



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

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Special Issue 1, April 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



9940 572 462



6381 907 438



ijirset@gmail.com



www.ijirset.com

# **HR-Chat Bot: Designing and Building Effective Skill Detection in Curriculum Vita**

**Ms. V. Sundara Jeyalakshmi<sup>1</sup>, N. Hamsavashini<sup>2</sup>, T.R. Harini<sup>3</sup>, V. Harishitha<sup>4</sup>, D. Pavithra<sup>5</sup>,**

Assistant Professor, Department of Electronics and Communication Engineering, Adhiyamaan College of Engineering,  
Krishnagiri, Tamil Nadu, India<sup>1</sup>

UG Scholars, Department of Electronics and Communication Engineering, Adhiyamaan College of Engineering,  
Krishnagiri, Tamil Nadu, India. <sup>2,3,4,5</sup>

**ABSTRACT:** The Human Resources (HR) departments in every company can face challenges regarding the number of job aspirants that are applying for a job to identify the employee. So, the main idea of this project is to help HR employees in collecting information about aspirants to a specific job through identifying aspirant's CV cross checking is fake or not, this cross checking is done by entering details of seeker before giving test. Afterward, the proposed model will recommend this aspirants to give test to identify their particular skills position for job required. Once seeker finish giving test a face recognition detection for seeker will done, to know whether seeker is strong able or not. This virtual interviews could highly minimize the amount of effort the HR employee have to deal with seeker. Also it rearranges job aspirants to the right track with help of face recognition. Emotion recognition for seeker, or the ability of computers to interpret seeker emotional states and identify whether seeker is strong able to this job or not. However, most image-based emotion recognition ways are defective, as humans can intentionally hide their emotions by changing facial expressions of seeker. We use Fast Fourier Transformation to extract the frequency domain features, convolutional layers for deep features, and reciprocally features to represent the dataset to know the condition of employee through their face expression and to show the results as their suitable for this job or not. The CNN models achieve nearly perfect accuracy of 99.89% and 99.22%, independently, which outperform every following state of the model.

**KEYWORDS:** Deep learning, CNN algorithm, facial expression, skills cross checking in CV and select strong candidate for suitable job

## **I. INTRODUCTION**

Have you ever wondered why applying for a job required too much effort from applying to multiple companies, attending multiple interviews or cruising around trying to advertise yourself around companies. This problem is common for the past years trying to communicate with one another. Besides this problem, during interviews HR interviewers could make mistakes judging or addressing some job applicants as of human's nature of addressing appearance first. Today technological trends currently include artificial intelligence, advanced deep learning, human machine interaction and Natural language processing. Crossing checking CV and face recognition of candidates is an AI concept that interacts with humans through details entering details of candidates and through face recognition. The details entering of candidate to cross check their CV of before applied CV to identify whether person is same or not this is to communicate on behalf of the companies in order to simplify online communication. Cross checking details with the help of facial expression recognition techniques could help accessing better results for detection throw conversations. Facial expressions are the facial changes in light of an individual's interior passionate states, expectations, or social interchanges of candidates. This system could highly minimize the time and the amount of human processing on job applicants, filtering all applicants to see who is suitable to carry on to the next step of job applying. Also, it helps the job applicants to connect with multiple companies throw just one interview.

## II. RELATED WORK

Crossing checking CV skill and face recognition of seeker is an AI concept that interacts with humans through details entering details of seeker and through face recognition. The details entering of seeker to cross check their CV of before applied CV to identify whether person is same or not this is to communicate on behalf of the companies in order to simplify online communication. Cross checking details with the help of facial expression recognition way could help accessing better results for detection through conversations. Facial expressions are the facial changes in light of an individual's interior passionate countries, prospects, or social interchanges of seeker. We use Fast Fourier Transformation to extract the frequency domain features, convolutional layers for deep features, and reciprocally features to represent the dataset to know the condition of employee through their face expression and to show the results as their suitable for this job or not. The CNN models achieve nearly perfect accuracy of 99.89% and 99.22%, independently, which outperform every following state of the model.

## III. METHODOLOGY

### SYSTEM MODULES

#### 1. Cross checking module:

In this module when candidate runs a program a welcome page will get appears. Then candidate should click on next to move to next page. In this page candidate should enter some basic details to cross check with their previous updated CV. With this we can identify whether the same candidate is giving exam or not.

