CSE563: Internals of Application Servers

Final Demo : Sample Application

Class monitoring system: This is a web application used to automate controlling the classroom peripherals (Lights , fans), taking attendance and giving feedback about the students (their attentiveness or emotions) to the teacher.

Input Sensors :

- Each classroom has 3 cameras.
- 4 light sensors and 1 temperature sensor.

Notification and Controllers :

- There are controllers controlling the fan speed and the intensity of the light.
- The list of students attended and the average emotion/attentiveness should be displayed on the UI and sent as a notification to the teacher.

AI Models needed:

- Face Detection (input image → Detects the different faces present in the image)
- Face Recognition (input face → Detects from the database who is this person)
- Emotion Detection (input face → Detects the emotion from the face (sad,attentive etc))
- Motion Detection (input 5-6 images → Detects if there is any motion)

Use Cases :

Feature 1: Attendance : (3 input sensors,2 models and sends notification)

- Each camera in the classroom will be sending images periodically.
- The faces in the images have to be detected and for each face recognition has to be run.
- By the end of class a list should be displayed with unique names who attended the class on the web app and the list has to be forwarded to the professor

Feature 2: Attentiveness: (3 input sensors,2 Models and sends notification)

- From the same cameras above after face detection for each face the emotion has to be predicted
- From the average emotion get the attentiveness of the class. (Make assumptions like if majority of class is happy it was attentive or if class was bored/sad it was inattentive)
- The notification should be displayed on the UI

Feature 3: Classroom peripheral control : (bursts of images 5)

- Should detect if there is any motion in the image.
- Depending on the motion switch on the lights.
- Take the continuous stream of temp data as input and control the fan.

Deployment details :

- Sensors should be registered with classroom names
- Application should be deployable by just providing the classroom name and the corresponding sensor binding should happen.
- The application should be running in the given class duration