Prince Mohammad University
College of Engineering
Department of Electrical Engineering

Face Detection and Recognition Student Attendance System

Student1: Rakan Abuazh	ID: 201500472
Student2: Yousef Abdullah	ID: 201403345
Student3: Yusef Aldakhail	ID: 201601279
Student4: Ali Alluwaimi	ID: 201100094

Advisor: Dr. Jawad Alasad

Date 3/31/2020

Outline

- Project Definition
- Project Objectives
- Project Specifications
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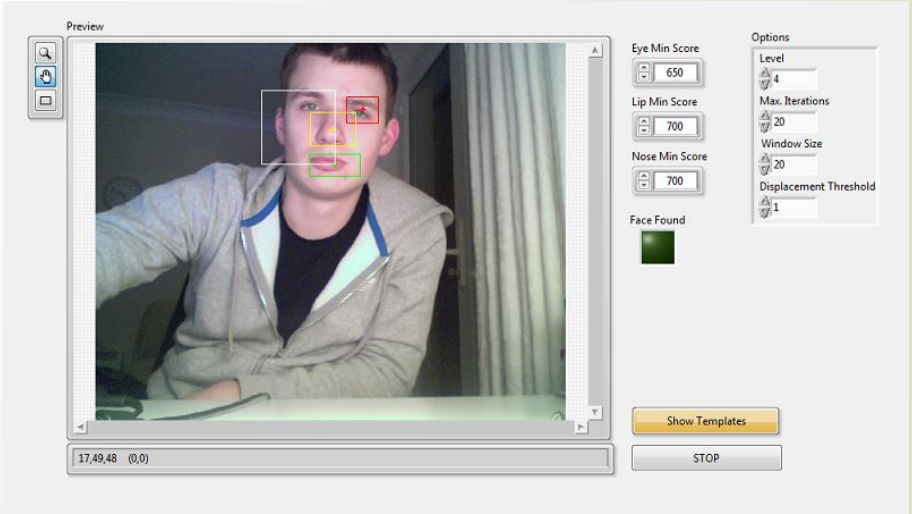
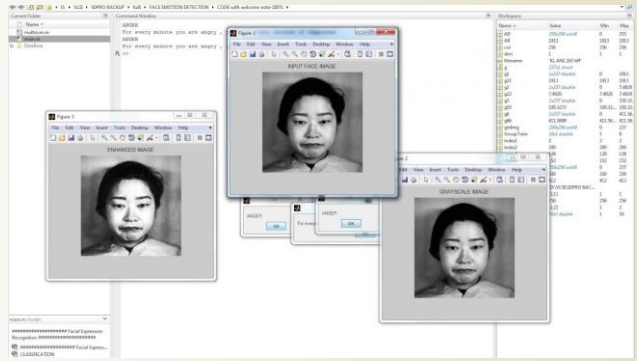
Project Definition

Design a smart automatic attendance system with **Face detection** and **Face recognition** technique. The system will be use commercially for proper evaluation.



