Instruction Manual

for

Facial Recognition for Student Attendance

Our Team (BE COMP 2022-23)

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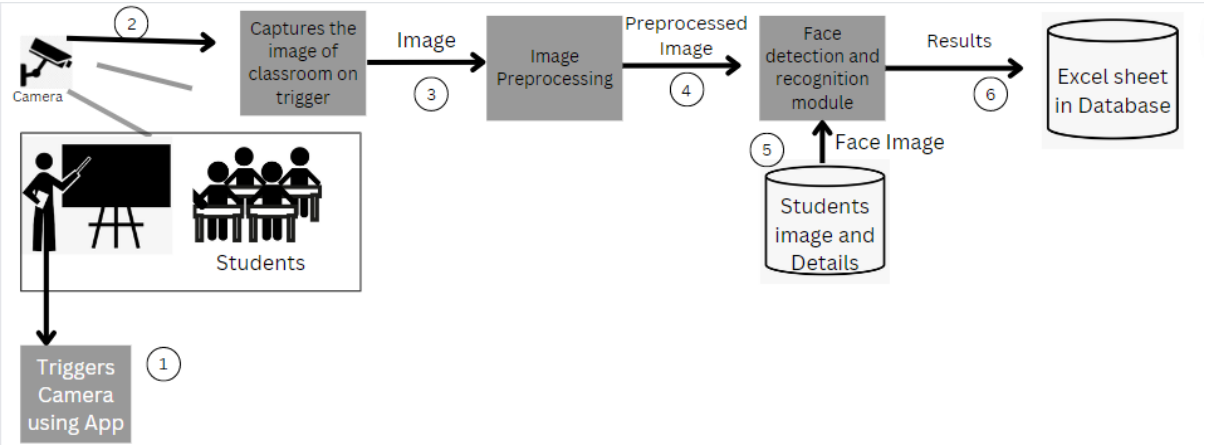
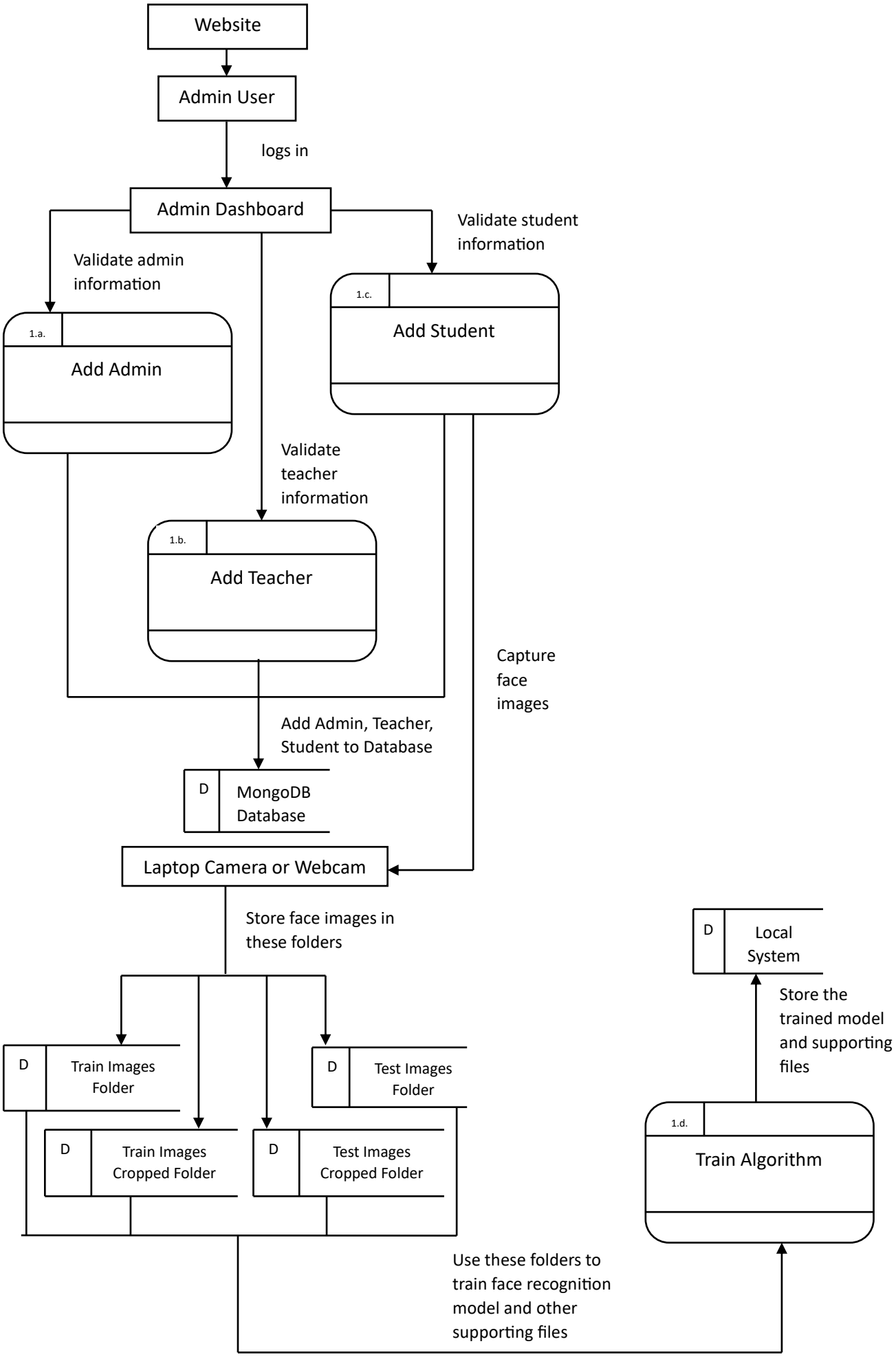
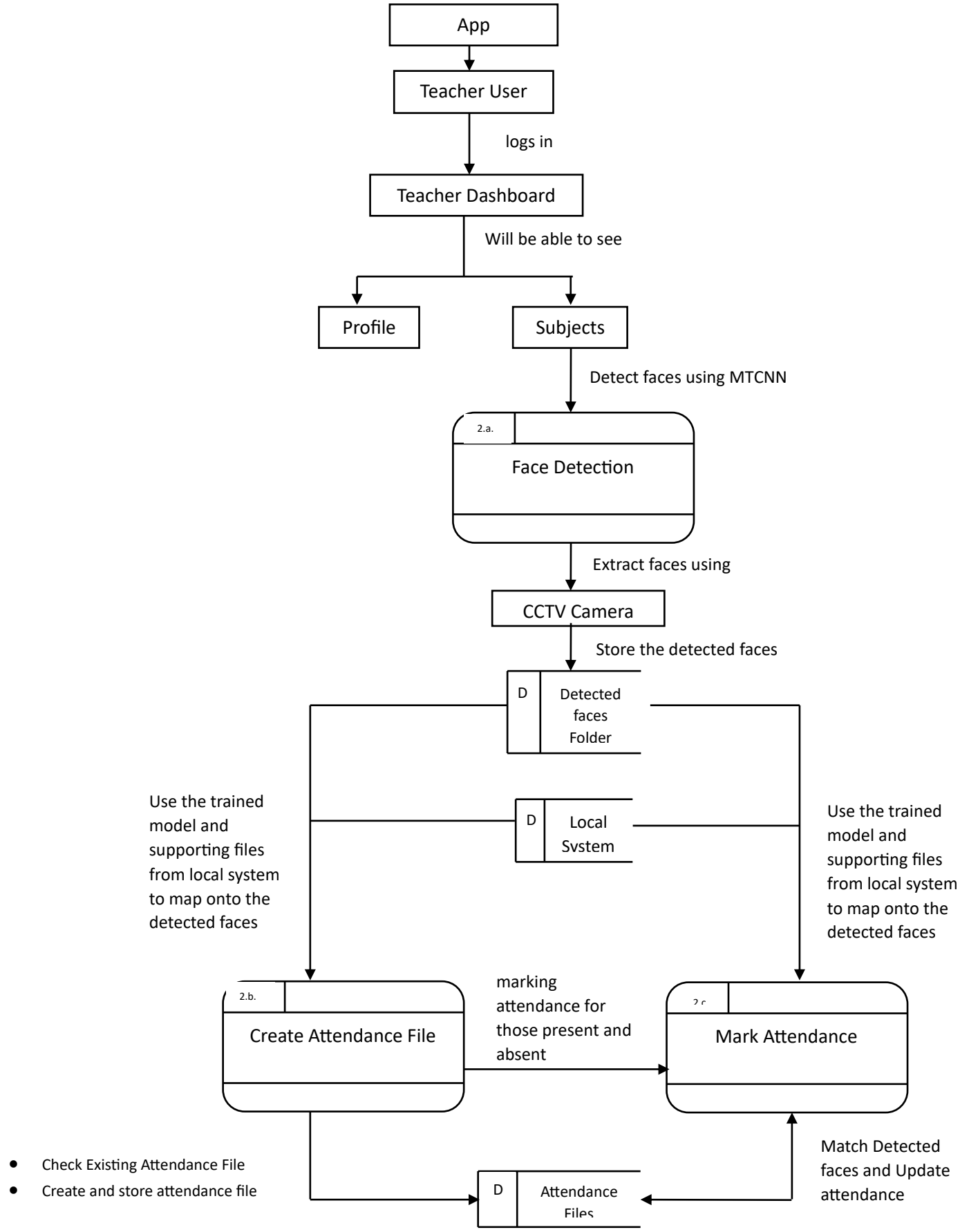
System Architecture:



