

**Project Name:** Artificial Intelligence Powered Mock Interview Tool

## Project Description:

The AI Mock Interview Tool utilizes advanced natural language processing and emotion recognition algorithms to analyze candidates' interview performances. Users will get real-time feedback on eye-movement, tone, clarity, and confidence levels.

**Project Purpose & Value to the industry** (This is the value proposition statement of why the project is initiated and how it matters to the business or industry.)

Implementing this tool enhances our business capabilities by providing a cutting-edge solution that meets the evolving demands of recruitment and talent development.

This tool streamlines the interview process, saving time and resources while ensuring a more thorough assessment of candidates. It empowers interviewers with valuable insights into candidates' soft skills and communication abilities, allowing for more informed hiring decisions.

Candidates receive personalized feedback and coaching, improving their interview performance and increasing their chances of success. Employers gain access to a pool of better-prepared candidates, ultimately leading to higher-quality hires and improved organizational performance.

## Project Scope (Define the boundary of the project)

The AI Mock Interview Tool will be used to analyze candidates' eye-movement, tone, clarity, and confidence levels. This project covers analysis & design, development and testing of a prototype of a mock interview tool plus full documentation that serves as a proof-of-concept supporting limited functions as listed under High-level Requirements.

## Constraints:

1. No formal business requirement discovery process is performed.
2. This project is only a proof-of-concept showing the capabilities of the students to the best supported by the information and data from TBC.
3. The end product from this project will not be deployable due to cost constraints and lack of complete business & functional requirements from TBC.
4. The chatbot will not support follow-up questions from the users since the dataset does not provide follow-up data.
5. This project is constrained by its timeline, functionality will be limited to necessities only at the discretion of the project advisor.

**Project End Product(s)** (Define the expected outcome of the project which needs to be tangible and measurable.)

1. The end-product is a prototype as Proof-of-Concept (POC) of a mock interview tool.
2. Full documentation including but not limited to technical spec, functional spec, source code and installation scripts & procedures, user instruction in form of a library set

**High-Level Requirements** (Define the functional and technical requirements to be met to produce project end product.)

User Interface (UI):

The mock interview tool has a user-friendly interface for candidates to start, pause, and stop mock interviews, and a dashboard for displaying post-interview analysis.

Natural Language Processing (NLP):

The mock interview tool shows a transcription of candidate responses with advanced NLP and emotion recognition algorithms. It provides analysis of speech content for clarity, relevance, and coherence.

Post-Interview Analysis:

The mock interview tool shows a report summarizing strengths and areas for improvement and suggestions for enhancing interview performance.

Compatibility and Expandability:

The mock interview tool provides support for various devices (desktop, mobile, tablets) and operating systems and can allow additional features to be built upon its existing code as plug-ins.

Documentation:

The mock interview tool should have proper documentation and comments in code for easy readability and understanding, which can allow the project to be further developed and deployed by future teams.

**MUST HAVE:**

Video and Audio Recording:

The mock interview tool can allow users to video record themselves on the platform. Recordings can be viewed, managed, and uploaded as needed.

Prep time, Recording time, and Flow:

For each question, the user gets a prep-time of 30 seconds and a recording time of 2 minutes within which they can answer. Once the user has completed answering the question, they can mark the recording as done to move on to the next question. Users can only move through the questions sequentially.

Questions will be based on the role they are practicing their interview for. The mock interview tool can support 5-10 different role-based job interviews, as well as a general interview HR round of questions.

Face presence, distance to camera:

The mock interview tool detects the user's face and analyzes their distance. If the user does not have their face centered or is far away/too close to the camera, the user is prompted on the screen

of this, and they will not be allowed to record themselves until they have corrected their posture in front of the camera.

### Eye Contact:

The mock interview tool can analyze how long the user is able to maintain eye contact with the camera and based on the results provide corrective feedback at the end of the interview, as well as the significance of maintaining eye contact.

### Facial Expressions:

The mock interview tool can process and analyze the user's facial expressions while conducting the interview to provide corrective feedback at the end along with the significance of displaying positive facial expressions.

### Video Quality:

### Audio Quality:

### Video Background:

The mock interview tool can distinguish between the user and the background and focus on the main subject in the frame if multiple people appear. If there is too much disturbance in the background, the tool can prompt the user to find a space with less disturbance.

### Audio Background:

The mock interview tool can distinguish and filter out the user's voice from the background noise, as well as music, or other people talking. If the audio background noise is interfering or too loud for the tool, it can prompt the user to move to a quieter place.

### Filler Words Detection:

The mock interview tool can detect and analyze the frequency of filler words to gauge whether the user sounds natural or not. The tool can help with suggestions if there are too many filler words, or too less to sound like the user is reading from a pre-prepared paragraph.

