

Video Interview Proctoring System Report

Project Title: Focus & Object Detection in Video Interviews

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Abstract

This project implements a **video proctoring system** designed to monitor online interviews. The system detects whether the candidate is focused, identifies unauthorized items (like phones, notes, or extra devices), and logs all suspicious events in real-time. A final integrity score is generated to assess the candidate's compliance during the interview.

Introduction

With the rise of remote interviews, it is important to maintain fairness and integrity. This system ensures that candidates remain attentive and prevents cheating by monitoring their video feed using **computer vision technologies**.

Objectives:

- Detect focus and attention of the candidate.
- Identify unauthorized objects such as phones, books, or notes.
- Log all events with timestamps.
- Generate a proctoring report including integrity score.

Methodology

Frontend (Interview Screen):

- Built with **HTML, JavaScript**.
- Displays live video feed of the candidate.
- Real-time detection of focus and suspicious events.
- Candidate's video is recorded and downloadable in **WebM** format.

Focus Detection Logic:

- Uses **MediaPipe Face Detection** library.
- Detects if candidate is **not looking at the screen for >5 seconds**.
- Detects **absence of face for >10 seconds**.
- Detects **multiple faces** in the frame.
- Logs all events with timestamps.

Item/Note Detection:

- Uses **TensorFlow.js / Object Detection Models**.
- Detects unauthorized items like:
 - Mobile phones
 - Books / paper notes
 - Extra electronic devices
- Flags and logs these events in real-time.

Backend & Logging:

- Node.js server stores logs in memory (or database like MongoDB).
- Provides API to fetch logs and generate proctoring report.

Integrity Score Calculation:

- Start with 100 points.
- Deduction rules:
 - Looking away >5s → -3 points
 - No face >10s → -7 points
 - Multiple faces → -10 points
 - Phone detected → -20 points
 - Notes/books → -10 points
- Final score = 100 - total deductions.

Results

- Candidate's video is recorded and downloadable.
- Real-time alerts displayed on-screen for:
 - No face detected >10s
 - Multiple faces detected
 - Unauthorized items detected
- Console logs provide event timestamps.
- Sample report generated in **CSV/PDF format**.

Conclusion

The project successfully demonstrates a **real-time proctoring system** for online interviews. It ensures candidate focus, detects unauthorized objects, logs events, and generates an integrity report. Future enhancements can include **eye closure/drowsiness detection** and **background audio monitoring**.

References

1. MediaPipe Face Detection Documentation:
https://google.github.io/mediapipe/solutions/vision/face_detection.html
2. TensorFlow.js Object Detection Guide: <https://www.tensorflow.org/js/models>
3. MDN Web Docs: <https://developer.mozilla.org>