Attention Span Detection in Online Instructor Led Sessions

Ministry/Organization name: Great Learning Education

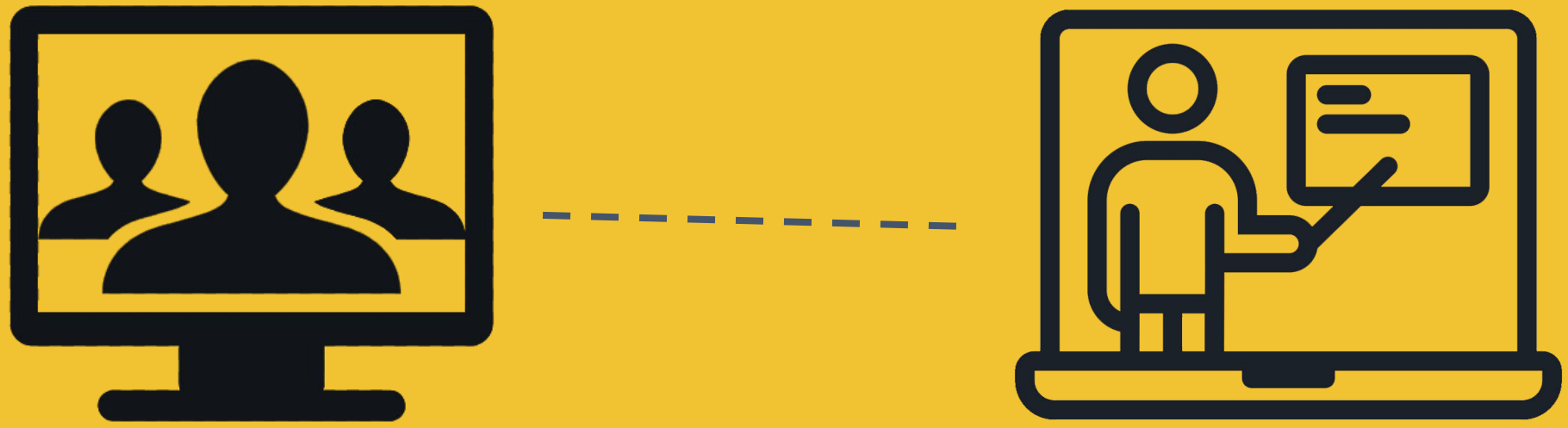
Team Name : INTANGIBLE

Team Leader Name : Tushar Mohandass

Technology Bucket : Smart

Problem Code : GL32

College Code : XXXXXXX



Problems in Online Instructor Led Sessions

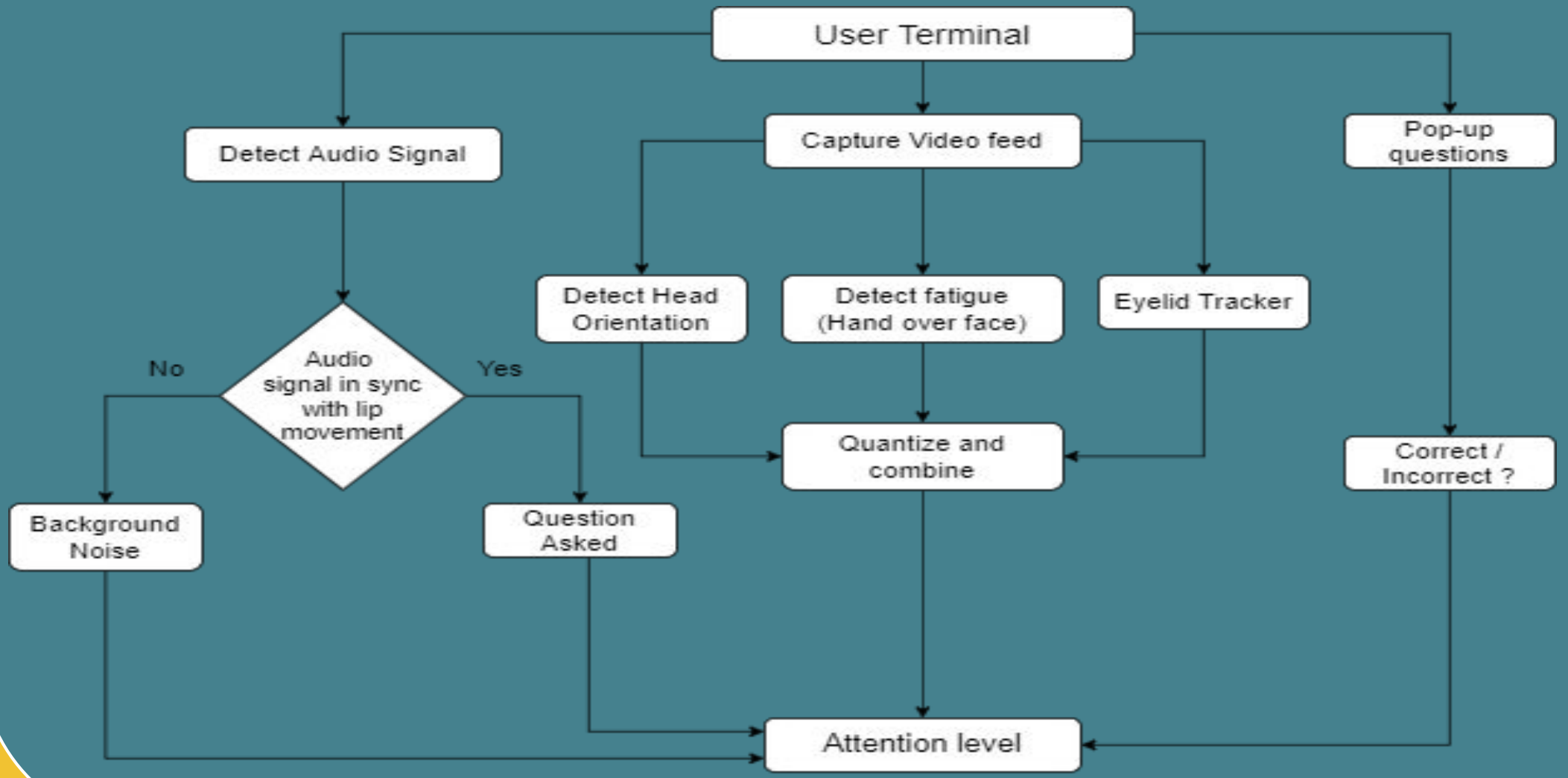
- Benefits of classroom based teaching are not fully realised
- Students tend to **slack off** and **loose attention** in such sessions
- A typical attention span of a student ranges somewhere between **10 to 15** minutes
- Difficult for the online instructor to figure out the **involvement** of every student
- The net **efficiency** in interactive sessions are much lower compared to offline video lectures where the student can revisit previous concepts that were not clear before
- There is no mechanism for **self assessment** by which the student can work to improve his/her focus and concentration

