Ain Shams University
Faculty of Computer & Information Sciences
New Programs for Higher Education
Artificial intelligence Program

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كلية الحاسبات و المعلومات
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# Graduation Project Proposal

## Video Interview Analysis

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# Introduction

In today's job market, several trends are shaping how companies approach hiring, particularly the increasing reliance on virtual platforms. As remote work becomes more common, businesses are moving away from traditional in-person interviews to more flexible methods, such as online and pre-recorded interviews. This shift allows organizations to expand their talent pools globally and adapt to the fast-paced, remote nature of modern work environments.

The hiring process typically follows structured stages, starting with job postings and candidate screenings, followed by interviews and evaluations, and concluding with final decisions. Interviews are generally classified into three types: offline (in-person), live virtual (real-time), and pre-recorded. Pre-recorded interviews, where candidates respond to a set of predefined questions, have gained popularity as part of the initial stages of hiring. They enable companies to assess multiple candidates without the constraints of scheduling conflicts. However, manually evaluating these recordings can be time-consuming and is often susceptible to bias or discrimination.

Our project introduces an AI-powered system specifically designed to automate the assessment of pre-recorded video interviews, mirroring the assessment process of HR professionals. By analyzing both verbal and non-verbal cues of each candidate, the system provides a comprehensive analysis that includes scores across several key areas related to verbal and non-verbal attributes, along with an overall score representing the candidate’s suitability for the role. This approach serves as a valuable support tool for HR personnel, allowing them to make informed decisions and assess candidates at scale.

## Motivation

Due to the time-consuming and exhausting nature of large-scale recruitment, where companies often navigate multiple stages of candidate evaluation, our project, "Video Interview Analysis," aims to optimize the process by automating interview assessments through video submissions. In traditional recruitment methods, reviewing each candidate individually can lead to delays, inconsistencies, and a significant drain on resources. Our system addresses this by using advanced technologies such as English proficiency analysis, personality trait detection, facial expression evaluation, and relevance checks between questions and answers. These automated evaluations provide a comprehensive understanding of the candidate's suitability, reducing the chances of bias or human error. By significantly accelerating the hiring process, this system allows recruiters to focus on higher-level decision-making, ultimately improving the quality of hires while reducing costs. As companies grow and expand their workforce, the need for an efficient, reliable, and scalable hiring solution becomes even more critical, making this project an essential contribution to modern recruitment practices.

## Objective

1) Simplify the process of pre-recorded video interviews for HR using AI technologies.
2) Evaluate candidates based on verbal and non-verbal cues.
    - Personality Traits.
    - English proficiency.
    - Facial expression.
    - Relevance between answers and questions.
3) Reducing the time and effort required for large-scale hiring.
    - Allow HR to set specific criteria or ratios for filtering candidates.
4) Improve decision-making for HR teams.
    - Minimize bias in the candidate evaluation process.

## Work Plan

1. Research and Literature Review.
    - Conduct a thorough review of academic research and industry practices related to video interview analysis.
    - Review Relevant Datasets.
2. Selection of Techniques and Datasets.
    - Select appropriate datasets and analytical techniques.
3. Requirements Gathering and System Architecture Design.
    - Define functional and non-functional specifications.
    - Design a scalable system architecture, detailing interaction between key modules.
4. Implementation.
    - Video Analysis Module.
        - Personality Traits.
        - English Proficiency.
        - Facial Expression.
        - Voice Tone.
        - Relevance of Responses to Questions.
        - Text Summarization.
5. Testing and Validation.
    - Conduct Unit Testing for individual modules, followed by overall system performance validation and user acceptance testing.
6. System Integration.
    - Integrate all the modules and perform end-to-end testing to ensure smooth system operation.
7. Documentation and Final Deliverables.
    - Prepare technical documentation and final project report.

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