

**PROJECT REPORT**  
**on**  
**Face Recognition Attendance System**  
**(CSE V Semester Mini Project )**  
**2021-2022**



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## CERTIFICATE

Certified that Mr.Divyakant Sundriyal (Roll No.- 1918333) has developed mini project on “Face Recognition Attendance System” for the CS V Semester Mini Project Lab (CSP-501) in Graphic Era Hill University, Dehradun. The project carried out by Students is their own work as best of my knowledg

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## **ACKNOWLEDGMENT**

I would like to express our gratitude to The Almighty God, the most Beneficent and the most Merciful, for completion of project.

I wish to thank our parents for their continuing support and encouragement. I also wish to thank them for providing us with the opportunity to reach this far in our studies.

I would like to thank particularly our project Co-ordinator Ms. Preeti Chaudhary and our Project Guide Mr. Sushant Chamoli for his patience, support and encouragement throughout the completion of this project and having faith in me.

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At last but not the least I greatly indebted to all other persons who directly or indirectly helped me during this work.

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## TABLE OF CONTENTS

CHAPTER NO.	TITLE
	<b>Abstract</b>
<b>1</b>	<b>Introduction</b>
1.1	Project Definition
1.2	Project Objectives
1.3	Project Specifications
<b>2</b>	<b>Literature Review</b>
	Project Background
<b>3</b>	<b>System Design</b>
	Design Constraints
	Design Methodology
	Implementation
<b>4</b>	<b>Project Analysis</b>
	Project Motivation
<b>5</b>	<b>Conclusion</b>
<b>6</b>	<b>References</b>

## **ABSTRACT**

Face detection and face recognition are very important technologies these days, furthermore we noticed that they got have a variety of uses such as cellphones, army uses, and some high risk information offices. We decided to make a device that detects and recognize the face as a student attendance system and can be a substitute for the regular paper attendance system and finger print attendance system. The main function in our project is going to be done using LabVIEW because, LabVIEW is a very helpful programming tool in regards of facial uses and very helpful in other uses. Our project is based on a main program in LabVIEW that detects and recognize faces with giving scores and parameters, furthermore the subsystems are an Excel sheet that is integrated with the program, and a messaging device that is for either a message for absent students or to the student's parents. Components of our project are LabVIEW program as the main system and subsystems, Office Excel sheet to include students names, and a computer (or laptop) to integrate the programs together.

# INTRODUCTION

## Project Definition

Design of an automatic class attendance system using face detection algorithm of LabVIEW software. The system requires a video capture device and the running LabVIEW algorithm to be implemented successfully. It detects the faces and mark attendance accordingly. This system will prevent unnecessary wastage of time of classes that is usually wasted in form of class roll calls.

## Project Objectives

1. Reducing time wastage during conventional class attendance.
2. Utilizing latest trends in machine vision to implement a feasible solution for class attendance system.
3. Automating the whole process so that we have digital environment.
4. Preventing fake roll calls as one to one attendance marking is possible only.
5. Encouraging the use of technology in daily lives

## Project Specifications

- a. Uses Pattern Matching algorithm for face detection.
- b. Score of minimum 600 required to perfectly match a face.
- c. Metric: Camera Resolution.
- d. For prototype fixed to 10 users only but scalable design.
- e. Requires good lighting condition for better camera capture capability.
- f. Attendance sheet is .xlsx format and can be digitally distributed and maintained.

## **Literature Review**

### **2.1 Project background**

In the face detection and recognition system, the process flow is initiated by being able to detect the facial features from a camera or a picture store in a memory. The algorithm processes the image captured and identifies the number of faces in the image by analyzing from the learned pattern and compare them to filter out the rest. This image processing uses multiple algorithm that takes facial features and compare them with known database.

The motivation behind this project is to simplify the means by which attendance is taken during lectures and how much time it takes. The use of ID cards or manually calling out attendance and writing it down on sheets is not productive and efficient. This system will detect the number of faces on the class and will also identify them from the store database. With the face detection and recognition system in place, it will be easy to tell if a student is actually present in the classroom or not.

## System Design

### Design Constraints

The constraints which were considered while designing on project are following.

#### Design Constraint: Engineering Standards

The samples for database should be increase, as to increase the efficiency of detection. Also, the more the expensive the camera, the easier its algorithm is likely detecting the person.