#### 2. Gaming module:

After completing details filling. Approach for screening question to select candidate. In which candidate should answer for some question. This question will be regarding the job role they have applied for. In which candidate should answer for each questions and scores will be displayed at the end of question session.

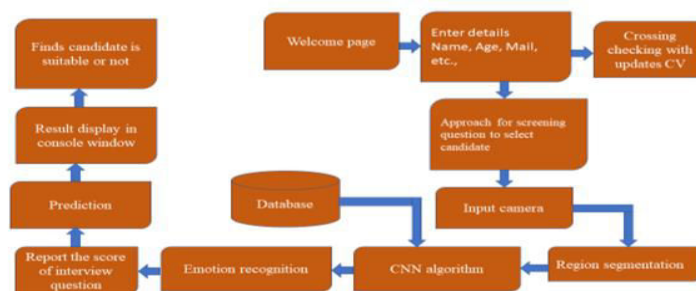


Figure 3 Architecture of proposed design

#### 3. Face detection Module:

In face detection module. When candidate completes his/her exam a camera will be opened to detect candidate face expression. A live video camera will record face expression in this video processing 25 fps will be converted into single frame per second, with this pure image will be extracted for segmentation processes. In segmentation process background of image will be ignored and face expression of human will be only extracted for accurate output of face expression of candidate. The CNN algorithm is trained with database for identifying face expression of candidate after completing his/her exam.



#### 4. Exam Score Module:

In this module the total score obtained by the candidate will be displayed in console window and face expression of candidate will also be displayed in console window by marking frame in candidate face in video processing.

#### 5. Prediction Module:

In final output this project will identify weather candidate is suitable for particular job role or not by prediction face expression of candidate after score of exams. If candidate scores well and good in interview then face expression will be happy and scores obtained by candidate will also be good and gets selected for work. If suppose a candidate do not score well in interview and face expression will be sad, then candidate will not be selected.

#### Convolution neural network Algorithm

When programming a CNN, the input is a tensor with shape (number of images) x (image range) x (image height) x (image depth). Also after passing through a convolution layer, the image becomes abstracted to a point chart, with shape (number of images) x (point chart width) x (point chart height) x (point chart channels).

A convolution layer within a neural network should have the following attributes:

- Convolution kernels defined by a width and height (hyperactive-parameters).
- The number of input channels and output channels (hyperactive-parameter).
- The depth of the Convolution filter (the input channels) must be equal to the number channels (depth) of the input point chart.

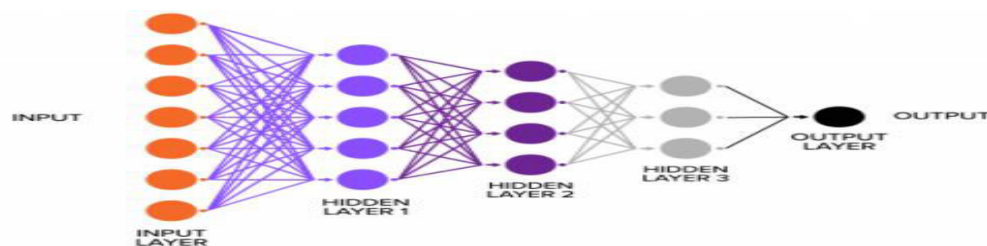


Figure 3.1 Convolutional neural network

#### Layers:

Let's take an illustration by running a converts on of image of dimension 32 x 32 x 3.

1. **Input Layer:** This layer holds the raw input of image with range 32, height 32 and depth 3.
2. **Convolution Layer:** This layer computes the output volume by computing fleck product between all pollutant and image patch. Suppose we use total 12 pollutants for this layer we'll get output volume of dimension 32 x 32 x 12.
3. **Activation Function Layer:** This layer will apply element wise activation function to the output of complicated layer. Some common activation functions are RELU:  $\text{output}(0, x)$ , Sigmoid:  $1/(1+e^{-x})$ , Tanh, Leaky RELU, etc. The volume remains unchanged hence affair volume will have dimension 32 x 32 x 12.
4. **Pool Layer:** This layer is periodically fitted in the converts and its main function is to reduce the size of volume which makes the calculation presto reduces memory and also prevents from over-fitting. Two common types of pooling layers are **maximum pooling** and **average pooling**. If we use a maximum pool with 2 x 2 filters and stride 2, the attendant volume will be of dimension 16x16x12.
5. **Fully-Connected Layer:** This layer is regular neural network layer which takes input from the former layer and computes the class scores and **outputs the 1-D array of size equal to the number of classes**.

