Ministry/ Organization name: Government of Sikkim

Problem Statement : CLASS ROOM ATTENDANCE DISPLAY (SG433)

Team Name : Synapse

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IDEA

1.Two CCTVs are placed at the entry and exit to capture the images of students.

2.An embedded system (any single board computer with accelerated GPU) is used to run face detection and recognition algorithms.

3.The captured images are fed to deep neural networks (such as Multitask Cascaded Convolutional Neural Networks ,etc) and the total number of students is displayed using nextion display board after the face detection.

4.After the face detection , the faces are recognised by annotating the labels with Regions with CNNs (which are trained on the database of students collected explicitly).

5. The recognised faces are transferred to the local server hosted via LAN after the teacher locks the number of students in that particular period. This process is repeated periodically.

6. The attedence is given periodically and stored in the master database of local server . The database is maintained using the SQLite as a database management framework.

7. UI is created in such a way that students can check their attendence and any authorised person can do necessary changes in some situations. The attendence can be monitored based on student's entry and exit from the class.

Technology Stack:

1. Tensorflow.

2. MATLAB with ONNX.

3. SQLite for DBMS.

4. Python for UI.

Dependencies:

1. Image Dataset of Individual student at 40 instances.

2..Raspberry pi 4 (4 GB variant).

3.HD CCTV cameras.

4.Nextion display.

4.CPU for hosting local server.

5.GPU accelerators for training the neural networks.

Use case: