pp:132-1402016.

[9].https://Opencvtutroals.readthedocs.io/en/latest/py_tutorials/py_setup/ py_intro/py_intro.html

[10]. Zijiang Zhu, Hang Chen, Yi Hu and Junshan Li , "Age estimation algorithm of facial images based on multi-label sorting", EURASIP *Journal on Image and Video Processing*,Vol:2, Issue:2, pp:114, 2018.

[11]. Stéfan van der Walt , Johannes L. Schönberger et al, "scikit-image: image processing in python", *International Research Journal of Engineering and Technology* (IRJET),Vol:3, Issue:3, pp:12-14, 2014.

[12]. Canny J, "A computational approach to edge detection", IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal of Engineering Science and Technology,Vol:8, pp:679-714,1978.

[13]. Burt PJ, Adelson EH, "The Laplacian pyramid as a compact image code", IEEE Transactions on Communications, Vol:31, Issue:4, pp:32-540, 1983.

[14]. L.C. Anami, J.M. da Costa Lima, F.E. Takahashi, M.P. Neisser, P.Y. Noritomi, M.A. Bottino," Stress distribution around osseointegrated implants with different internal-cone connections: photoelastic and finite element analysis",*Science Direct*,Vol:41,Issue:2, pp:155-162,2015.

[15]. S. Bijjargi, R. Chowdhary," Stress dissipation in the bone through various crown materials of dental implant restoration: a 2-D finite element analysis",Vol:4,Issue:3,pp:172-177,2013.

[16]Murugan, S., Jeyalaksshmi, S., Mahalakshmi, B., Suseendran, G., Jabeen, T. N., & Manikandan, R. (2020). Comparison of ACO and PSO algorithm using energy consumption and

load balancing in emerging MANET and VANET infrastructure. Journal of Critical Reviews, 7(9), 2020.

[17]Sampathkumar, A., Murugan, S., Sivaram, M., Sharma, V., Venkatachalam, K., & Kalimuthu, M. (2020). Advanced Energy Management System for Smart City Application Using the IoT. In Internet of Things in Smart Technologies for Sustainable Urban Development (pp. 185-194). Springer, Cham.

[18]UshaKiruthika,S. Kanaga Suba Raja, C.J. Raman ,V.Balaji. (2020) 'A Novel Fraud Detection Scheme for Credit Card Usage Employing Random Forest Algorithm Combined with Feedback Mechanism', IEEE Second International Conference on Power, Energy, Control and Transmission Systems (ICPECTS2020), Sairam Engineering College, Chennai ,Tamilnadu, India. (Scopus Indexed)

[19]UshaKiruthika,S. Kanaga Suba Raja,V.Balaji ,C.J. Raman, (2020) 'E-Agriculture for Direct Marketing of Food Crops using Chatbots', IEEE Second International Conference on Power, Energy, Control and Transmission Systems (ICPECTS2020), Sairam Engineering College, Chennai Tamilnadu, India. (Scopus Indexed)

[20]Raveendran, A. P., Alzubi, J. A., Sekaran, R., & Ramachandran, M. (2021). A high performance scalable fuzzy based modified Asymmetric Heterogene Multiprocessor System on Chip (AHt-MPSOC) reconfigurable architecture. Journal of Intelligent & Fuzzy Systems, (Preprint), 1-12.