International Journal on Emerging Research Areas (IJERA) *ISSN:2230-9993*

DOI:

SMART TECHNICAL INTERVIEWING SYSTEM

Najla Nazar
Assistant Professor of Computer Science And Engineering
Universal Engineering College, Kerala, India
najla@uec.ac.in

Badarunnisa T S
Department of Computer Science And Engineering
Universal Engineering College, Kerala, India
badruthorappa@gmail.com

Adithya VT
Department of Computer Science And Engineering
Universal Engineering College, Kerala, India
adithyavthampi@gmail.com

Sanjana M Sunil
Department of Computer Science And Engineering
Universal Engineering College, Kerala, India
sanjanamsunil2001@gmail.com

Sanitta Benny
Department of Computer Science And Engineering
Universal Engineering College, Kerala, India
sanittavattakuzhy@gmail.com

Abstract— These days, the interview process takes a while. The HR department of an organization invites an applicant for an interview based on their resume in the conventional approach of hiring. In order to determine whether an applicant is qualified for the position, the HR staff manually evaluates the skills listed on their resume. Since all hired candidates must have the proper attitude and discipline for the Job, they not only assess a candidate's talents during the interview but also their personality. In this project, we offer a deep learning-based smart technical interviewing system that automates all the tasks that the interviewing panel once performed manually. It is a set of interviews to evaluate your technical competence for the position, the breadth and your chosen field's knowledge in its entirety. Technical interviews are also intended to evaluate your capacity for problem-solving, communication, and decision-making under pressure. The selection procedure takes into account factors such as the résumé, head nodding and technical skills. The results of the smart technical interviewing process are presented in graphical form, and they help determine whether the candidate is a good fit for the position. Machine learning tools including TensorFlow, face API, and tinyface Detector were employed in this application.

Keywords - Face API, tinyface Detector, Tensor Flow, Machine Learning.

I. INTRODUCTION

Employers may choose to conduct a technical interview in order to evaluate a candidate's technical aptitude for the open position. When selecting candidates for positions in information technology, healthcare, engineering, and science, employers frequently use technical interviews. Interviewing for a position needing system design knowledge is an opportunity to showcase your experience and highlight your ability to develop complicated systems. How you express your knowledge when conversing with a potential employer will assist you establish that you are a qualified applicant for the position. During technical interviews, candidates for advanced positions in technological fields often have their knowledge and skills tested. Employers inquire about a range of topics during technical interviews, including the business, the position, and the candidate's areas of competence. Before your interview, doing some research on possible questions might help you psychologically get ready to respond to them professionally. Enables you to demonstrate further technical expertise: Your technical interview is a chance to demonstrate your relevant job skills, but it's also a chance to talk about other abilities or information you may bring to the position. You can distinguish yourself from the competition by going over your other technical skills and highlighting them to employers.

In this study, we presented a method for conducting technical interviews that would substitute a computer system for an interview panel. The candidate must first enter their resume into the system, following which resume information will be gathered to determine the skill areas the candidate possesses. Second, the questions will be generated by the algorithm based on the candidate's expertise. Here, we took a strategy for assessing a candidate's communication skills and facial expressions to determine whether or not he or she is confident and how they respond to questions. Also, the system will verify whether the responses are accurate. The system will produce a candidate skill graph once this technical interview has been successfully completed. From there, the interview panel should be able to determine the candidate's demeanor, communication abilities, technical expertise, etc. That is a wise strategy for carrying out the technical interview. The interview panel finds it advantageous to cut down on the amount of time needed to conduct the technical interview, therefore the new method performs better than the prior system.

DOI:

II. PREVIOUS WORK

Development of GUI for Text-to-Speech Recognition using Natural Language Processing [1].

In this project, a Text-to-Speech synthesiser is created that transforms written text into spoken word by using Natural Language Processing (NLP) to analyse and process it, followed by Digital Signal Processing (DSP) technology to create a synthesised speech representation of the text. Any text that is followed by rambling language is transformed into voice by a TTS system. Its benefits include real-time text-to-speech functionality and the ability to capture speech far more quickly than you can type.

Behavioral Interview and its Implementation [2].

To assist businesses choose the best candidates from a pool of applications and get the most out of the hiring process, behavioural interviewing is a more precise, economical, and flexible way of selection. In order to further examine the benefits of behavioural interviews, this research contrasts traditional interviews with behavioural interviews in terms of interview components and time allocators. These projects have the benefits of being a rapid method to get to know someone, streamlining the interview and recruiting process, and offering candidate-specific questions.

Proposed System for Resume Analytics [3].