DFD for Admin


Website
Admin User
logs in
Admin Dashboard
Validate admin information
Validate student information
Validate teacher information
1.a.
Add Admin
1.c.
Add Student
1.b.
Add Teacher
Capture face images
Add Admin, Teacher, Student to Database
D
MongoDB Database
Laptop Camera or Webcam
Store face images in these folders
D
Train Images Folder
D
Test Images Folder
D
Train Images Cropped Folder
D
Test Images Cropped Folder
D
Local System
Store the trained model and supporting files
1.d.
Train Algorithm
Use these folders to train face recognition model and other supporting files

DFD for Teacher



- Check Existing Attendance File
- Create and store attendance file

Before Deployment:

Make sure to do the installations as given below: -

Connection of CCTV camera to an app: -

The CCTV camera comes with an app in which it will start working for real-time video processing. This step is necessary to get the RTSP link from the ONVIF device manager which is to be used in the code app_project.py

The app is called “iCSee”. You can download the app with this link:

https://play.google.com/store/apps/details?id=com.xm.csee&hl=en_IN&gl=US

Once downloaded, follow these steps.

Step 1: Use the power adapter to connect the camera power interface and the power socket.

Note: If you need local storage, please install the memory card firstly, then power on the device (the memory card does not support hot swapping, please plug and unplug the memory card when the device is powered off).