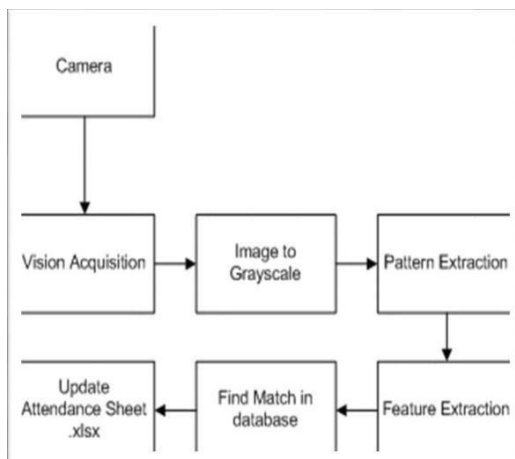
#### Design Constraint: Environmental

The camera should capture all the students present in the class. Each student present should be seated such that it is visible to camera, so that his/her attendance gets marked easily.

#### Design Constraint: Ethical

The second limitation which is faced include the person appearance by face, which a person changes his/her look and looks different from the picture in the database of the attendance system, then it may be difficult for his/her attendance to be marked.

### Design Methodology



In (Figure 1.1). The project process is:

- A camera will take continuous stream.
- In LABVIEW, IMAQ library for vision will be used.

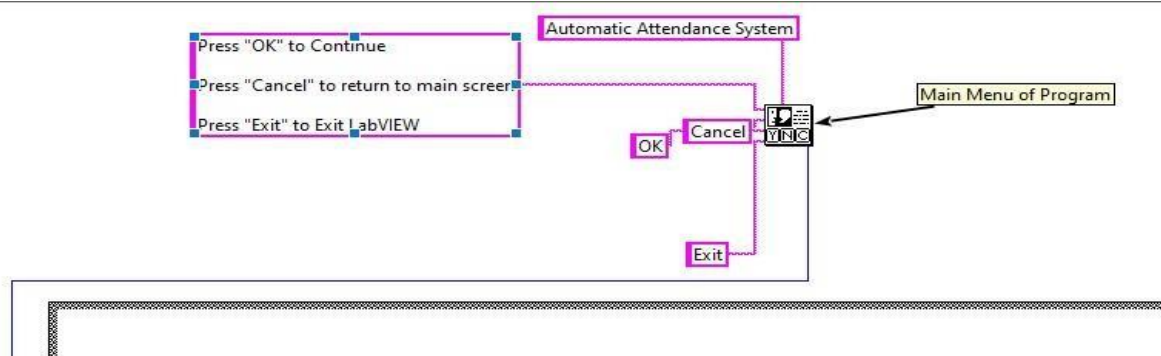


- Convert the RGB image to grayscale image.
- Then perform Machine Vision Algorithm and match with patterns stored in our database.
- If pattern matches based on the score of how successful, decide to mark attendance or not.
- Update the marked attendance in a measurement file.

## Implementation

### THE MAIN MENU:

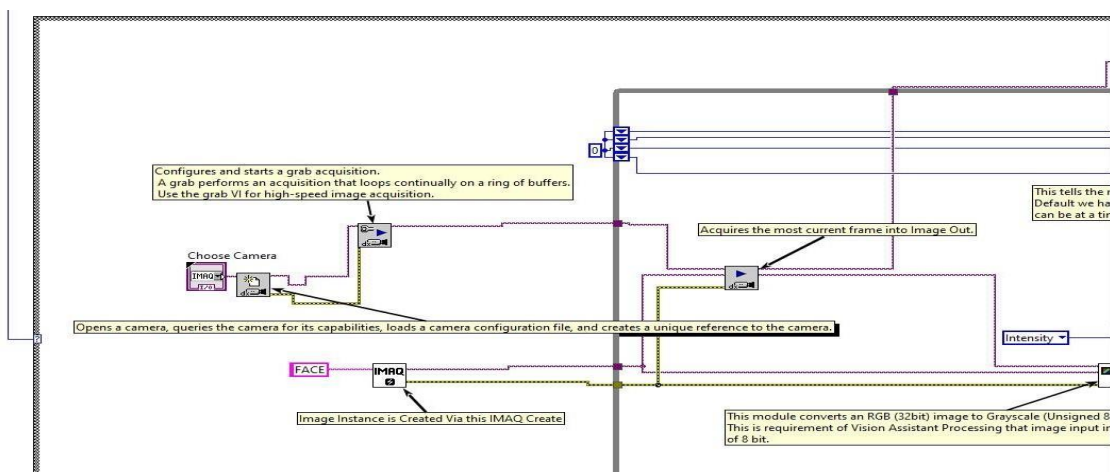
This is the first prompt to appear when program is run. It will ask user to either proceed further for face detection or exit the program as demonstrated in figure.