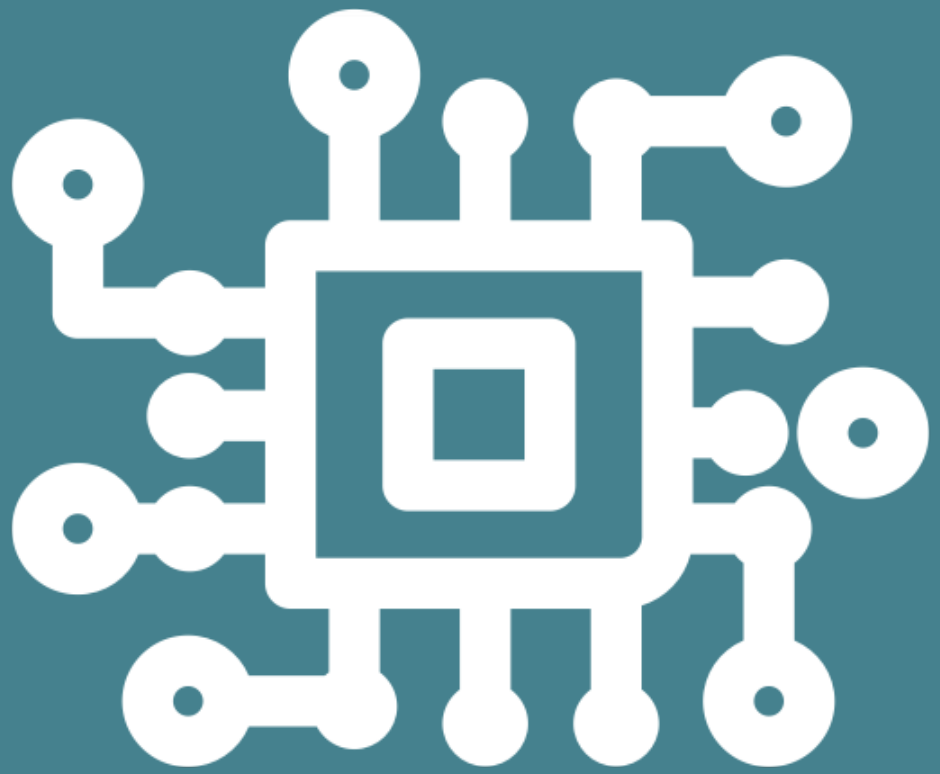
Idea Proposed

- User’s video is captured, audio signal is detected and responses from pop-up questions are recorded
- Captured video is used to detect **head orientation, fatigue level and tracking of eyelids** using Deep Learning Models like **CNN, RNN, RCNN,** etc.
- Audio signal is synchronized against **Lip movement** to check for **background noise** using **Audio Signal processing** to determine One-way vs Two-way dialogue
- The real time dashboard collects the data from the above analysis and displays the **attention level** for every student to the instructor