Step 2: Open up the app and connect your phone to the Wi-Fi (4G most preferrable) to register an account and login

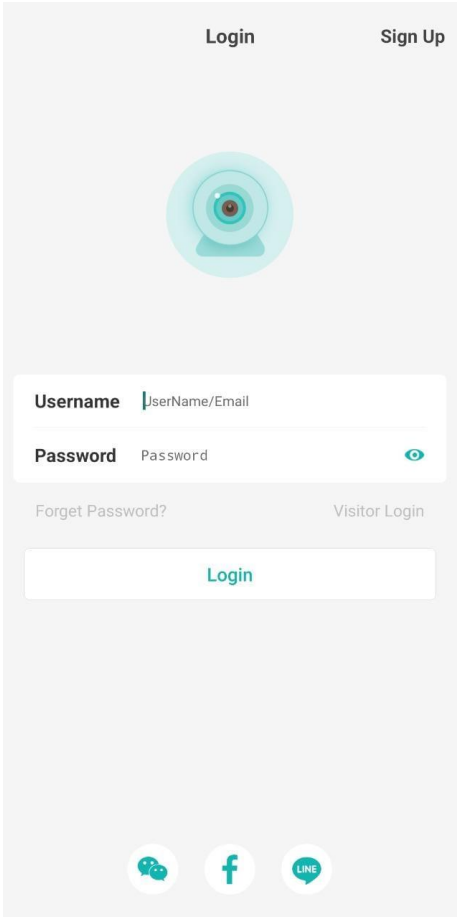


Fig. 1: Step 2 of iCSee app

Step 3: Click the "+" button to add device

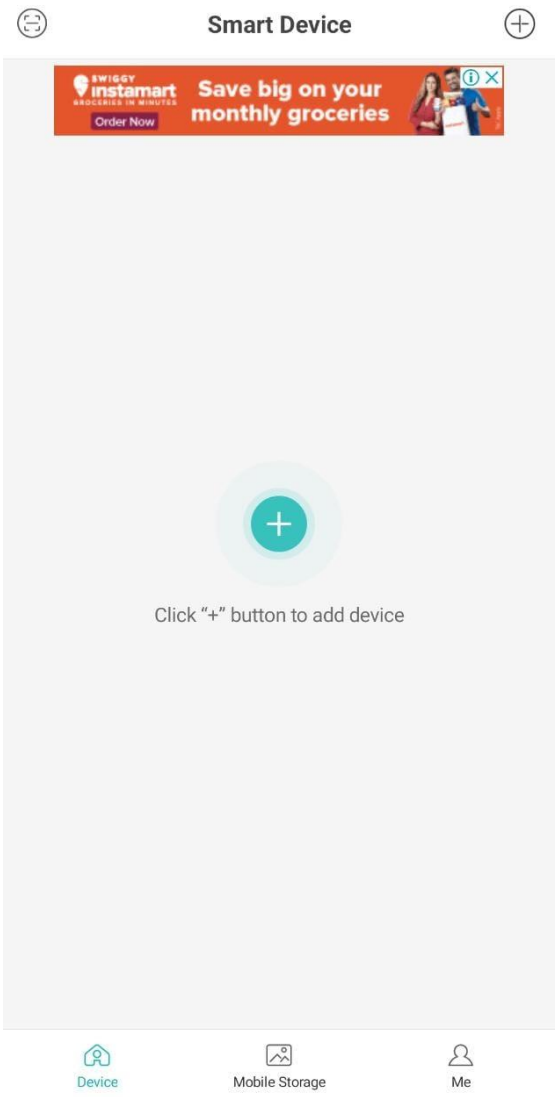


Fig. 2: Step 3 of iCSee app

Step 4: Select “WiFi Camera”

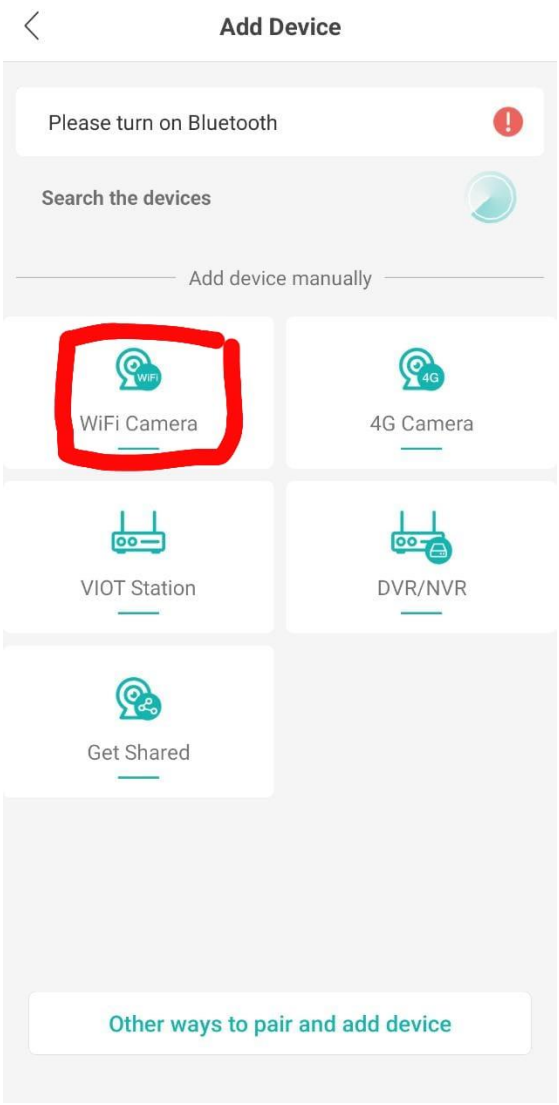


Fig. 3: Step 4 of iCSee app

Step 5: Click “Next” two times.