#### Region Based Segmentation

The region-grounded segmentation methods involve the algorithm creating segments by dividing the image into various components having similar characteristics. These elements, simply put, are nothing but a set of pixels. Region-grounded image segmentation ways originally search for some seed points – either lower parts or vastly bigger chunks in the input image. Next, certain approaches are employed, either to add more pixels to the seed points or further diminish or

compress the seed point to lower segments and combine with other smaller seed points. Hence, there are two introductory techniques based on this method.

### Region Growing

It's a bottom to up system where we begin with a lower set of pixel and start accumulating or iteratively incorporating it grounded on certain pre-determined similarity constraints. Region growth algorithm starts with choosing an original seed pixel in the image and compare it with its neighboring pixels. If there is a match or similarity in neighboring pixels, then they are added to the original seed pixel, thus increasing the size of the region. When we reach the achromatism and hereby, the growth of that region cannot proceed further, the algorithm now chooses another seed pixel, which inescapably does not belong to any region(s) that presently exists and start the process again. Region growing styles frequently achieve effective Segmentation that corresponds well to the observed edges. But occasionally, when the algorithm lets a region grow completely before trying other seeds, that generally impulses the segmentation in favour of the regions which are segmented first. To fight this effect, utmost of the algorithms begin with the user inputs of parallels first, no single region is allowed to dominate and grow fully and multiple regions are allowed to grow simultaneously. Region growth, also a pixel based algorithm like thresholding but the major difference is thresholding excerpt a large region grounded out of analogous pixels, from anywhere in the image whereas region-growth excerpts only the conterminous pixels. Region growing ways are preferable for noisy images, where it is large delicate to descry the edges.

### Region Splitting and Merging

The splitting and incorporating grounded segmentation styles use two introductory ways done together in confluence – region splitting and region coupling – for segmenting an image. Splitting involves iteratively dividing an image into regions having analogous characteristics and incorporating employs combining the conterminous regions that are kindly analogous to each other. A region split, unlike the region improve, considers the entire input image as the area of business interest. also, it would try matching a known set of parameters or pre-defined analogous constraints and picks up all the pixel areas matching the criteria. This is a peak and conquers system as opposed to the region growth algorithm. Now, the below process is just one half of the process, after performing the split process, we will have numerous similarly pronounced regions scattered each across the image pixels, meaning, the final segmentation will contain scattered clusters of neighboring regions that have identical or analogous pixels. To complete the process, we need to perform merging, which after each split which compares conterminous regions, and if needed, grounded on similarity degrees, it merges them. similar algorithms are called split-merge algorithms.

## IV. EXPERIMENTAL RESULTS

From this figure detect the emotion of the applicant is effective reaction of skills in CV

### Emotions detection

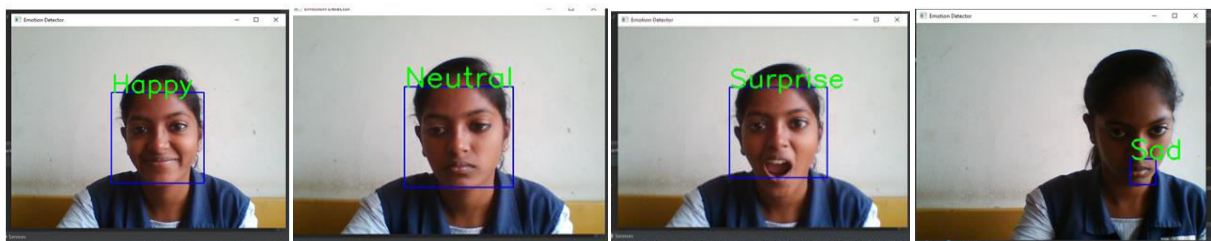


Figure 6.1 happy Emotion

Figure 6.2 neutral Emotion

Figure 6.3 Surprise Emotion

Figure 6.4 Sad Emotion

### Graph for emotion detection

This graph determine the emotion detect of applicant in threshold value & level of performance