The goal of this project is to suggest an automated approach for the human resources department to shortlist the finest resumes and choose candidates. Selection of resumes according to the standards set by the HR division. The approaches used in this case include normalization and K-means clustering. Its benefits include saving recruiters time, removing hiring bias, fostering fairness and transparency, improving time to hire, and lowering hiring costs.

Clinical Screening Interview Using a Social Robot for Geriatric Care [4].

The goal of this research is to create social robots that can regularly do clinical interviews in geriatric care, including assessments of cognition, risk of falls, and pain. GCSIM stands for general clinical screening interview management. Self-care assistance, emotional support, and remote access for medical professionals are all benefits of social robots.

Real Time Mock Interview Using Deep Learning [5]

System is an online tool that helps people prepare for interviews. Currently, a lot of businesses use web technology to conduct interviews digitally. The creation of a system that allows users to practice for these online interviews is thus currently necessary. Candidates can practice for mock interviews using this technology by participating in mock interviews. Also, it offers feedback on users' performance during the fake interview, including volume, speaking rate, head nodding, reaction time, and facial preference. The technology offers speech-to-text conversion to check the candidates' responses for grammar and advises any necessary adjustments. The user's face expression will be evaluated while doing the interview with the aid of the webcam. When the user chooses to begin the interview, Open CV launches in the background and begins to record the interview's video. The dataset that was imported into the system will be used to analyze this facial expression, and the results will be saved in the database. Those that experience anxiety or trepidation when conducting interviews will benefit from the suggested system. In order to track the progress of the candidates, the results are provided in a graphical style. Corrective action will be made in order to perform better in the following interviews.

An Affective Service based on Multi-Modal Emotion Recognition, using EEG enabled Emotion Tracking and Speech Emotion Recognition [6].

The affective algorithm discussed in this research actually comprehends a user, and his inner condition appears more lifelike than ever. EEG-based Emotion Recognition and Speech Emotion Recognition, which employ speech and brain waves to detect and evaluate emotional content, may make it possible to provide this service. The usefulness and significance of this article for security and healthcare objectives, as well as the ease and simplicity of detecting human emotions, are its benefits.

Facial expression detection using six facial expressions (SFEH) model [7].

The Six Facial Expressions Hexagon (SFEH) Model is used in this study to identify six fundamental facial expressions. Six facial expressions are represented generally by the SFEH model on six edges of a surface hexagon (S-Hex). The S-hex, which forms the face's outside border, is divided into three sections: an upper triangle, a middle rectangle, and a lower triangle. The division of facial characteristics into three sections reduces the processing area of the face from which expression emerges and is highly useful in locating the variable region. The suggested SFEH model's focus is on applying morphological operations to modify only the different regions of the face at a reasonable computing cost. The six hexagonal edges of the sculpture depict all possible facial emotions. More specifically, hexagonal edges along six expressions show which part of the face changes as the expressions on the face vary. It can be seen from the SFEH model that the expression of anxiety alters the upper half of the triangle. It means that only the upper part of the face is evaluated for recognition when there is a fear emotion.

Efficient-swish Net based system for facial emotion recognition [8].

Artificial intelligence (AImajor)'s research field of facial emotion recognition (FER) has a wide range of applications, including deep fakes detection, e-learning, entertainment, and face identification systems. Because there are significant intra-class variances in emotions, FER is still a difficult undertaking. Despite the fact that earlier deep learning techniques have successful FER results. However, there is still a need to create FER systems that are reliable and efficient under certain circumstances, such as variances in lighting, face angles, gender, race, backdrop settings, and persons from various geographical regions. Also, it is necessary for computer systems to incorporate a generic model for the classification of human emotions in order for them to interact with people more effectively and in accordance with their emotions. The suggested model's performance is assessed using five different datasets, including the CK+, JAFFE, FER-2013, KDEF, and FERG datasets.

To more precisely recognize eight different facial emotions, we suggest a simple and efficient Efficient- Switch Net DL model with a Swish activation mechanism. The suggested model is resistant to changes in lighting circumstances, facial angles, gender, race, background settings, and morphological appearance of individuals from various geographic places. In order to show the proposed model for FER's capacity for generalization, we also conducted comprehensive tests on numerous heterogeneous datasets encompassing the facial expressions of real and stylized cartoon characters.

Auto encoder with emotion embedding for speech emotion recognition [9].

To extract deep emotion features, we put out a brand-new technique called an auto encoder with emotion embedding. We combine the acoustic features collected from the open SMILE toolbox with the latent representation learned by the auto encoder. The suggested model significantly outperforms competing spoken emotion recognition systems, according to experimental results. In this research, we presented a unique approach that combines emotion embedding and auto encoding. Learning substantial emotional information from labels is the main goal of the emotion embedding path. This enables the auto encoder’s latent representation to understand which deep features are connected to emotion. The IS10 feature set and the deep emotion feature from the auto encoder were combined for the emotion classification process. The suggested technique considerably improves classification accuracy, according to experimental results using two publicly accessible corpora.