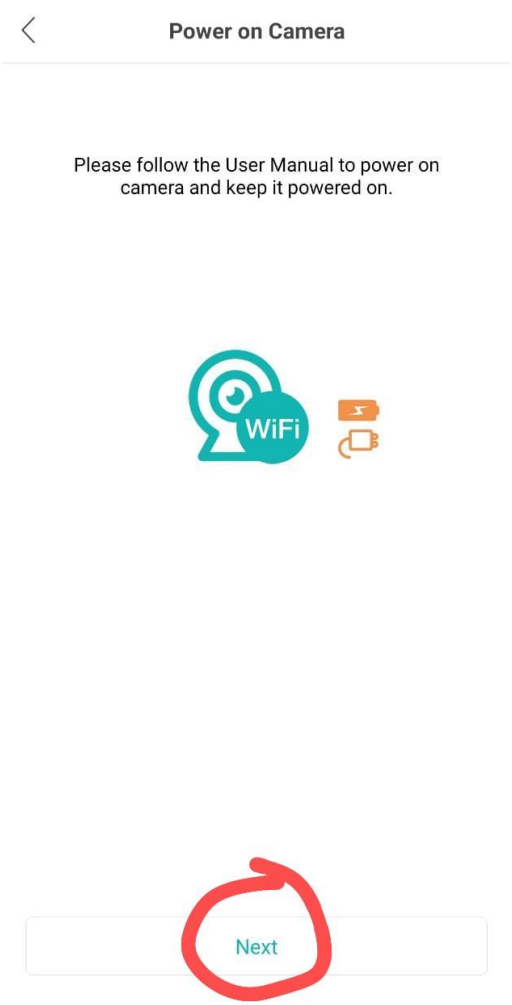


Fig. 4: Step 5 of iCSee app

Step 6: Type in the password of your Wi-Fi. This step will automatically detect your wifi and will display the name. Then click “Confirm”.

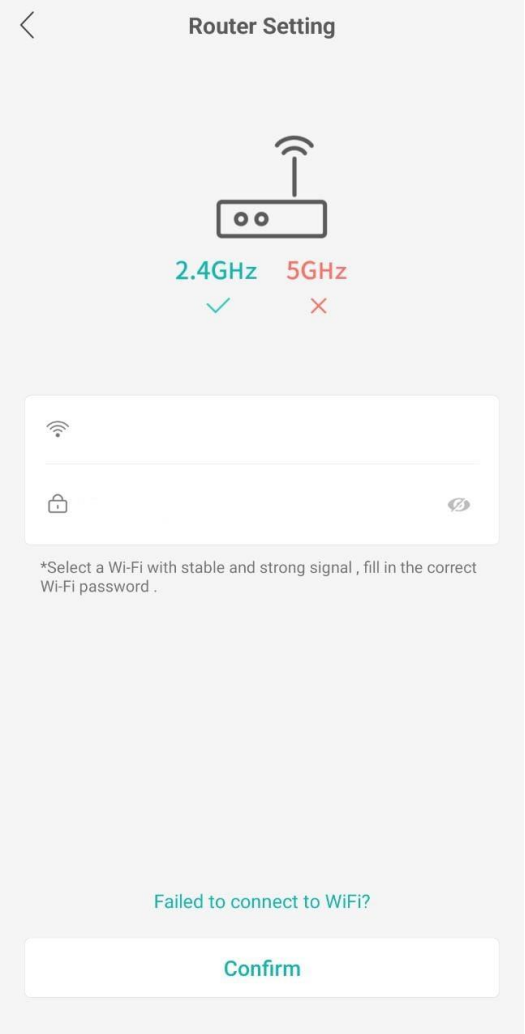


Fig. 5: Step 6 of iCSee app

Step 7: Click “Next”

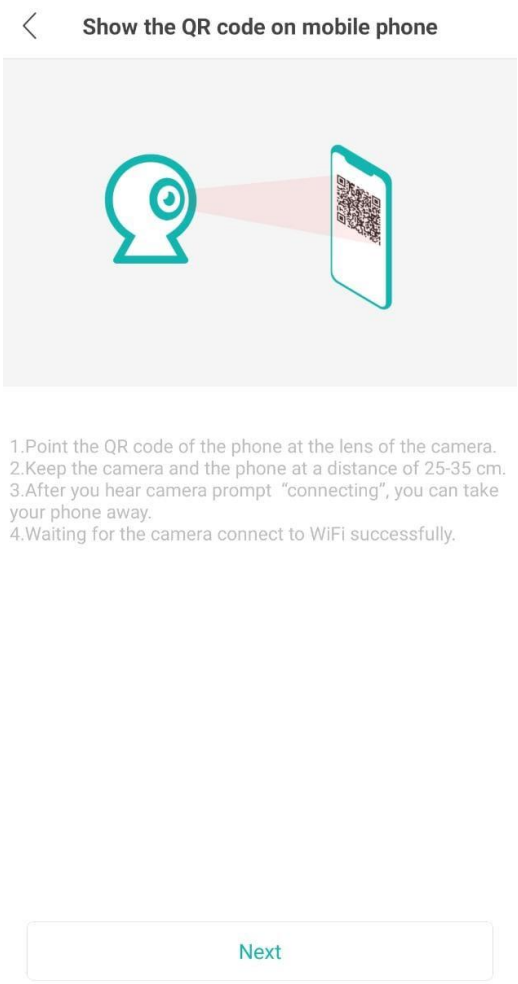


Fig. 6: Step 7 of iCSee app

Step 8: Connect the camera given the QR code. And put it close to the camera about 25-30 cms at the most.

Fig. 7: Step 8 of iCSee app

Step 9: After it has said, “Connected to router successfully”, the following page appears. Now, enter the password for the camera.

