

Problem statement 4:

AI-Powered Interactive Learning Assistant for Classrooms

Objective: Build a Multimodal AI assistant for classrooms to dynamically answer queries using text, voice, and visuals while improving student engagement with personalized responses.

Prerequisites:

- Familiarity with natural language processing (NLP) and multimodal AI concepts.
- Knowledge of speech-to-text frameworks and computer vision techniques.
- Programming skills in Python, with experience in libraries like Hugging Face Transformers and OpenCV.

Problem Description:

Modern classrooms lack real-time, interactive tools to address diverse student needs and keep them engaged. The objective is to create a multimodal AI assistant that:

1. Accepts and processes text, voice, and visual queries from students in real-time.
2. Provides contextual responses, including textual explanations, charts, and visual aids.
3. Detects disengagement or confusion using facial expression analysis and suggests interventions.