Facial Micro-Expression Recognition using Two-Dimensional Landmark Feature Maps [10].

For efficient human-artificial intelligence (AI) interaction, such as with social robots, emotion recognition based on facial expressions is crucial. Contrarily, facial micro expressions (FMEs) are far more difficult to identify in a real-world setting than facial general expressions with complex emotions. For successfully identifying such FMEs, we suggest a two-dimensional (2D) landmark feature map in this study. By converting traditional coordinate-based landmark information into 2D image information, the proposed 2D landmark feature map (LFM) is created. LFM is made to have a beneficial quality regardless of how much a facial expression change. Additionally, we present a convolutional neural network (CNN) and long short-term memory (LSTM) integrated architecture for emotion recognition (LSTM). The deep learning-based classifier and the LFM/CLFM generation step make up the proposed FER technique. In order to create a single 2D image, or LFM, the point-wise distances between landmarks (LMs) of two adjacent video frames must first be calculated. A compact LFM (CLFM) can be produced here. Be aware that LFM/CLFM functions somewhat like an inter-frame distance. As a result, N-1 LFMs/CLFMs can be constructed for a video sequence, assuming it consists of N frames. Second, a classification utilizing the LFMs/CLFMs is used to identify an emotion that corresponds to the video sequence. We use the CNN-LSTM network with the LFMs/CLFMs as input for this categorization. A representative classifier for image sequences is the CNN-LSTM network, it should be noted. We use a framework that combines VGG13 and LSTM in this paper. Each LFM/CLFM is first converted by the CNN into a one-dimensional (1D) feature vector. The emotion class of each input video is then determined if the successive 1D feature vectors pass through LSTM.

Generating Unified Candidate Skill Graph for Career Path Recommendation [11]

The suggested approach makes use of the idea of skills to create skill graphs that serve as the foundation for suggestions for career paths. It believes that skills are better suited for standardizing career paths across firms. The suggested solution uses an Open IE pipeline to extract education and experiences after ingesting a user's profile (in a pdf, word format, or from other open and shareable data sources). The collected items are then mapped as distinct skills and expressed as a brand-new unified skill graph. We think that skill graphs that depict both geographical and temporal correlations can help in producing accurate career path suggestions. The precision and recall of our current skill extraction model were 80.54% and 86.44%, respectively, when tested with an industrial scale dataset. Customized career, employment, and skill training suggestions based on candidate profiles present a difficult research problem. This is especially important for careers that need a lot of experience and expertise. In this paper, a novel framework for creating customized skill graph representations of candidate profiles using text extraction techniques is proposed. Utilizing information theoretic methods that are centered on graphs.

DOI:

NLP methods for automatic candidate's CV segmentation [12].

The research suggests a novel approach to automatically segmenting and parsing CVs. The described algorithm is based on machine learning and natural language processing techniques. The suggested method enables information about a candidate's education and employment history to be extracted from their PDF or DOCX formatted resumes. Particularly, the segmentation of the CV into the three categories of Basic Information, Education, and Work Experience is carried out approaches. A new technique for automatically parsing and segmenting a CV was described, allowing information about a candidate's education and employment history to be extracted from a text file in the pdf or docx format. Here As long as the entire collection was of the standard Head Hunter type, the majority of the errors on the test set were due to the good fortune of variety in the training data.

A Review on Text Analytics Process with a CV Parser Model [13].

The suggested CV parser model for information extraction. When job seekers begin submitting their resumes or curriculum vitae to recruitment websites, a CV parser automatically extracts data items for uploading CV to extract skill codes, such as academic background and personal data. A CV can be uploaded manually or digitally. Every time a manual upload occurs, digitization is done as a result. The information is then extracted in the form of information that has been parsed by the parser analyzer. The data gathered upon parsing is Large and intricate data sets make up big data. As a result, a variety of software has been developed to handle such massive databases. Such a technique for gathering CVs is CV parsing. Multiple language support, simplicity of modification, and semantic mapping for skills, job boards, and recruiters

Ethical Considerations in AI-Based Recruitment [14]

This study establishes ethical considerations in the application of machine learning in the employment sector and provides an overview of fairness definitions, methodologies, and tools with regard to recruitment. There have been few fairness studies utilizing these models, despite the fact that contemporary recruitment systems use significant developments in AI applications for recruitment. An overview of the hiring process, the effects of bias in these models, and techniques for bias mitigation are provided in this study. Fairness has been studied extensively in terms of model interpretability and post-processing techniques. Nonetheless, there is need for improvement in a number of areas, including pre-processing and optimization techniques, models to address occupation-specific requirements, fair job advertisements to reach a wider audience, and openness in hiring practices. These difficulties present a chance for businesses and machine learning researchers to improve the hiring procedure for candidates all around the world, resulting in more productive workplaces and motivated employees.