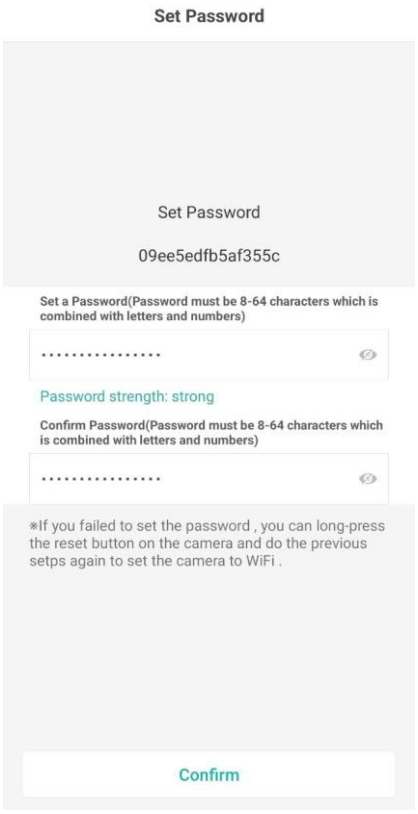


Fig. 8: Step 9 of iCSee app

Step 10: Name your camera

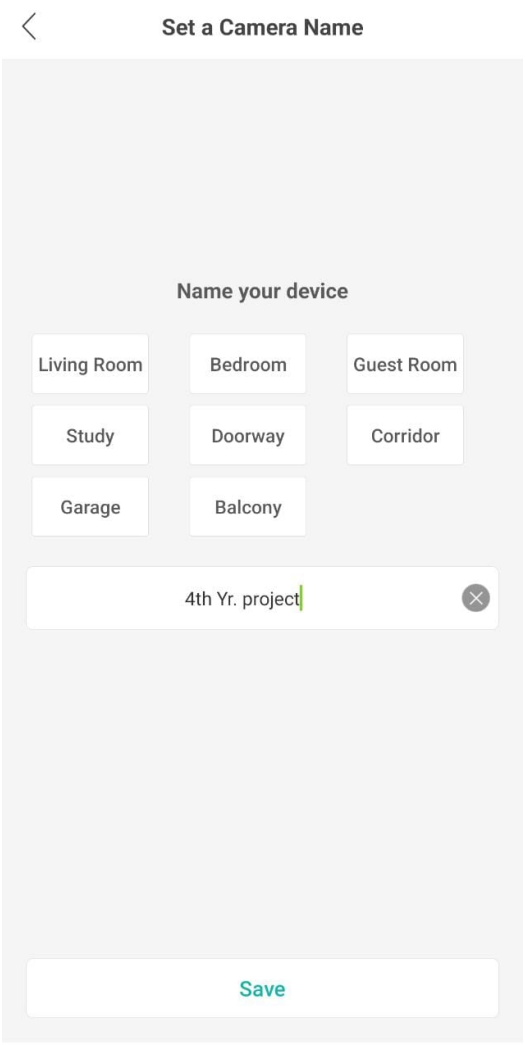


Fig. 9: Step 10 of iCSee app

Step 11: Click “Next”.

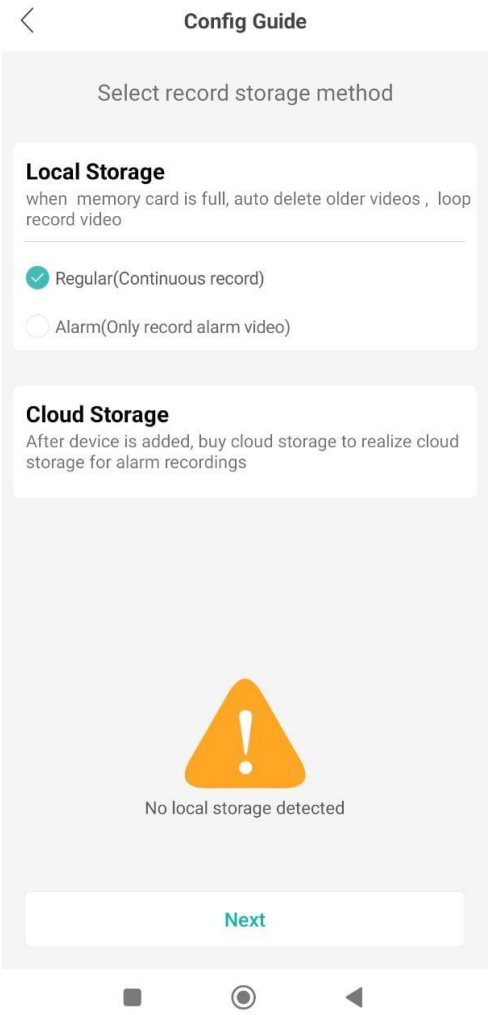


Fig. 10: Step 11 of iCSee app

Step 12: Your camera is now ready. Click the play button to see the features and play around with it.

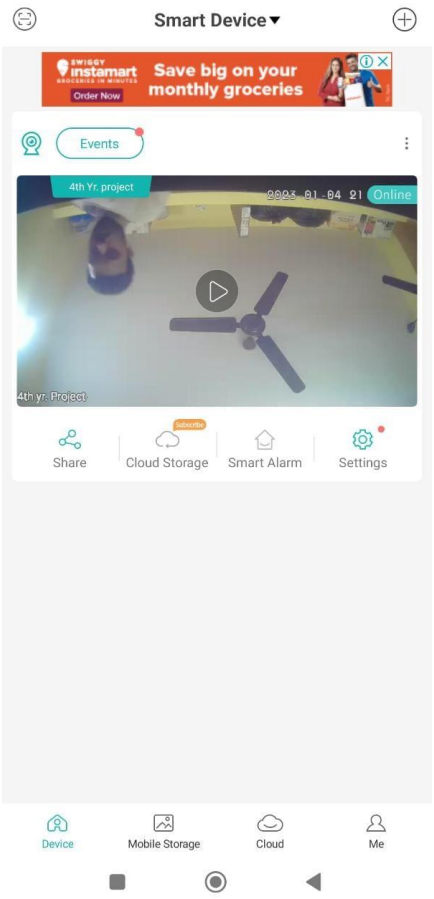


Fig. 11: Step 12 of iCSee app

ONVIF Device Manager: -
The RTSP link can be obtained utilizing ONVIF Device Manager software.