## **GOOD TO HAVE:**

### Grammar Check:

The mock interview tool can check for grammatical errors in the user's speech. The only supported language is English. The use of any other language will result in an invalid attempt.

### Confidence Analysis:

The mock interview tool can perform tone analysis, as well as eye movement on the user's speech to determine the confidence levels.

### Question Answer Scoring:

The mock interview tool can score the user based on the answer they provided for the question provided. The questions supported are basic introductions such as "tell us a little about yourself".

## **NICE TO HAVE:**

### Speech Clarity and Coherence:

The mock interview tool can analyze speech clarity and coherence and prompt the user at the end of how clear their speech was, or the speed of their speech, teaching them the significance of a steady pace and clearer speech.

### Pronunciation Check:

The mock interview tool can analyze the pronunciation of the user and point out inconsistencies in their speaking. The tool has a

### Technical Question Answer Scoring:

The mock interview tool can score the user based on the answer they provide for the technical question provided. The questions are role based technical questions such as “What is deep learning and how is it different from supervised learning?”

### Run-time optimization:

### **Assumptions:**

1. Too much background noise will skew other results
2. Student is not allowed to blur the background
3. Students will be able to collect volunteer information
4. Gemini key is being used which has a request limit so the system can only handle 30 interview analysis/day, under the free tier

**Project Resources requirement** (If cost-free option of delivering the project is exhausted and the project requires billable resources e.g.: hardware & software, please elaborate and justify the funding request for college pre-approval.)

1. Availability of suitable and sufficient data.
2. The project can be completed using free resources without incurring funding requirements.

**Project Completion Criteria** (Describe & list out what measurable criteria to be met, by which the project can be declared as completed)

The project will be considered complete once all the high-level requirements are tested and met.

## **Deliverable Schedule**

<b>Schedule</b>	<b>Deliverable Name</b> (Mapped to Assignment Name posted in Moodle)	<b>Deliverable Description</b> (Describe briefly the exact deliverable required to be submitted in the designated week)
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## AIP PROJECT INCEPTION PAPER

Week3	Project Deliverable #1	-
Week4	Project Deliverable #2	-
Week5	Project Deliverable #3	-
Week6	Project Deliverable #4	-
Week7	Project Deliverable #5	<p>Start with data analysis and preprocessing.</p> <p>Finalize evaluation metrics for each model and what each model should output</p>
Week8	Project Deliverable #6	<p>Implement the models, study the model outputs, and see if it needs fine tuning or not.</p> <p>Prepare documentation and Presentation for Midterm.</p>
Week9	Mid Term Presentation	<p>Implement the models, study the model outputs, and see if it needs fine tuning or not.</p> <p>Presentation slides for midterm project showcase + live presentation</p>
Week10	Project Deliverable #7	<p>Implement the models, study the model outputs, and see if it needs fine tuning or not.</p> <p>Test the built models, run iterations, and Perform optimizations.</p> <p>Start designing backend system design and databases + documentation</p>
Week11	Project Deliverable #8	<p>Run iterations and Perform model optimizations.</p> <p>Convert UI wireframes to UI Designs.</p> <p>Continue implementing designs using a front-end framework. Continue implementing Backend + documentation</p>
Week12	Project Deliverable #9	<p>Run iterations and Perform model optimizations.</p> <p>Complete further development of backend and frontend + documentation</p>
Week13	Project Deliverable #10	Testing and Documentation
Week14	Final Project Report Submission	Full system documentation set including source code

	WIX Project Portfolio website	Project portfolio website
Week15	Final Project Showcase	Presentation slides for final project showcase + live presentation

**Attach a high-level Project Work Schedule in terms of major activities to an extent that students can follow and be tracked of their work progress in the project.** This high-level schedule provides the basis for students to further decomposition into smaller tasks to make their work actionable and trackable.

Refer to the deliverable schedule above as the activities are also specified there.

**Benefit to Students** This section describes what students can benefit and achieve through delivering the project in respect to applying the domain knowledge and reflecting the essential employability skills.

1. Technical Skills Development: Gain proficiency in programming, AI, NLP, database management, and API integration.
2. Project Management Skills: Develop skills in planning, organization, teamwork, problem-solving, and time management.
3. Practical Experience: Apply theoretical knowledge to real-world problems and prioritize user-centric design.
4. Analytical and Critical Thinking: Enhance abilities in data analysis and critical thinking for innovative solutions.
5. Communication Skills: Improve technical documentation and presentation skills.
6. Career Readiness: Build a strong portfolio and gain industry-relevant experience.
7. Understanding User Needs: Develop empathy and insights into customer service principles.
8. Innovative Thinking: Foster creativity and explore modern technologies for enhanced chatbot capabilities.