Presentation Script of Mini Project (Demo Script)

Good morning, sir.

I am pleased to present my mini project, *"AttentiveAI: Real-Time Student Monitor."*

This project addresses a significant challenge in online education: monitoring student attentiveness and engagement during virtual classes. With the rise of remote learning, it's essential to ensure students remain focused and helps students parents and teachers to track their Behaviour during Studies, and this tool helps by using AI and computer vision techniques.

Introduction:

"AttentiveAI" is designed to monitor a student's behavior and engagement level in real time using three core features:

1. **Motion Detection**: Detects if a student moves away from their screen or becomes physically distracted.
2. **Emotion Recognition**: Analyzes the student's facial expressions to understand emotions like happiness, sadness, or anger.
3. **Hand Gesture Control**: Tracks hand movements and allows interaction, like controlling the mouse or adjusting the system's volume.

These features help teachers and parents assess whether a student is actively engaged or distracted during online sessions.

System Overview:

The system uses a webcam to capture the student's behavior, and through AI-powered techniques, it processes the following:

- **Face Detection and Emotion Recognition**: The system detects the student's face and analyzes their emotions in real time. This gives insights into their mental state—whether they are happy, sad, or perhaps feeling frustrated.
- **Motion Detection**: If the student moves significantly (for example, if they get up or walk away), the system raises an alert.
- **Hand Gesture Detection**: It tracks hand gestures to control the system, such as moving the mouse pointer or adjusting the volume, making the interaction intuitive.

Feature Breakdown:

1. Motion Detection:

The system constantly monitors the video feed and compares two consecutive frames to detect any movement. If a student leaves the frame or there is significant movement, an alert is triggered with a sound and a visual marker.

How it works: We analyze pixel differences between frames. If there's a large change in motion, the system highlights the area with a green rectangle and sounds an alert. This ensures that if the student walks away or gets distracted, we can track that behavior.

2. Emotion Recognition:

The system uses a pre-trained AI model, DeepFace, to detect and analyze facial expressions. For example, it can determine if a student is happy, sad, or angry based on their facial expressions.

Why this is important: This feature gives us an insight into the student's emotional engagement. A happy or calm face may indicate the student is enjoying the class, while a sad or frustrated expression could imply disengagement or confusion.

3. Hand Gesture Control:

Using MediaPipe's hand tracking, the system detects hand movements, specifically the index finger and thumb. This allows the student to:

- **Control the mouse**: The student can move the mouse pointer by simply moving their finger.
- **Perform clicks**: If the distance between the thumb and index finger becomes small, the system registers it as a click.
- **Adjust volume**: The system also monitors the distance between the two fingers to control the volume. For example, a wider distance increases the volume, while a smaller one decreases it.

Demonstration:

During live demonstration is :

- As you can see, sir, when I move away from the frame, the system detects my motion and triggers an alert. It can also track my facial expression to analyze my emotions.
- By bringing my index finger and thumb close, I can simulate a mouse click or control the volume, as seen on the screen.

Conclusion:

This project aims to make online learning more interactive by allowing teachers and parents to monitor a student's attentiveness and behavior. By tracking facial expressions, movements, and hand gestures, *AttentiveAI* provides real-time feedback that can be used to improve a student's focus and engagement during virtual classes.

This tool offers a non-intrusive way of understanding how students are interacting with their learning environment, ultimately helping educators intervene when necessary and personalize the teaching process.

Thank you, sir. I'd be happy to answer any questions or discuss how this system can be further improved or adapted.