Automatic Speech Recognition using Recurrent Neural Network [15].

The system that has been suggested is a straightforward query processing system for the railroads, with speech serving as both the input and the output. For the purpose of processing railway system queries, the process converts the input speech into the inquiry. The phoneme is extracted from the speech data in the system using the Mel Frequency Cepstral Coefficient (MFCC), and it is then input into the Long Short-Term Memory (LSTM) and Connectionist Temporal Classification (CTC) training models. The CTC loss is then calculated as confirmation. The system's output is the text that has been recognized for the supplied speech input. And we strive to deliver results that are accurate. This paper briefly explored the process of turning speech into text. The approach of phenomenon segmentation preprocessing and feature extraction is carried out by citing numerous studies, but the accuracy of the output gained is discovered to be lower than expected. So, in order to achieve high accuracy, we have implemented a hybrid methodology that combines Long Short-Term Memory (LSTM) and Connectionist Temporal Classification (CTC).

Technical Skill Assessment using Machine Learning and Artificial Intelligence Algorithm [16].

This project is for every coder whether they are total novices or a master at coding. Many websites offer programming language instruction or a venue for you to tackle programming language problems. Nonetheless, they frequently disregard the programmer's temperament and level of expertise. To reach your level after initially signing up, you must first complete all the prerequisites. We suggest a technique in which the software determines the programmer's ability level after we test the programmer with simple to challenging programming questions in the language of their choice. The challenge and the course will be chosen based on the programmer's skills, and they will evolve as they do. In the proposed effort, we would create a system that would accurately evaluate students and give them a learning path that is tailored to their objectives, talents, and aspirations for the future. To identify each user's profile and learn more about their future objectives, we would need to ask each user a specific kind of question initially. After completing the pre-questionnaire, the student can take a computerized general test to assess his knowledge in a number of different areas. The results of the test will be used to show the student where he is in terms of his knowledge in each area and what he needs to pay more attention to. To evaluate his knowledge in a particular subject, the student can take more specialized tests. By clearing away

DOI:

all the clutter, our system will assist students in giving them a clear route. We are more confused than educated as a result of the abundance of information available to us online. We must apply Machine Learning Classification Algorithm like Nave Bayes and Logistic Regression because we require an algorithm to classify Student Skills based on his performance.

Placement Training using Machine Learning [17].

The report describes a computer-based placement training programme to replace the manual training methods that institutes have adopted. The entire process needs to be automated because training involves hundreds of candidates and is a year-round effort. With the aid of this system, the candidate would be able to attend a real-time interview. The system's face expression recognition feature will enhance it by giving it the capacity to analyse gestures and ethics. The system will also give students feedback so they can raise their performance. Immediate feedback will boost inclusion and diversity in turn. This research demonstrated the creation of a device that can offer practice for technical interviews, specifically job interviews. The candidate interacts with the database of predetermined questions and their associated answers in the system. The information is prepared and examined. Using the online speech API, the speech input is transformed to text and stored in a database. Candidates who receive feedback are better equipped to ace more technical interviews. At no point throughout the interview will the machine be prejudiced, ensuring that the system will deliver accurate feedback.

III. PROPOSED SYSTEM

This study suggested a platform for asynchronous video interviews with automated scoring features. The scoring functions examine characteristics found in the video interviews applicants recorded and assess personality traits and interview performance. The tool instantly generates a quantitative report and displays the findings of the investigation in charts and graphs. The work will be implemented by identifying gestures and vocal commands for measuring the ethical standards that a candidate should adhere to in an interview. The developed human interface is described, which is intended to provide user-friendly interaction. Machine learning tools assist members of the placement team by tracking a candidate's progress during the interview process and assisting in the acceleration of the process of creating skill-based graphs.

