Proctoring Face & Object Detection Module with Quiz Settings Integration

Develop and integrate a **real-time face detection and object monitoring module** into the existing proctoring system. This module must also be configurable within the **Proctoring Settings** for each quiz. The system must use **fully free and open-source libraries**:

- **MediaPipe** → for face detection, head orientation, and facial tracking

- **YOLO** (TensorFlow.js or ONNX) → for detecting unauthorized objects (phones, other people, devices, etc.)

1. Proctoring Settings Integration

Add a configuration section in each **Quiz's Proctoring Settings**, allowing the instructor to enable or disable:

- Face detection (MediaPipe)

- Object detection (YOLO)

- Multi-face restrictions

- Detecting if the student looks away

- Device visibility restrictions

- Other anti-cheating rules

These settings must dynamically control how the proctoring engine behaves during the exam.

2. Pre-Exam Photo Capture

Before the quiz starts:

- Use **MediaPipe face detection** to confirm that the student's face is clearly visible.

- Block progression if no face is detected.

- Ensure smooth integration with the proctoring workflow.

3. Real-Time Monitoring During Exam

Throughout the exam, continuously analyze the webcam feed using:

MediaPipe

- Detect face presence

- Detect if the student looks away or leaves the frame

- Ensure only one face is present

YOLO Object Detection

- Detect mobile phones

- Detect laptops or additional digital devices

- Detect additional persons or suspicious objects

- Detect cheating-related movements

Whenever a violation occurs:

- Display a **top popup warning** to the student.

- Send a **real-time alert** to the instructor's monitoring dashboard.

4. Violation Rules to Enforce

- The student's **face must always remain visible**.

- Prevent prolonged **looking aside**, **head turns**, or **leaving the frame**.

- Allow **only one face** in the webcam at all times.

- No **phones, tablets, or digital devices** visible in the frame.

- No **other people** should appear.

- Apply any additional anti-cheating rules defined in the quiz proctoring settings.