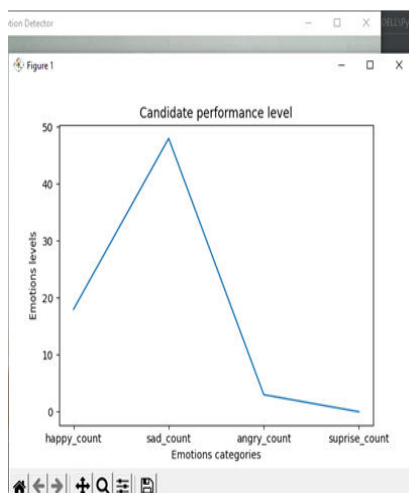


Figure 6.5 Graph of Sad Emotion

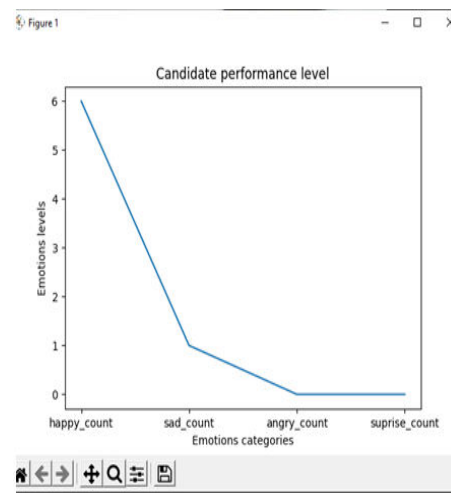


Figure 6.6 Graph of Happy Emotion

## V. CONCLUSION

In conclusion, detection of job personal skills is essential to achieve a high level of communication and harmony between company's employees. By helping HR employee's taking a better decision on who's suitable for the job is important to achieve company's aims and goals. This project could highly help facilitate our communications and helps reaching some important decisions with the help of some outer algorithms and techniques a more accurate decision could be reached like facial emotion extraction or speech emotion extraction.

## REFERENCES

- [1]. S. Zheng, H. Bao, J. Zhao, J. Zhang, Z. Qi, and H. Hao, "A novel hierarchical convolutional neural network for question answering over paragraphs," in *2015 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)*, 2020.
- [2]. M. Granik and V. Mesyura, "Fake news detection using naive bayes classifier," in *2019 IEEE First Ukraine Conference on Electrical and Computer Engineering (UKRCON)*, 2019.
- [3]. A. Lajis, A. F. B. Mohd, T. A. Mat, H. Nasir, and N. A. Aziz, "Data selection in the assessment of higher order thinking skills: Focus on cognitive competency," in *2018 IEEE 5th International Conference on Smart Instrumentation, Measurement and Application (ICSIMA)*, 2018.
- [4]. J. Purohit, A. Bagwe, R. Mehta, O. Mangaonkar, and E. George, "Natural language processing based jaro-the interviewing chatbot," in *2019 3rd International Conference on Computing Methodologies and Communication* 2019.
- [5]. R. Mohan, "The chatbot revolution and the indianhr professionals", 2021
- [6]. S. Tadvi, S. Rangari, and A. Rohe, "Hr based interactive chat bot (powerbot)," *2022 International Conference on Computer Science, Engineering and Applications (ICCSEA)*, 2022.