The following outlines the process for downloading the ONVIF Device Manager software:
Link to download: https://onvif-device-manager.software.informer.com/download/

After installation, follow these steps to get the RTSP link.
Step 1: Open up the app.

Step 2: Click the "Live Video" with the red arrow button. And then you will get a real-time video with an RTSP link below that (given in red box).

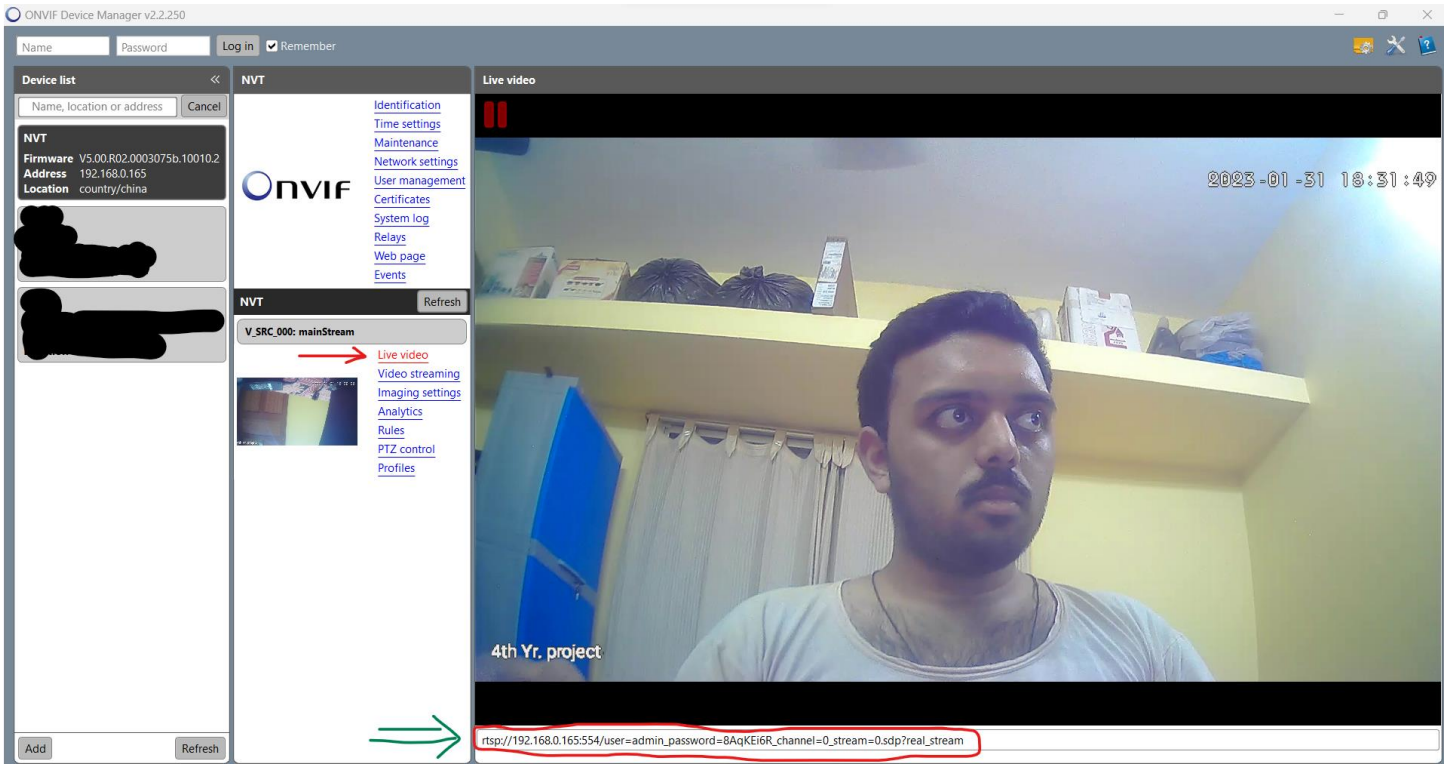


Fig. 12: Step 2 of ONVIF Device Manager

On Local System: -

Name	Date modified	Type	Size
.git	05-Jun-23 11:57 AM	File folder	
App	05-Jun-23 11:57 AM	File folder	
facenetp	05-Jun-23 2:18 PM	File folder	
Website	05-Jun-23 12:01 PM	File folder	

Make a folder say “FYProject” and it should contain these files. You can get these files from the following:

GDrive: https://drive.google.com/drive/folders/1OkYm02d68RWapgYc_l-ZZVok5kDGJ1V2?usp=drive_link

OR

GitHub: Will upload soon

Next, go to cmd (Command Prompt) and change directory using “cd” for those folders (Except .git) and type code . (This opens visual studio code) for each.

Once done, open visual studio code for “facenetp” and type the following:

1) Type in cmd prompt: **python -m venv myenv**

This will create a virtual environment in python.

2) Next to activate the script in cmd: **myenv\Scripts\activate**

3) requirements.txt is in this directory. Type this in cmd: **pip install -r requirements.txt**

This will install all the libraries, dependencies, and tools required for this project under this environment.