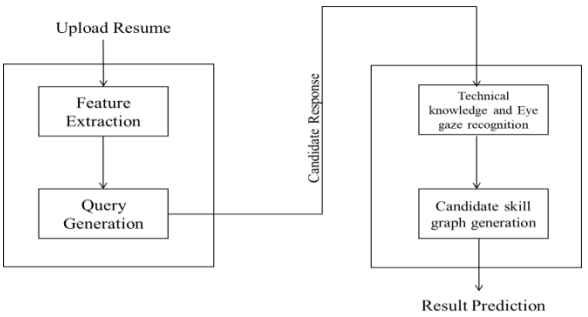

Fig.1 Block Diagram

1. Log In – Beginning the user has to sign up in the system. The user will then receive a username and password. The user can log in to the system using their credentials.
2. Resume Parsing –The first step in resume parsing is to manually or automatically submit all applications for a certain vacancy into the parsing programme. Resume parsing tools examine each document and extract any pertinent data when applications are posted, according to the requirements of a recruiter. An unstructured form of resume data is converted into a structured one using resume parsing technology. A resume parser analyses resume data and extracts it into output that is machine-readable, like XML or JSON. To automatically store, organise, and analyse resume data to discover the best candidates, a CV/resume parser is used. By locating and organising the apps that contain the pertinent data, and eliminating those that do not. Interview questions are automatically generated by the computer for the specific candidates based on the parsing results.
3. Start Interview – Selected candidates may begin the interview based on the results of the resume parsing process. Users' performance will be recorded as the interview goes along and stored in the system's database. This information will then be used to compare various parameters at the conclusion and display the results.
4. Eye – Gaze movement Analysis – The user's eye movement will be analysed while conducting the interview with the aid of the webcam. The webcam begins to record the interview's footage. The interviewers pay close attention to the candidates' facial expressions to determine whether they are engaging in any unethical behaviour. we use TensorFlow and Face API to develop a methodology for the detection of eye-gaze movement analysis. Analysis of eye gaze movement is crucial for the interview.

DOI:

5. Database – Because the database stores user performance, it is a crucial component of our system. Also, user's data like User's preferences, personal information will be also saved in the database
6. Display Result – After the user completes the interview, the results will be displayed depending on their performance and will include their CV, facial emotion detection, and grammar analysis. The outcome will be presented graphically and delivered to a specific company for further action.

IV. METHEDOLOGY

We primarily employ machine learning technologies in our suggested system. Here, we use TensorFlow and Face API to develop a methodology for the detection of eye-gaze movement analysis. This uses trained face identification models and tinyface detectors. These technologies are used to get over the problems with classification in eye-gaze movement analysis. The Sklearn machine learning package's counter vectorizer feature is used to implement resume parsing.

A. System Architecture

The system as a whole consists of around 3 modules. The resume parsing program automatically pulls the crucial information from the candidate's resume. A straightforward resume parser called pyresparser is included in this module and is used to extract data from resumes. Using doc2text (for docs) to convert your resumes to plain text is the first step in his Python tutorial. Then, you can use spaCy's named entity recognition features to perform your text extraction.

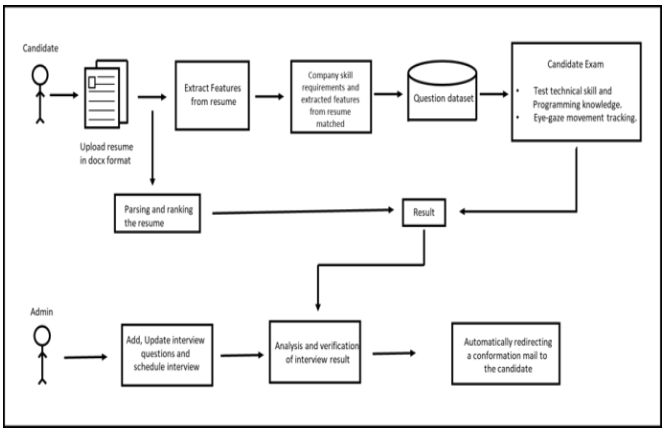

Fig.2 System Architecture

Similar to this, candidates must log into the system using their credentials in the candidate module in order to attend technical interviews. The session is also built using a Python Django backend framework in this module. The questions in this section are chosen at random. Analyzing the candidate's eye-gaze movement for surveillance.

In our proposed system, we mainly use machine learning technology. Here, we create a method for the study of eye-gaze movement detection using TensorFlow and Face API. Tinyface detectors and trained face identification models are used in this. In eye-gaze movement analysis, these technologies are utilized to overcome the classification issues. Resume parsing is implemented using the counter vectorizer feature of the Sklearn machine learning package.