Idea Proposed

Metrics for assessing student involvement : Real Time Process Flow

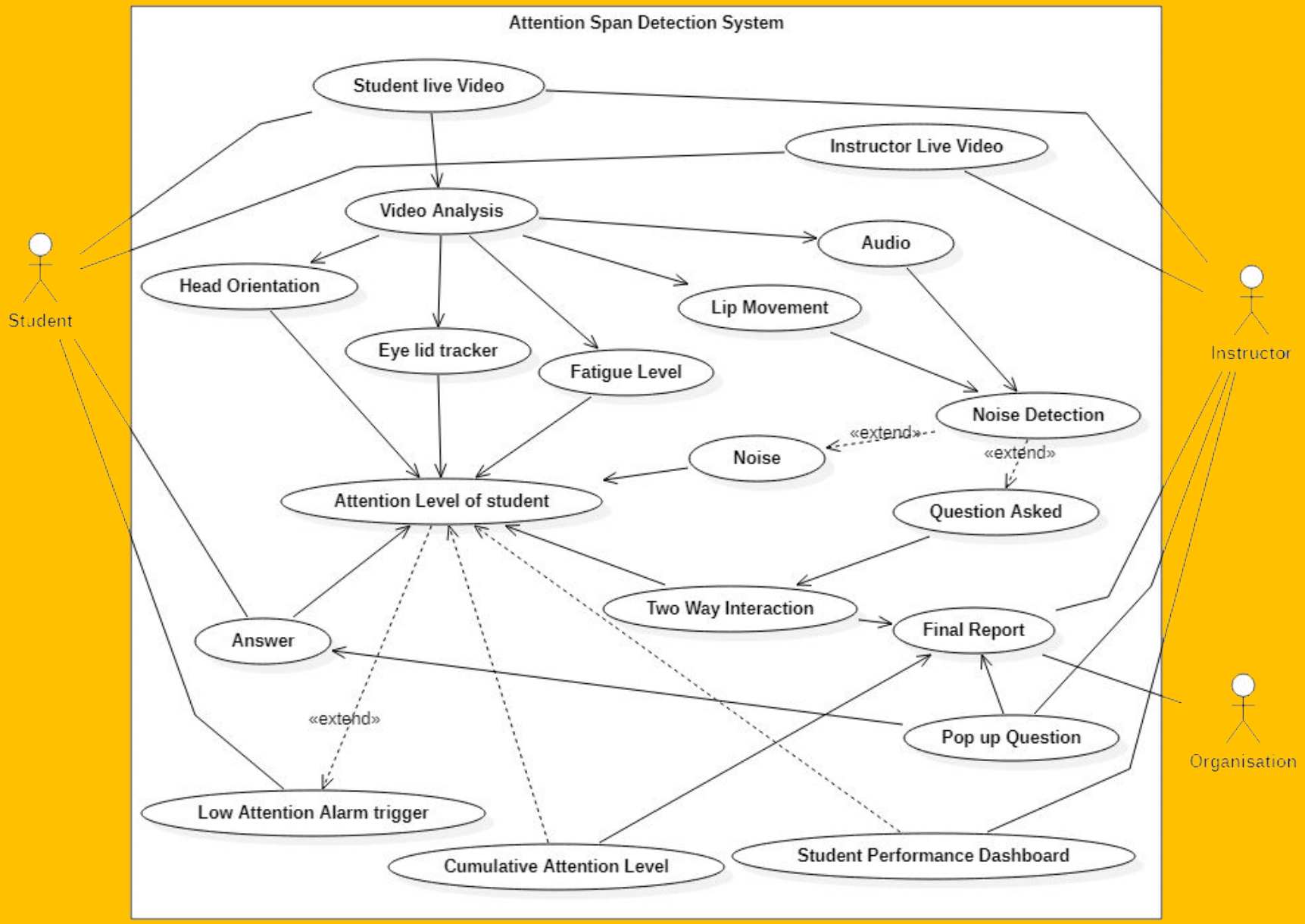




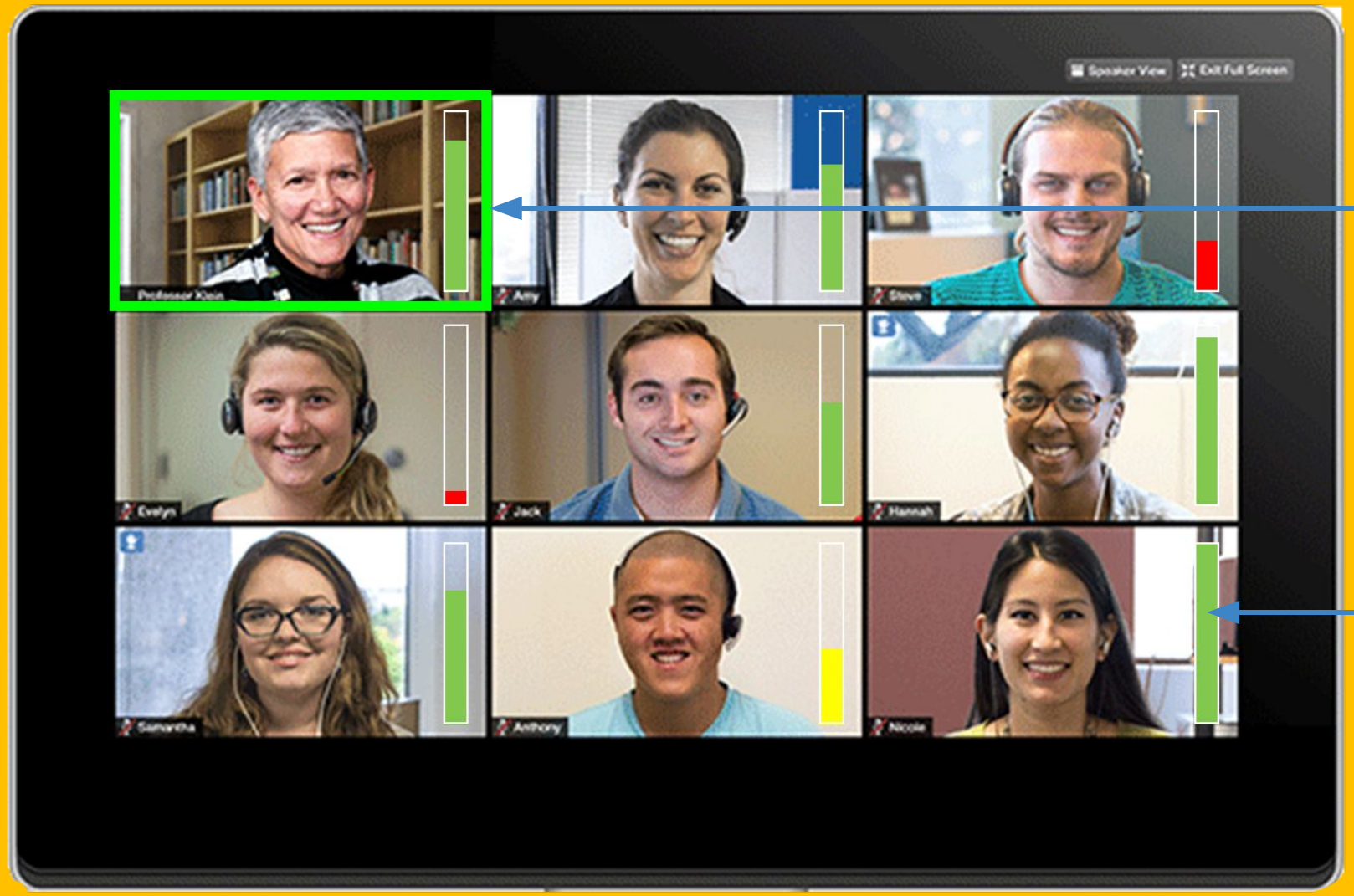
Technology Stack

- Video Analytics
- Audio Signal Processing
- Deep Learning
- Transfer Learning
- Software Development
- Web Development
- Python Programming
- Java, Javascript, HTML