Once done, then go to visual studio code for “App” and do the following:

- Go inside “studface” folder and run: **npm install**
- Similarly go inside “backend” folder and run: **npm install**
- Do the same for “Website”

- And in frontend code, change the IP address.
- You can find it in command prompt by entering command “ipconfig”
- IPv4 address will be the address.
- Like for “Website” on those particular components given in pic below:

Fig. 13

- In app, frontend files only you'll need to change the IP address in “screen” folder there are files like Files.js, HomePage.js, LoginScreen.js, Profile.js and SubjectDetails.js. Other than LogoScreen.js file, all other files in “screen” folder, there you will find IP address that you'll need to change accordingly. Like in the pic given below:

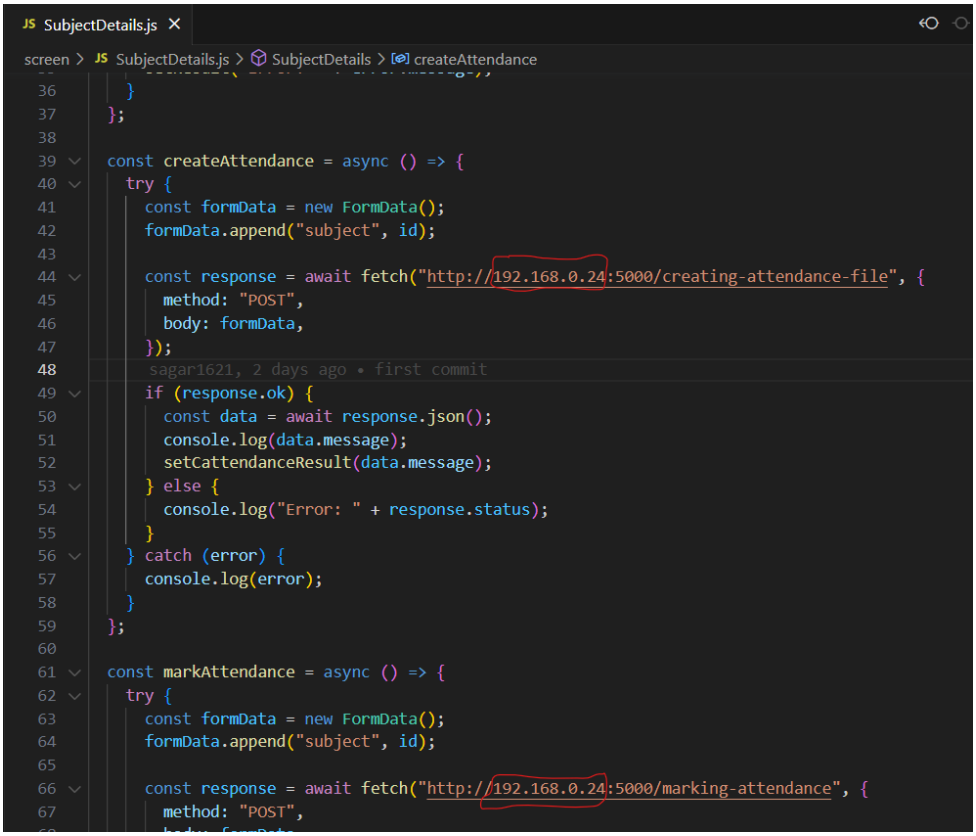


Fig. 14

- And video capture will be 0 in files where camera is needed to access your laptop camera instead of RTSP link which is there in that.
- To test app, download the app “EXPO GO”, on play store you will find it.

- Next, download MongoDB. Link is given here: https://www.mongodb.com/try/download/community

  Make sure to download the Version 5 as that is the stable version till now. Package should be .msi

  Run the .msi file, go to the MongoDB folder (mostly will be in C drive -> Program Files), enter the bin (binary) folder and copy the path. Add these to “Environment Variables”:

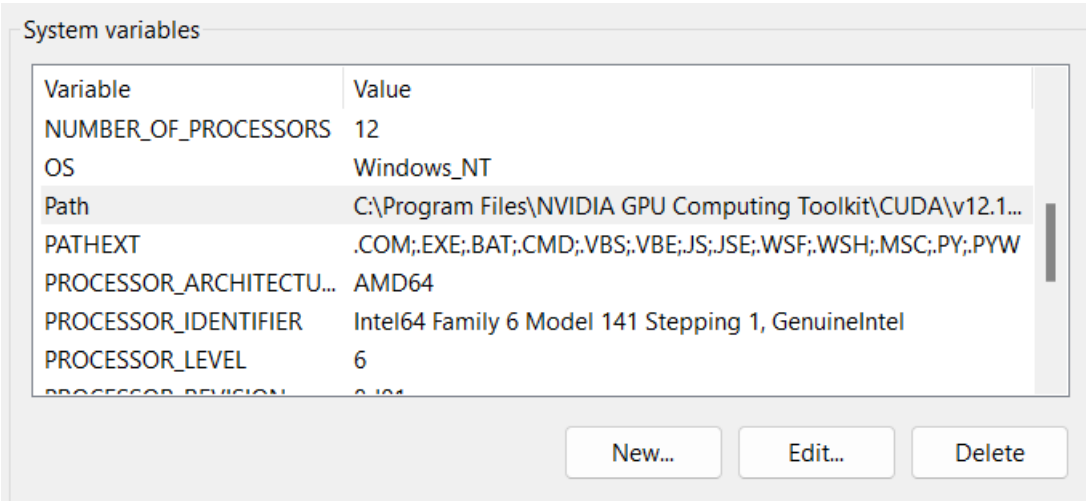


Fig. 15

Go to “Path” and click “Edit”. Then click “New”. Then click “Ok” 3 times till “System Properties”.