B. Resume Parsing

The proposed approach is compatible with resumes in the docx-format. The degree to which a candidate's résumé closely resembles the job description is determined using cosine similarity, and candidate's resume are rated appropriately. The architecture for the resume parsing is given below:

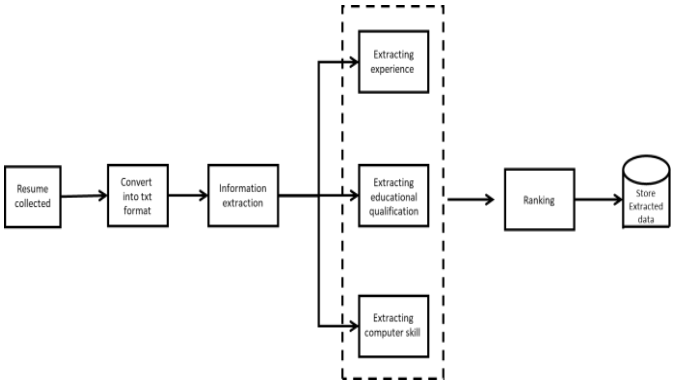

Fig.3 Architecture of Resume Parsing

Cosine Similarity Algorithm

Text mining and information retrieval both use cosine similarity. It determines how similar two vectors are to one another. If you have two papers and wish to compare for similarity, you must find the cosine angle between their two vectors. We can import the sklearn.metrics.pairwise sklearn cosine similarity function. It will figure out how similar two NumPy arrays are on the cosine scale. We'll step-by-step implement cosine similarity in this essay.

Step for cosine similarity

Step 1: Importing package –
First, we'll import the cosine-similarity module from the sklearn.metrics.pairwise package in this step. Additionally, NumPy's array construction module will be imported here. The syntax for this is as follows.

Step 2: Vector Creation –
Second, vectors are necessary in order to illustrate the cosine similarity function. Vectors in this case are NumPy arrays. Create a NumPy array now.

Step 3: Cosine Similarity-

DOI:

After having vectors, we can finally call cosine-similarity() and pass both vectors. The cosine similarity between these two will be calculated. The value will fall between [0, 1]. If it is 0, both vectors are wholly different from one another. However, if it is 1, it will be exactly the same in that spot.

Formula for Cosine similarity:

$$\text{Cosine Similarity} = Sc(A,B) := \frac{\mathbf{A}.\mathbf{B}}{||A||\,||B||} = \frac{\sum_{i=1}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} A_i^2}\sqrt{\sum_{i=1}^{n} B_i^2}} \quad [1]$$

C. *Eye-Gaze Movement Analysis*

Eye tracking is carried out through eye gaze detection using TensorFlow image recognition technology. Usually, gaze tracking is used to identify a person's attention focus. In a variety of fields, such as security, psychology, computer vision, and medical diagnosis, eye tracking is growing in importance. Additionally, security apps use gaze to analyze questionable gaze behaviors. The automated analysis of students' eye movements during a test to reduce cheating is one application in educational institutions.

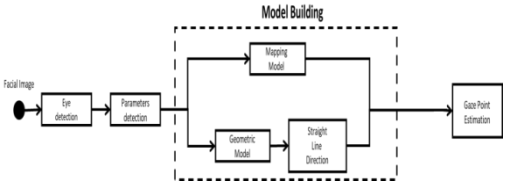

Fig.4 Architecture of Eye-Gaze movement Analysis

TensorFlow

A JavaScript library for machine learning is called Tensorflow.js. It offers a large number of ready-to-use pre-trained models, but also gives the user the ability to train and construct their own model directly in JavaScript. You may get the whole list of pre-trained models here.

A user-friendly interface for creating ML apps is offered by Tensorflow.js. The facial landmarks detection model in TensorFlow.js. The MediaPipe Iris model allows for the completion of this work. The original facemesh model has been disregarded, and future upgrades will focus on the face landmarks detection model. Note that neither iris tracking nor any other type of identity recognition can be used to infer where people are looking.

We describe the model's intended applications, constraints, and fairness characteristics (aligned with Google's AI Principles) in the model's documentation and the Model Card that goes along with it. Users accustomed to our current facemesh model will be able to transition to the new faceLandmarksDetection model with just a few minor code modifications, as explained below. Compared to facemesh, faceLandmarksDetection offers three key improvements:

1. Iris key-points detection
2. Improved eyelid contour detection
3. Improved detection for rotated faces

V. EXPERIMENTAL RESULT

An automated framework for conducting technical interviews was presented. The suggested model predicts the human interview rating with a 94.3 accuracy rate, which is an impressive result. As far as we are aware, the interview dataset used in our experiment consists of a list of questions from a job interview that were gathered in a somewhat realistic environment. The query that would be pertinent in the majority of real-world job interviews was included. A careful analysis of the interviewee's reaction is frequently necessary to predict how well the interview will go. We identified interviews in our dataset when a careless mistake (such as the use of an expletive) impacted the interview outcome. It is challenging to predict these phenomena due to the rarity of these events; possibly anomaly detection approaches would be more

efficient in their place. It may be possible to gain important knowledge and understanding about job interviews and human behavior in general by expanding our prediction framework for quantifying these various and complicated cues in job interviews.