Usecase Diagram of Attention Span Detection Software



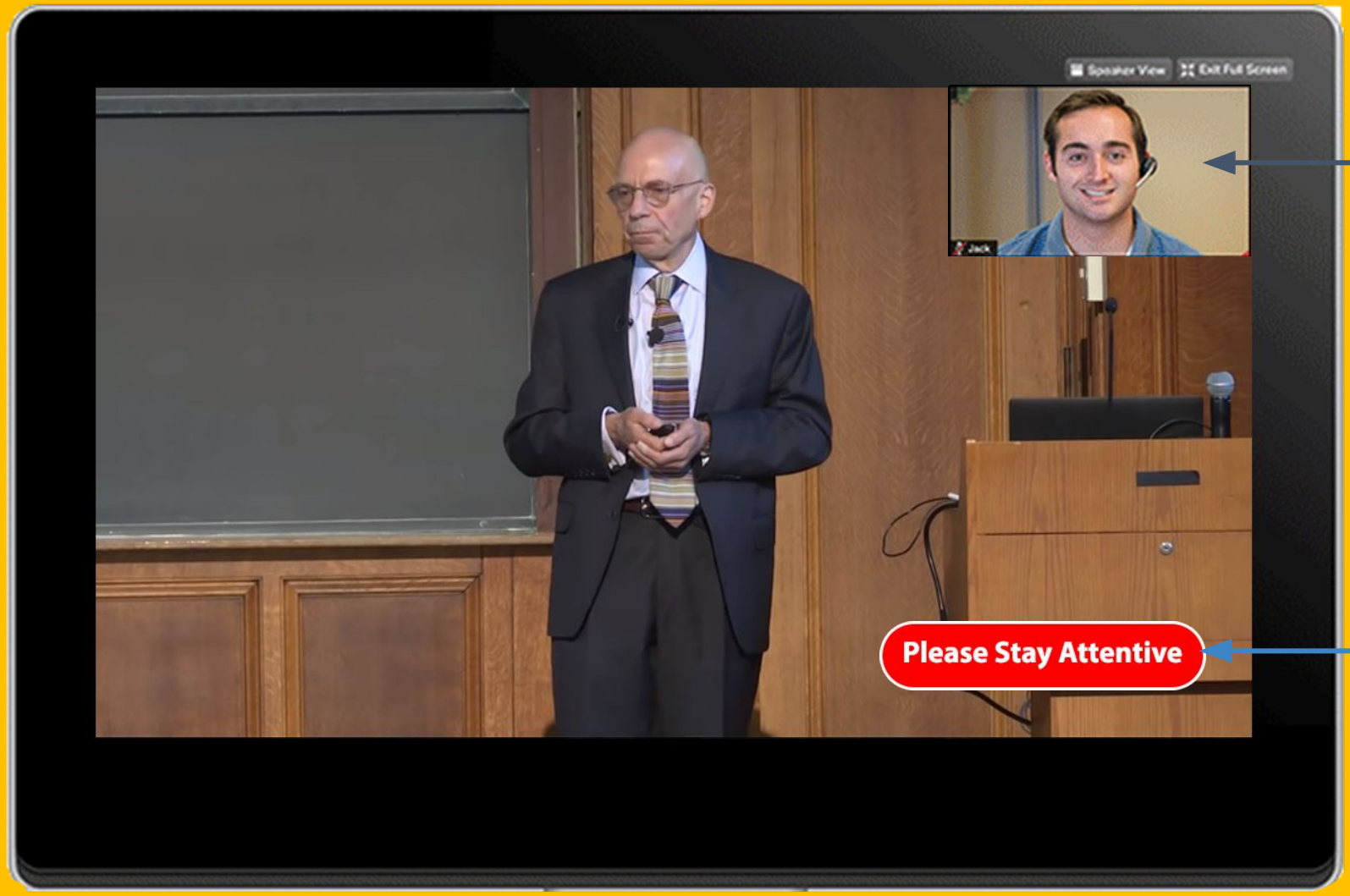
Real Time Student's Attention Dashboard (for Instructor)



Highlighting students video indicating the question is asked by that particular student

Attention Level

Real Time Instructor Led Session (for Student)



Student Video feed

Low Attention Alarm Trigger

Instructor Led Live Session Report

Session Report					
Name	Student 1	Student 2	Student 3	Student 4	Student 5
Attention Span	16 / 20 min	12 / 20 min	19 / 20 min	17 / 20 min	15 / 20 min
Average Attention Span	80 %	60 %	95 %	65 %	75 %
Background Noise Level	---	---	---	---	---
Questions Raised	---	---	---	---	---
Question 1	---	---	---	---	---
Question 2	---	---	---	---	---
Question 3	---	---	---	---	---
. . . .	---	---	---	---	---
Question n	---	---	---	---	---
Overall Session Score	---	---	---	---	---

Dependencies/Show stopper

- Internet Connectivity
- Student’s live video and audio
- Video quality
- Audio quality

The impact we wish to create !!

- **Personalized Attention** in online interactive environments
- A gauge to understand student participation and involvement
- Help tutors design courses for effective conceptual clarity and hands on sessions
- Build a holistic concept for Virtual Classroom

Thank You