



# VIDEO ATTENDANCE MODULE

CS 101

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## User Manual

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# 1 What's new?

These are some features which our application has to offer over the existing technology to mark attendance for students or employees across institutions around the world.

- **Visual Attendance Module v0.1** is the alpha release of a Face Detection and Recognition Module
- Human effort is remarkably reduced. Apart from the minimal amount of supervision required to train the machine to recognize faces, there is no human intervention required for the execution of the application.
- The application is capable to recognize multiple faces in the same frame, thus enabling it to mark attendance for multiple persons at once.
- The Program also has a very user friendly GUI which makes it easy for both clients and administrators to use and update.

## 2 Setup

In the current release, Video Attendance Module v0.1 is compatible with Microsoft Windows OS 7 and above.

### 2.1 Installing OpenCV

To download OpenCV(Open Source Computer Vision), visit: [www.opencv.org/downloads](http://www.opencv.org/downloads) and download the latest version (preferably 2.4.9 or above)

### 2.2 Installing Visual Attendance Module Executable

Download our Executable File(Windows Only) from <https://github.com/cheekujodhpur/cs101>  
After Download, Follow the instructions of the Install Wizard. Install the .exe in the same folder as that of your OpenCV Libraries( Or manually Link them to the Program)

## 3 Tutorials

The program has very clear instructions and hence,too may complications will not arise while using it. A brief Tutorial is given below.

### 3.1 For Students

- There are 2 Modes: i)Static Mode and ii) Attendance Mode. To give your Attendance, click on the "Attendance Mode" Radio Button. When your face is recognized, a Message will pop-out with your Name and Roll-No. If both of the above match, click on the 'Okay' Button and complete the attendance procedure.
- Note: Your Images must be trained on the System, or it rise to incorrect or no recognition. Please Contact your administrator to add your data to the Database.
- When a student is added to the Database, Each student is provided with a unique id which must be remembered for security purposes (in case of any discrepancies)

### 3.2 For Administrators

Administrators have more rights and extended accessibility of the internal features of the program. Every administrator has a unique username and password which He/She will use to login to the Admin Page of the Software. In the Admin Page, the administrator has options to:

- To Add Students, Click on the 'Add' Button and Then click on 'Students'
- To Add New Administrators to the Database, Click on the 'Add' Button and Then click on 'Admin' (Only Available to Level 2 access members) Note: The new Created administrators are by default Level 1 access only. Hence the have fewer features.
- Settings Page has changeable values to customize the program.
- Administrator also has Database Searching rights by means of which he can search for a certain student or another administrator. The Admin can search by Name or by Roll Number.
- Administrator also can retrain images for a pre-existing students to continuously update students by clicking the 'Retrain' Button.

## 4 Extending and Embedding

Visual Attendance Module v1.0 is built under GNU General Public License. You can fork the source at <https://github.com/cheekujodhpur/cs101> and extend it to your desired needs. This version does not allow support for preparing the application for an embedded system. However, there is no difficulty other than having the required dependencies parallel to the application while executing the application on a custom architecture. This constraint is elaborated in the System Requirement Specifications Document, which can be found on our website.

## 5 FAQs

**Q. How does it work?** We use Intel's OpenCV library to capture and process frames from a Webcam. The data is represented via a Eigen Face mechanism and the match likelihood is used as a confidence parameter to identify faces

**Q. How many students can be added to a database?** We recommend dividing student databases into smaller divisions due to training and accuracy constraints. A database with groups of 50-100 students each would be ideal.

**Q. What if my face is not recognized?** We recognize the lack of complete accuracy in Face-Matching Algorithms, and hence there will be an option of manual attendance in case of non-recognition.

**Q. How accurate is the program?** Since pictures are highly dependent on illumination, it may vary. But in constant illumination and with well trained pictures, it gives an ideal accuracy of 80%.  
**Note:** We encourage more questions and they can be posted along with your queries on [home.iitb.ac.in/keshavsrinivasan](http://home.iitb.ac.in/keshavsrinivasan). We appreciate feedback, so we can improve Further Versions of our software.

## 6 Known Issues

- Abrupt changes in facial features, although unlikely is known to cause inaccuracy in prediction.
- Facial effects such as sunglasses and cape hinder the function of the application as bad as the last point.
- The recognition is illumination dependent. There is a listed feature-request to make our algorithm illumination independent and it is expected to be included in the beta-release

- Subject can come up with a bizarre facial expression to confuse the machine but it is unclear why would anyone want to do so.