Next, open “MongoDBCompass”. Click “New Connection”. And do the following according to the pic given below:

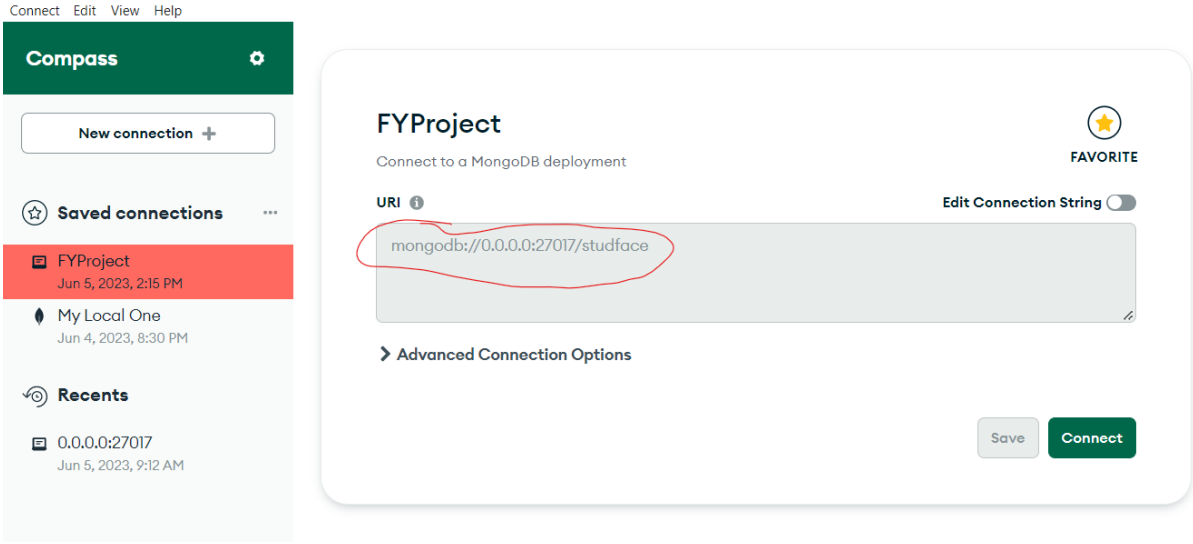


Fig. 16

Type the URI given in red circle and click “Connect”. The URI can also be obtained from the app / website “backend” folders under .env like given below:

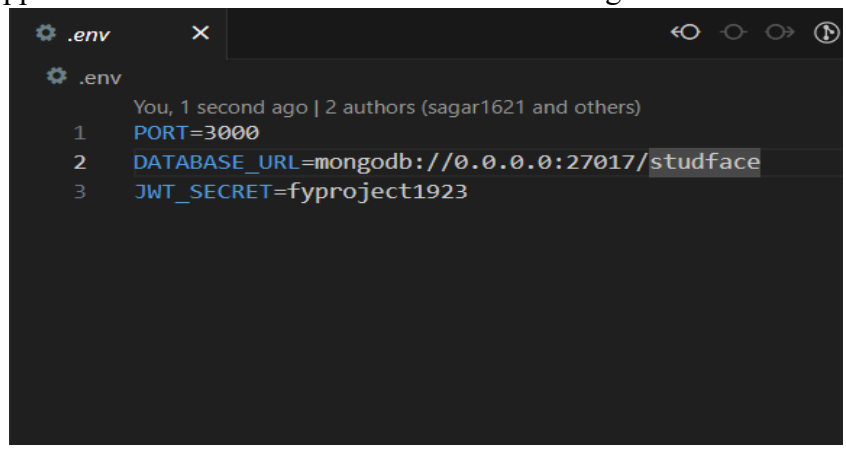


Fig. 17

Once successful connection, this is what will appear:

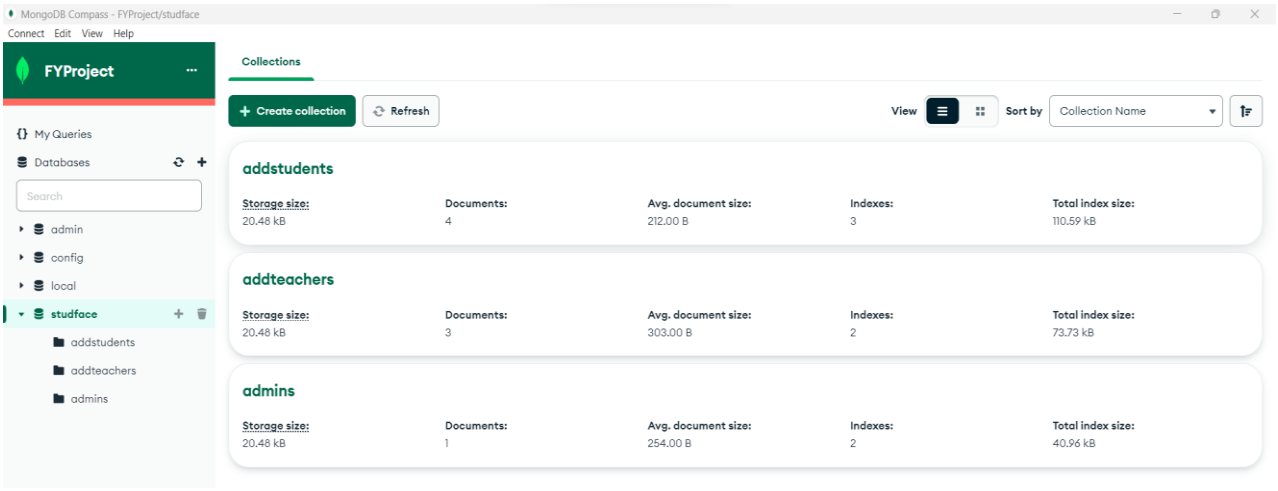


Fig. 18

Deployment Time:

- To run website, frontend: **npm run dev**

- To run website backend: **npm start**

- To run app, frontend: **npx expo start or expo start**

  Then QR code will appear. Scan it using expo go app.

- To run app, backend: **npm start**

- To run API in “facenetp” folder, api_project.py: **python api_project.py**

Keep these running and now you can play around. 😊