Project Objectives

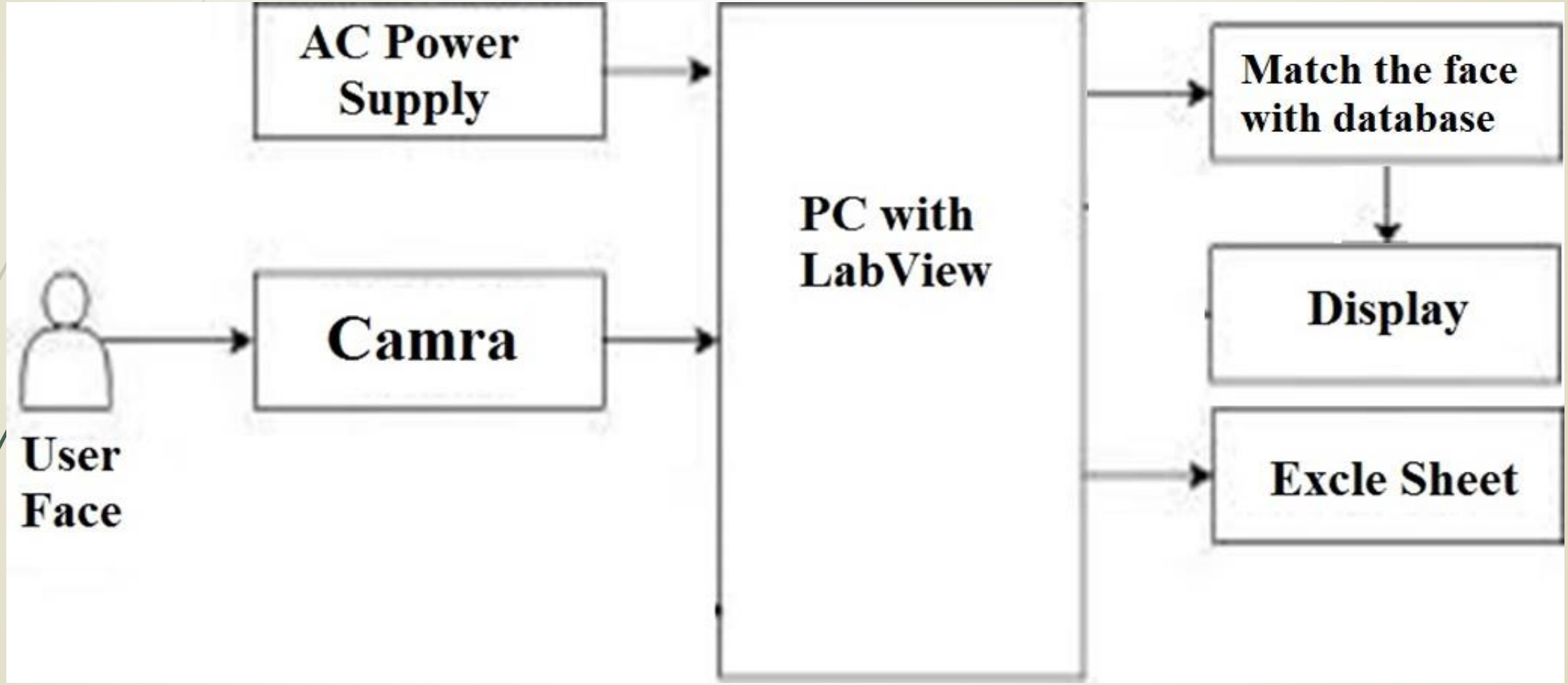
1. **Reduce** the false attendance scenario
2. **Being** green friend
3. **Secured** and **Time saving** system



Project Specifications

- Uses Pattern Matching algorithm for face detection
- Score of minimum 600 required to perfectly match a face
- Metric: Camera Resolution
- For Prototype fixed to 10 users only but scalable design
- Matching pattern from 1 second to 3 second per match
- Attendance sheet is .xlsx format and can be digitally distributed and maintained

Project Architecture



Background: Problem

- Problematic attendance by using manual roll calling.
- Maintaining the whole attendance record and compiling of it.

Manual Attendance

Background: Solutions

- The Smart attendance system will provide the most accurate and efficient way of marking attendance online.
- The provided system will omit the scenario of proxy or called false attendance.

Background: Solutions

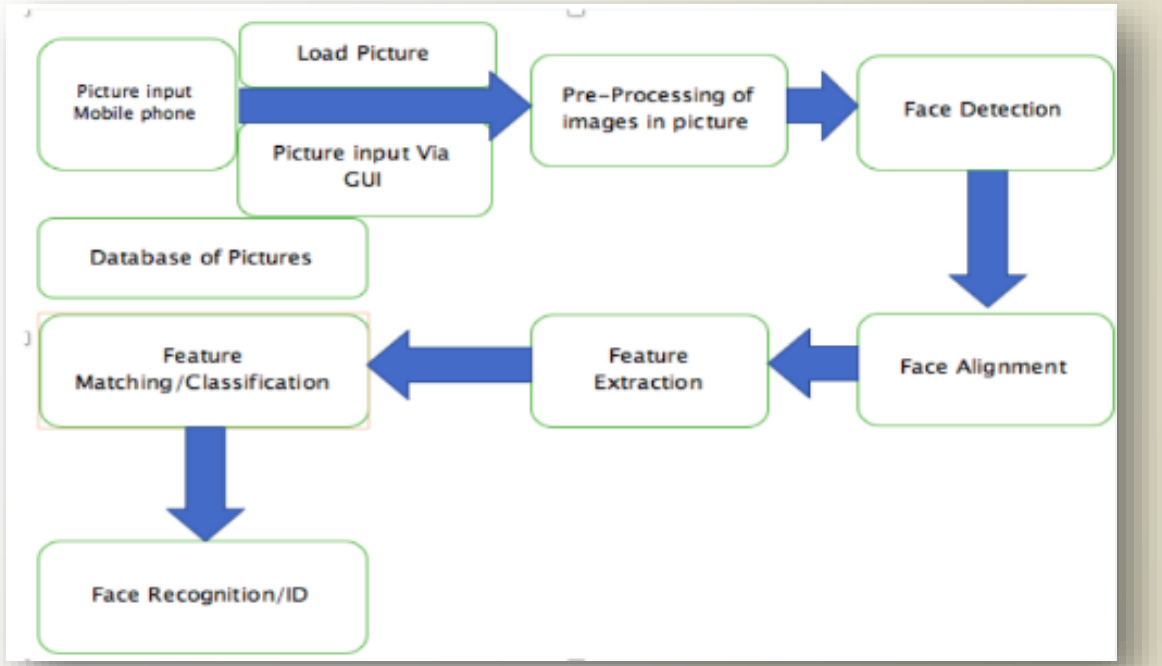
1. **Time Saving**
   - This module will be the time saving because it will mark attendance in seconds.