A. *Performance Analysis*

This article discusses the effectiveness of various cutting-edge models for both resume parsing and eye-gaze analysis. The comparison of various models' accuracy is shown in the following graph.

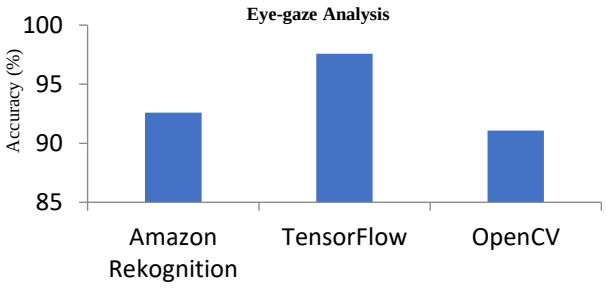

Fig.5 Accuracy Comparisons for Eye-gaze movement Analysis.

DOI:

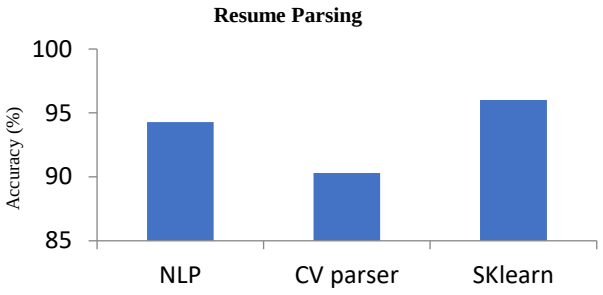

Fig.6 Accuracy Comparisons for Resume parsing Model

It has been found that all of the proposed models acquired validation accuracy above 94.3% and it works in parallel with every other model suggested by the researchers.

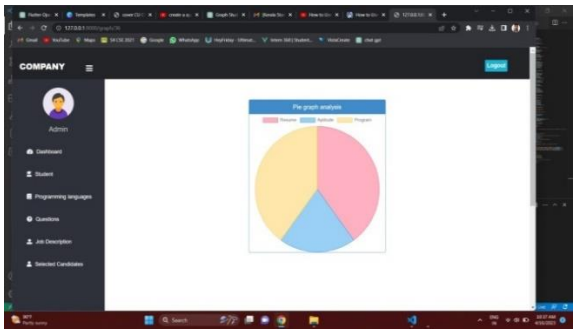

Fig.7 Pie-Chart Representation

Tensorflow.js is used in our system for eye-gaze movement analysis, and it provides accuracy of 97.58%.
When compared to other models, the Cosine-similarity algorithm in Sklearn for rating resumes provides an accuracy of 96.02%.

VI. CONCLUSION

The technological interview platform suggested in this study analyses the personality traits and interview performance of applicants while analyzing the visual, aural, and textual aspects of an interview. The platform is helpful for evaluating candidates objectively and picking up important nuances that are invisible to humans. The models utilized in this study produced results that were adequate. Unfortunately, the scarcity of comparable items on the market makes it challenging to compare the performance outcomes. We think that voice, position, and emotion models may be more accurate. Future research should take into account aspects like facial expression analysis to create a more complete model. To further improve model accuracy, weighting based on business needs should also be included. The platform's analytical report makes it easy for HR managers or supervisors to swiftly assess applications, which speeds up the candidate screening procedure. This platform helps candidates overcome their stage fright and boost their self-assurance.

In the future, its use may be broadened to include additional areas in the future; for instance, educational institutions may decide to use it to conduct interviews. The platform now only offers a broad analysis report based on the features that are offered. The platform may be changed in the future to produce different analysis reports as required by HR or supervisors. In the future, use a microphone to record the candidate's response. With the variety of jobs available across various industries, each job post should have a unique set of interview questions on the platform. To give the relevant interview questions for each employment position, a question bank might be created. A more thorough analysis might be produced by appropriately weighting each question.

Acknowledgment

We take this opportunity to express our deep sense of gratitude and sincere thanks to all who helped us to complete the project design phase successfully. With pleasure, we express our sincere thanks to our Principal, Dr. JOSE K JACOB for rendering all the facilities for the completion of our project within campus. We are deeply indebted to Professor Dr. SREERAJ R, Head of Department, Computer Science and Engineering, our project guide Assistant Professor NAJLA NAZAR, Department of Computer Science and Engineering, for their excellent guidance, positive criticism and valuable comments. We would also like to extend our heartfelt thanks to our project coordinator Ms. Muneebah Mohyiddeen, Assistant Professor, UEC for their meticulous guidance and support that helped us in the completion of our project. We express deep gratitude to all the faculties and staff members of the Department of Computer Science and Engineering for their unflinching support and encouragement throughout the course of work. Finally we thank our parents and friends, near and dear ones who directly and indirectly contributed to the successful completion of our project.