- [7]. P. A. Angga, W. E. Fachri, A. Eleanita, Suryadi, and R. D. Agushinta, "Design of chatbot with 3d avatar, voice interface, and facial expression," in 2019 *International Conference on Science in Information Technology (ICSITech)*, 2019.
- [8]. S. Zheng, H. Bao, J. Zhao, J. Zhang, Z. Qi, and H. Hao, "A novel hierarchical convolutional neural network for question answering over paragraphs," in 2015 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT), vol. 1, 2019..
- [9]. M. Granik and V. Mesyura, "Fake news detection using naive bayes classifier," in 2017 IEEE First Ukraine Conference on Electrical and Computer Engineering (UKRCON), 2018.
- [10]. A. Lajis, A. F. B. Mohd, T. A. Mat, H. Nasir, and N. A. Aziz, "Data selection in the assessment of higher order thinking skills: Focus on cognitive competency," in 2018 IEEE 5th International Conference on Smart Instrumentation, Measurement and Application (ICSIMA), 2018, pp. 1.-4.
- [11]. J. Purohit, A. Bagwe, R. Mehta, O. Mangaonkar, and E. George, "Natural language processing based jaro-the interviewing chatbot," in 2019 3rd International Conference on Computing Methodologies and Communication (ICCMC), 2019, pp. 134-136.
- [12]. R. Mohan, "The chatbot revolution and the indianhr professionals."
- [13]. S. Tadvi, S. Rangari, and A. Rohe, "Hr based interactive chat bot (powerbot)," in 2020 International Conference on Computer Science, Engineering and Applications (ICCSEA), 2020, pp. 1-6.
- [14]. P. A. Angga, W. E. Fachri, A. Eleanita, Suryadi, and R. D. Agushinta, "Design of chatbot with 3d avatar, voice interface, and facial expression," in 2015 International Conference on Science in Information Technology (ICSITech), 2020, pp. 326-330.
- [15]. A. Argal, S. Gupta, A. Modi, P. Pandey, S. Shim, and C. Choo, "Intelligent travel chatbot for predictive recommendation in echo platform," in 2018 IEEE 8th Annual Computing and Communication Workshop and Conference (CCWC), 2018, pp. 176-183.
- [16]. X. Liu, X. Cheng, and K. Lee, "Ga-svm-based facial emotion recognition using facial geometric features," *IEEE Sensors Journal*, vol. 21, no. 10, pp. 11532- 11542, 2021.
- [17]. J. Yang, F. Zhang, B. Chen, and S. U. Khan, "Facial expression recognition based on facial action unit," in 2019 Tenth International Green and Sustainable Computing Conference (IGSC), 2019, pp. 1-6.
- [18]. E. H. Houssein, B. E.-D. Helmy, A. A. Elngar, D. S. Abdelminaam, and H. Shaban, "An improved tunicate swarm algorithm for global optimization and image segmentation," *IEEE Access*, vol. 9, pp. 56066-56092, 2021.
- [19]. S. Deb, D. S. Abdelminaam, M. Said, and E. H. Houssein, "Recent methodology-based gradient-based optimizer for economic load dispatch problem," *IEEE Access*, vol. 9, pp. 44 322-44 338, 2021.
- [20]. E. G. Dada, J. S. Bassi, H. Chiroma, S. M. Abdulhamid, A. O. Adetunmbi, and O. E. Ajibuwa, "Machine learning for email spam filtering: review, approaches and open research problems, 2019.

## BIOGRAPHY



Mrs. V. Sundara Jeyalakshmi. M.E,  
Assistant professor  
Department of ECE,  
Adhiyamaan College of Engineering,  
Hosur-635130.



N.Hamsavashini, (UG Student)  
B.E, Electronics and communication Engineering  
Adhiyamaan College Of Engineering,(Autonomous)  
Hosur.



T.R.. Harini, (UG Student)  
B.E, Electronics and communication Engineering.  
Adhiyamaan College Of Engineering,(Autonomous)  
Hosur

**International Journal of Innovative Research in Science, Engineering and Technology**

*An ISO 3297: 2007 Certified Organization*

*Volume 12, Special Issue 1, April 2023*

**10<sup>th</sup> National Conference on Frontiers in Communication and Signal Processing Systems (NCFCSPPS '23)**

**5<sup>th</sup> -6<sup>th</sup> April 2023**

**Organized by**

**Department of ECE, Adhiyamaan College of Engineering, Hosur, Tamilnadu, India**



V. Harshitha, (UG Student)  
B.E, Electronics and communication Engineering,  
Adhiyamaan College Of Engineering, (Autonomous)  
Hosur.



D, Pavithra, (UG Student)  
B.E, Electronics and communication Engineering,  
Adhiyamaan College Of Engineering, (Autonomous)  
Hosur.





**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](http://www.ijirset.com)

Scan to save the contact details