2. **Data saving & Management**
   - This will save all of the data into the excel file and will mark the remaining student as absent. So in this way all of the data will be sorted.

Previous Projects (1)

Face detection and recognition system, university of London in 2018.

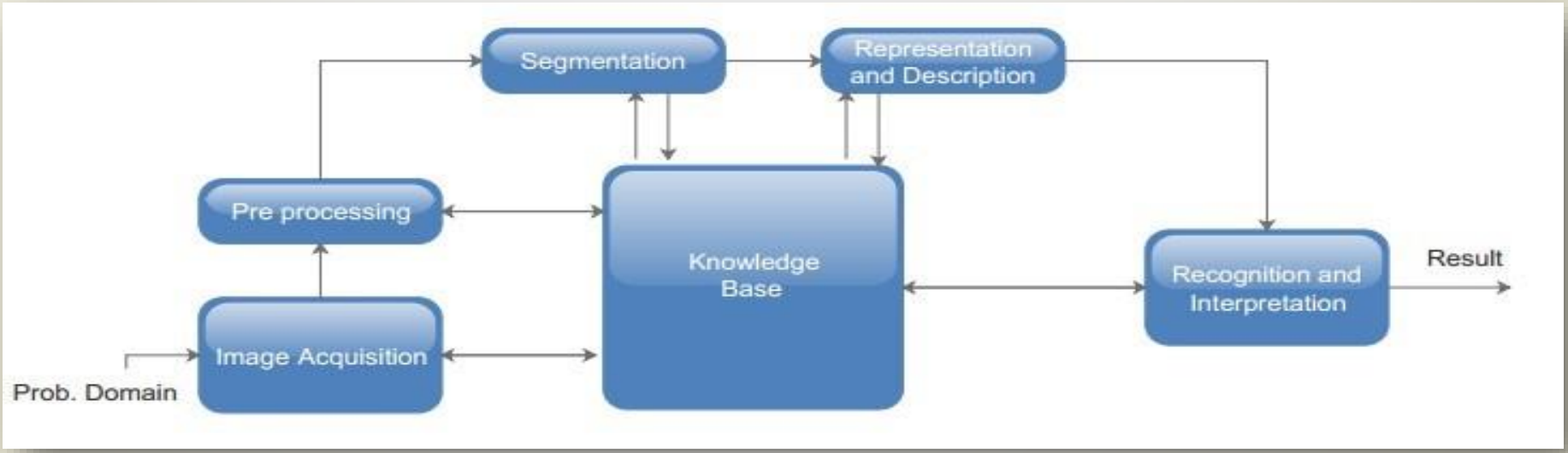
- First step was to **detect the face of person**.
- Second step was to **recognize the person** from data.
- **Save the record** into the data base.



Previous Projects (2)

AUTOMATED ATTENDANCE MACHINE USING FACE DETECTION AND RECOGNITION, UNIVERSITY OF NAIROBI 2011.

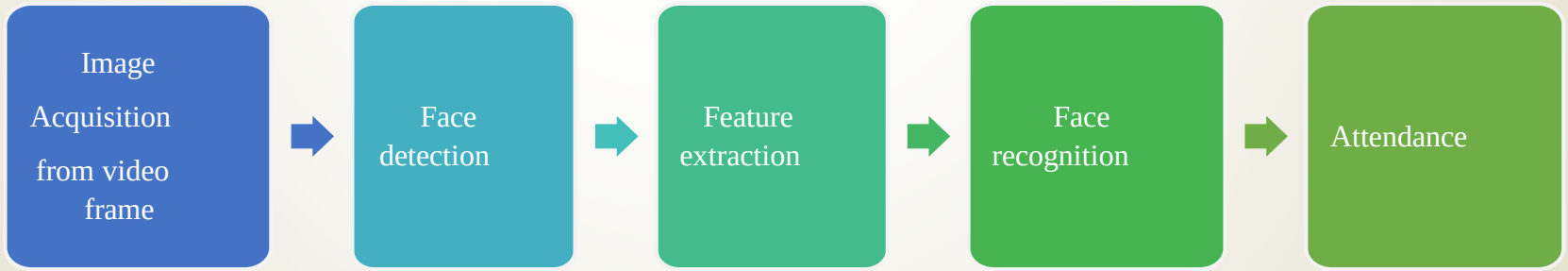
- Designing the face detection technique by using **mobile phone kit**.
- **wireless** connection to the central servers at the utilities.