MAIN MENU ICONS

### THE VISION ACQUISITION MODULES:

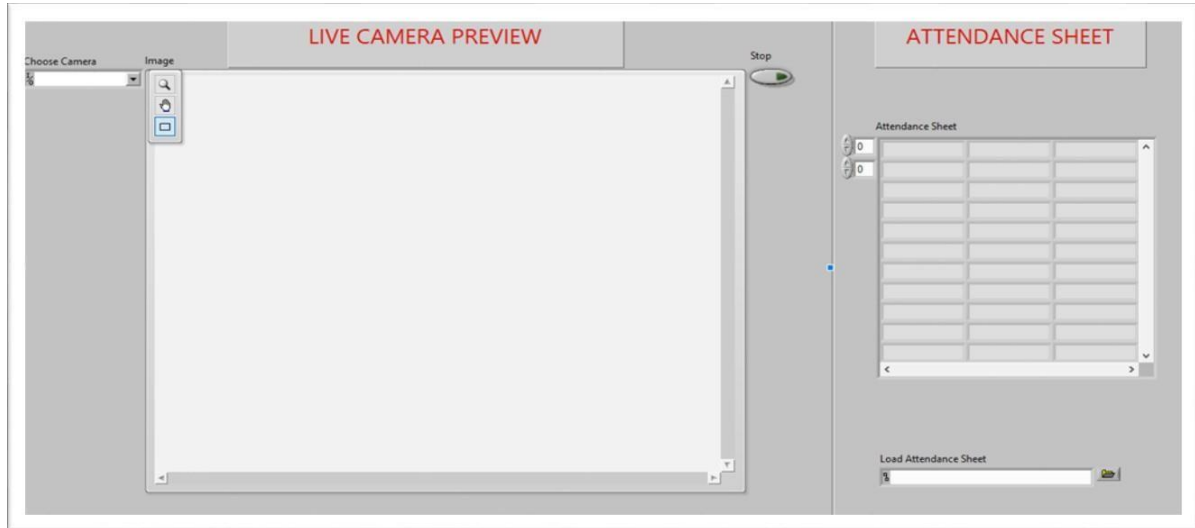
Vision acquisition is responsible of the live camera in front panel, changing the image to grayscale so the Vision Assistant can accept it, and the camera choice as shown in figure.



VISION ACQUISITION MODULES

**FRONT PANEL:**

This is the front panel where the capture picture of the class is shown in image out. We have to add path for the save attendance file where it needs to be stored and also the path of the pattern of each student, three cases are generated. You can increase the pattern from Vision Assistant block as already stated above. The marked attendance is updated in the file and also shown in the indicator in front panel as shown in figure.



## **Project Analysis**

### **Project Motivation**

#### **Life-Long Learning**

With the implementation of this project, we gained skills on the commands of LabView specifically Vision Assistant and Acquisition based modules. Understanding of Machine Vision Algorithm for face detection and reading manual of LabView enhances our skills on the LabView. Furthermore, the project management skills we gained by dividing the project into different phases and time slot not only developed our project management skills but also increased our time management skills.

#### **Impact of Engineering Solutions**

This project saves time for the lecture by taking attendance on its own and update the attendance record. So that, additional time can be given to the topic for better understanding. Furthermore, it will be easy to sort the attendance according to the student roll no. and name while updating the student report for mentioning his/her attendance record. With the help of simple processing, we can estimate the student attendance record with an algorithm and if their attendance is less than 75%, send a notice mail or message to their parents

## **Conclusions**

Number of modules are available on LabVIEW to achieve incredible number of tasks. The best thing about LabVIEW is that you can view the flow of data from one block to other and have more freedom to make changes according to your requirements. The Automatic Class Attendance System implemented in this project would be much more difficult if it was not implemented on LabVIEW. The objective of class attendance system is to automate the time consuming and error prone attendance system.

There are always limitations of every system. One can only have fixed number of students and provide less freedom to have interclass attendance system. This means the attendance system for one class can't be used for attendance system of other class. One must change programming to do this.

The Project experience was tremendous as we learned the core of vision algorithms and different programming techniques of LabVIEW. We learned how can a problem be simplified into smaller tasks and can be achieved successfully.

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