**1 Abstract:**

Through AI, technology is making life easier. Machine learning is being used to learn human behavior so that apps can predict what you might want and at what time. **Artificial intelligence (AI) has made it possible to collect and analyze large amounts of information, which could optimize processes in many sectors, including urban spaces, transport healthcare, and business.** So, why not use it in the most important aspect of a business? That is employee hiring or job recruitment process.

As we know, when a Candidate can traditionally take an interview (where the candidate is physically present in the interview place), this process is time-consuming, the organization is hardly managing interviews there are chances of recommendation.

so companies need a system that virtually conducts the interview process and efficiently hires a candidate. . Many systems work on ‘chat interview Bot’, virtual interview BOT,

But even with this, there are lots of challenges that the company and employees both face during the entire procedure, such as monitoring numerous interviews, biased results, keeping records, etc.

Therefore, in this paper we introduced a system in which candidates can automatically and virtually take interviews Using an Artificial intelligence system that can easily manage the interview and very responsive, a candidate can take an interview in a short time with its place, and the system analyzes candidate sentiment, emotion, and matching the answers through video. This system is mainly used in many organizations. Companies use this system to make their interview process fast and effective save their time and there are no chances of recommendation. Through this system, companies hire candidates in less time and in an efficient way.

**2 PROPOSED METHOD:**

The “AI video interview BOT” is an AI-based web application that helps people to take interviews virtually based on user sentiment and emotion. The company can register on the website; it uploads question papers on the website. Administrator login to system manages all activities of the user (candidate and company) on website. The candidate can provide information and register on the website; the candidate can schedule a meeting and take a video interview on the website. All the user information is stored on the Database. The system asks a different question, and the candidate answers every question in the video, the system converts its speech on the video to text by speech recognition technique (NLP) and saves text at the back end. The system can create sentiment analysis by applying a sentiment algorithm on the text which saves on the back end and by using CNN and open CV, the system can analyze the emotion of the candidate life from the video. The system can match the keyword from text to answers which save in the backend of Bot. The primary target of this project will be an organization. This project will be used in many companies, this project mostly focuses on responsiveness and time. Every company needs that its interview process fast and effective, through this system companies hire candidates in less timely and ineffective ways.

**3 USER INTERFACE:**

**3.1Web-application:**

A website is created for a company to post the job and conduct the interview for the job. Three types of dashboards are working on this website. candidates apply for the job and take video interviews Through this website; the Whole interview process is analyzed and its result is viewed on the website. The website is created using the Django framework.

**3.1.1 Company Dashboard:**

Company login to its dashboard, through this dashboard company, can post job and set question paper according to a job post, the company can manage the candidate record and analyze the report of candidate interview. After Analyzing the report company select or non-select candidate through their dashboard.

* + 1. **Candidate Dashboard:**

Candidate login to the dashboard and his record is stored in the company database and the data is stored in the website databases well. The candidate selects the job that company has posted and takes an interview according to the specific job which he has selected. The candidate schedules his interview according to his own time its interview time is stored in the company database and website databases well. While in the Start Interview, the system asks questions to the candidate. candidate answers the question in voice system converted is the voice to text and put the text at answer place and same time system analyze the candidate facial expression live form webcam. The system also analyzes the sentiment of the answer either positive, negative, or neutral.

The System then analyses the video interview and displays a detailed report of the candidate's sentiment analysis, Emotion analysis, Answers. This report is visible to the company on their page. The company can then compare the report of all the candidates and select the best candidate for their organization.

* + 1. **Admin Dashboard:**

Admin is a superuser of website, which manages both candidate and company record. Admin can edit and delete the record of both candidate and company.

1. **Analysis:**
   1. **Facial expression analysis:**

CNN (convolution neural network) is the artificial neural network that helps in image classification. In CNN, neuron of a single layer is connected to the small region or part of the layer before it.

CNN classifies the image by considering pieces, called Features. It compares this feature with an input image, by roughly matching them at roughly matching positions to get more précised results.

For facial expression detection CNN is used. For this, recorded videos are converted into several Keyframes to get multiple images. Then these images are fed to CNN to detect the facial expression. Modules used are Subprocess module, OS module, CV2 module for video capture, Keres module to analyze facial expression, Matplotlib for plotting of graphs, Haar-Cascade-Files for defining facial key points, etc.

Fer2013 (Facial Expression Recognition 2013), a dataset from Kaggle, is used for facial expression recognition. Using this dataset, the emotions that the system detected are ‘Angry’, ’Fear’, ’Happy’, ’Sad’, ’Surprise’ ‘Neutral’, and Disgust. Whenever the system gets any image, it will detect the facial expression of that image by comparing it with the images of the dataset. The system reads an image using the values at each pixel and using CNN these pixels are processed further for generating results. Images are fed to the system. Then they are converted into greyscale images. From this greyscale image, the face is then detected. Then we resized the images on the scale of 48\*48. After resizing the detected face, scaling of an image is done. Then capture the value of the expression and display it on screen.

* 1. **Voice Analysis:**

In the system, the answer is taken in voice, System captures the voice and converts voice to text, and puts in answer place. For speech to text conversion python, a speech recognition library is used.

The first component of speech recognition, speech. Speech must be converted from physical sound to an electrical signal with a microphone, and then to digital data with an analog-to-digital converter. ADC also removes the noise and normalizes sound and speed of speech.

Hidden Markov modal and Neural Network are two approaches used in speech recognition to effectivity conversion of speech into text.

In many modern speech recognition systems, neural networks are used to simplify the speech signal using techniques for feature transformation and dimensionality reduction before HMM recognition. Voice activity detectors (VADs) are also used to reduce an audio signal to only the portions that are likely to contain speech. This prevents the recognizer from wasting time analyzing unnecessary parts of the signal.

**4.3Sentiment Analysis:**

The system analyzes sentiment analysis on the answer. Sentiment analysis is a technique used in Natural Language Processing (NLP) and is used to determine whether given data is positive, neutral, or negative.

TextBlob is a python library for Natural Language Processing (NLP). TextBlob actively used Natural Language ToolKit (NLTK) for sentiment analysis in the text. TextBlob is a simple library that supports complex analysis and operations on textual data.

**lexicon-based approaches**, a sentiment is defined by its semantic orientation and the intensity of each word in the sentence. This requires a pre-defined dictionary classifying negative and positive words. Candidate answer is through a TextBlob module and TextBlob returns **polarity** and **subjectivity** of a sentence.

Polarity: Polarity score is a float value ranging [-1.0, 1.0] where -1.0 is very negative and 1.0 is very positive. This score is used to check the sentiment of a sentence.

 Subjectivity: Subjectivity score is a float value ranging [0.0, 1.0] where 0.0 being very objective and 1.0 being very subjective. This Polarity score is used for analyzing whether the sentence is negative, neutral, or positive.

Once the analysis is completed the result of each answer is stored in the report.

**5 Report Generation.**

At the end of the interview through a Video interview Bot Report is generated and this report is shown in both company and candidate dashboard. Report Is the combination of Answer sentiment, candidate facial expression, and numbers of matching words of real answer and candidate answer.