References

[1] Partha Mukherjee, Soumen Santra, Subhajit Bhowmick, Ananya Paul, Pubali Chatterjee, Arpan Deyasi “Development of GUI for Text-to-Speech Recognition using Natural Language Processing”. https://doi.org/10.1109/IEMENTECH.2018.8465238

[2] Chen Lin School of Foreign Studies South China Agricultural University Guangzhou, China “Behavioral Interview and its Implementation”. https://doi.org/10.1109/ICIII.2010.23.26-28 November 2010.

[3] Amala Deshpande, Divya Deshpande, Deepika Khatri, Prarthita Das. ”Proposed System for Resume Analytics”. ISSN: 2278-0181 IJERTV5IS110274 Vol. 5 Issue 11, November-2016.

[4] Ha Manh Do, Member, IEEE, Weihua Sheng, Senior Member, IEEE, Erin E. Harrington and Alex J. Bishop. ”Clinical Screening Interview Using a Social Robot for Geriatric Care”. https://doi.org/10.1109/TASE.2020.2999203

[5] Rohan Patil 1, Akash Butte 2, Sahil Temgire 3, Varun Nanekar 4, Asst. Prof. Shivganga Gavhane.” Real Time Mock Interview using Deep Learning”. ISSN: 2278-0181.

[6] Danai Styliani Moschona, Taipei, Taiwan.” An Affective Service based on Multi-Modal Emotion Recognition, using EEG enabled Emotion Tracking and Speech Emotion Recognition”. https://doi.org/10.1109/ICCE-Asia49877.2020.9277291

[7] M. Murtaza, M. Sharif, M. AbdullahYasmin and T. Ahmad, "Facial expression detection using Six Facial Expressions Hexagon (SFEH) model," 2019 IEEE 9th Annual Computing and Communication Workshop and Conference (CCWC), 2019, pp. 0190-0195, doi: 10.1109/CCWC.2019.8666602.

[8] T. Dar, A. Javed, S. Bourouis, H. S. Hussein and H. Alshazly, "Efficient-SwishNet Based System for Facial Emotion Recognition," in IEEE Access, vol.10,pp.71311-71328,2022, doi:10.1109/ACCESS.2022.3188730.

[9] C. Zhang and L. Xue, "Autoencoder With Emotion Embedding for Speech Emotion Recognition," in IEEE Access, vol. 9, pp. 51231-51241, 2021, doi: 10.1109/ACCESS.2021.3069818.

[10] D. Y. Choi and B. C. Song, "Facial Micro-Expression Recognition Using Two-Dimensional Landmark Feature Maps," in IEEE Access, vol. 8, pp. 121549-121563, 2020, doi: 10.1109/ACCESS.2020.3006958.

[11] A. Gugnani, V. K. Reddy Kasireddy and K. Ponnalagu, "Generating Unified Candidate Skill Graph for Career Path Recommendation," 2018

[12] IEEE International Conference on Data Mining Workshops (ICDMW), 2018, pp. 328-333, doi: 10.1109/ICDMW.2018.00054.

[13] M. Tikhonova and A. Gavrishchuk, "NLP methods for automatic candidate’s CV segmentation," 2019 International Conference on Engineering and Telecommunication (EnT), 2019, pp. 1-5, doi: 10.1109/EnT47717.2019.9030535.

[14] P. Das, B. Sahoo and M. Pandey, "A Review on Text Analytics Process with a CV Parser Model," 2018 3rd International Conference for Convergence in Technology (I2CT), 2018, pp. 1-7, doi: 10.1109/I2CT.2018.8529772.

[15] D. F. Mujtaba and N. R. Mahapatra, "Ethical Considerations in AI-Based Recruitment," 2019 IEEE International Symposium on Technology and Society (ISTAS), 2019, pp. 1-7, doi: 10.1109/ISTAS48451.2019.8937920.

[16] Sruthi Vandhana T , Srivibhushanaa S , Sidharth K , Sanoj C S, 2020, Automatic Speech Recognition using Recurrent Neural Network, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume 09, Issue 08 (August 2020).

[17] Mohammad Suhaib Ahmed , Nikhunj Saraf , Rohan Atale , Ajinkya Bhujbal, 2019, Technical Skill Assessment using Machine Learning and Artificial Intelligence Algorithm, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume 08, Issue 12 (December 2019).

[18] Aishwarya P R , Anamika , Ganga V M , Kamarunnisa K A, 2019, Placement Training using Machine Learning, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume 08, Issue 06 (June 2019