Faculty of Computer Science and Information Technology
Course Name: Computer Vision
Course Code: AID-421

E-JUST

Gesture-Based Smart Presentation Assistant

Overview:

Develop a smart assistant system to control PowerPoint or Google Slides presentations using hand gestures and facial authentication.

The assistant should be able to:

- Recognize the presenter using face recognition.
- Control slide navigation using hand gestures (next, previous, start, end).
- Display presenter name and gesture status on the screen.
- Optionally, detect facial emotion to auto-pause the presentation during confusion.

Core Functionalities (Minimum Requirements):

1. **User Authentication:**
   - Use DeepFace or MediaPipe Face Mesh for recognizing the presenter.
   - Only authenticated users should be able to control the presentation.
2. **Gesture-Based Slide Control:** **Recognize at least 4 gestures:**
   - Next Slide
   - Previous Slide
   - Start Presentation
   - End Presentation
3. **Use MediaPipe Hands for gesture recognition:** **Live Gesture Feedback:**
   - Display gesture name and control feedback on screen (e.g., "Next Slide ✓").
   - Show presenter name and status on top corner.
4. **Emotion-Pause Feature (Optional):**
   - Use facial emotion detection to pause the presentation if presenter appears confused.
   - Display “Paused due to confusion” and resume after change in expression.
5. **Camera Calibration Module:**
   - Calibrate the webcam with OpenCV using a chessboard pattern.
   - Apply calibration to reduce distortion and improve gesture recognition accuracy.

Bonus Features(For Extra Credit):

- Voice feedback (e.g., "Next slide activated").
- Integration with PowerPoint API or browser automation tools.
- Gesture training mode to customize hand signs.

Deliverable:

- Fully working Python project.
- Report (3–5 pages) covering:
  - Introduction and objective
  - Used libraries and models
  - Screenshots and explanation of implementation
  - Challenges and how they were solved
  - Future work

Team Structure:

- Each team must consist of **exactly 6 members**.
- Members **should divide roles**:
  - Face & Emotion Detection.
  - Gesture Control Implementation.
  - Presentation Integration.
  - UI Feedback Overlay.
  - Camera Calibration & Testing.
  - Testing/documentation.

Submission Deadline: 13/05/2025

🎓 Wishing You All a Happy Graduation!

Congratulations! on reaching this milestone! May this project be a memorable and rewarding capstone to your academic journey. Best of luck in your future careers!