Previous Projects (3)

FACE RECOGNITION BASED AUTOMATED STUDENT ATTENDANCE SYSTEM, UNIVERSITI TUNKU ABDUL RAHMAN 2018.

- To detect the face segment from the video frame.
- To extract the useful features from the face detected.
- To classify the features in order to recognize the face detected.
- To record the attendance of the identified student.



Previous Projects Summary

Projects	1	2	3	Our Project
Face Recognition & Detection	√	√	√	√
Communication GSM, Zigbee, WiFi	GSM	GSM	Wi-fi	Wi-Fi
Time Saving	√			√
Market Demand	√	√	√	√
Local Usage in Schools		√	√	√
Data Saving in Record (Monitoring)	√			√

Budget Estimate

- List of Key components and their approximate cost.
- Add up total estimate: 1000 SAR (250 SAR as others).

Item	Quantity	Unit Cost (SR)	Subtotal
Camera	1	500 SAR	500 SAR
Memory card(16GB)	1	50 SAR	50 SAR
LCD	1	200 SAR	200 SAR
others	-	250 SAR	250 SAR

Required Programs

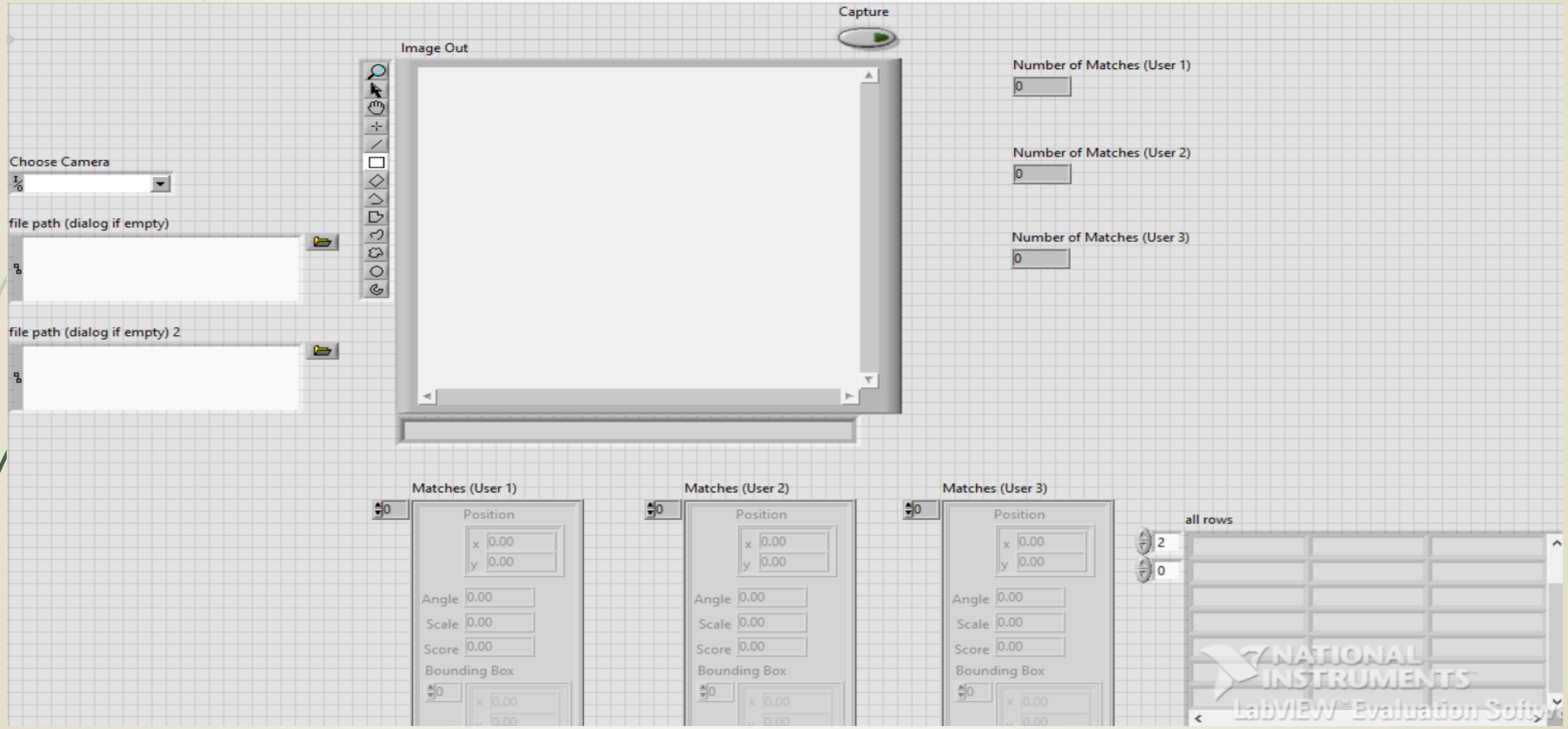
LabVIEW

Excel

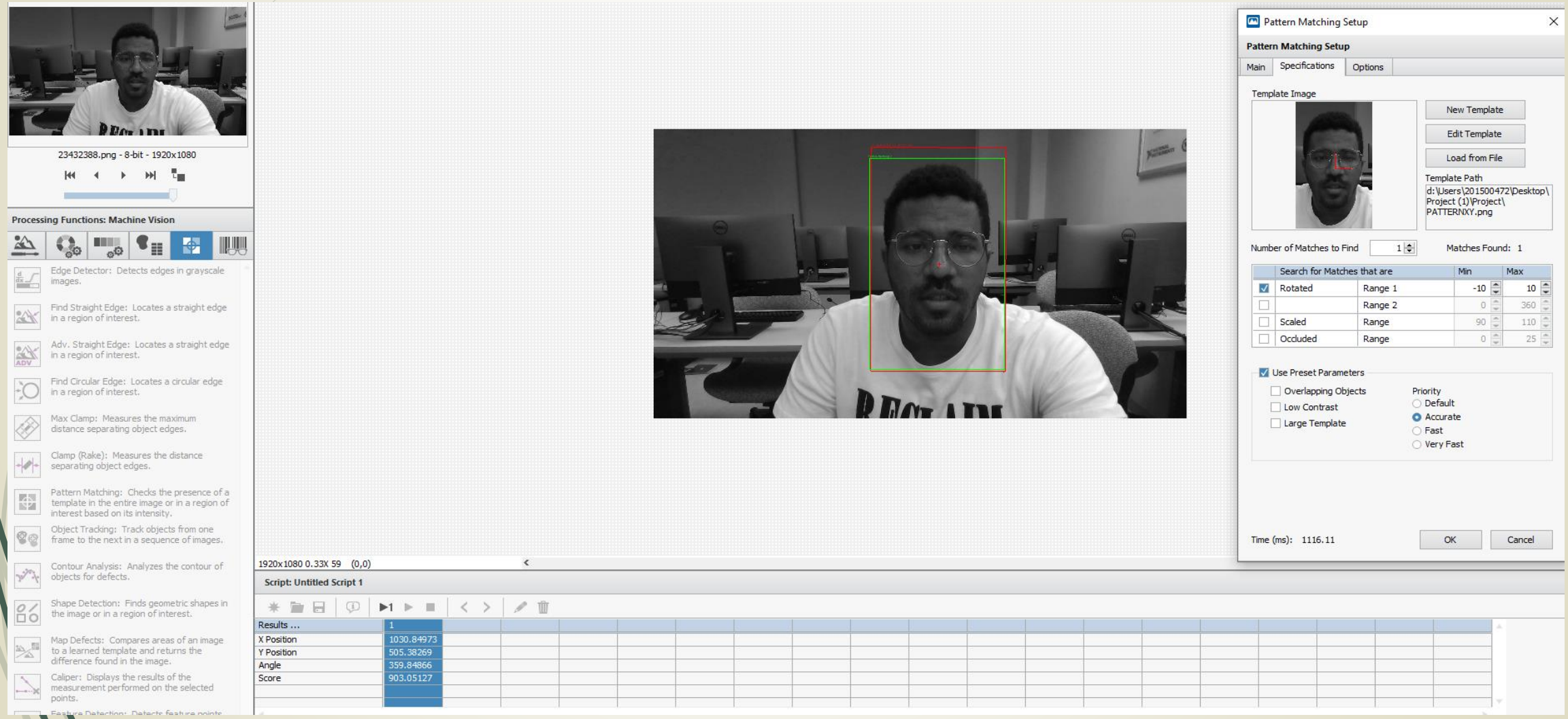
Programming Icons

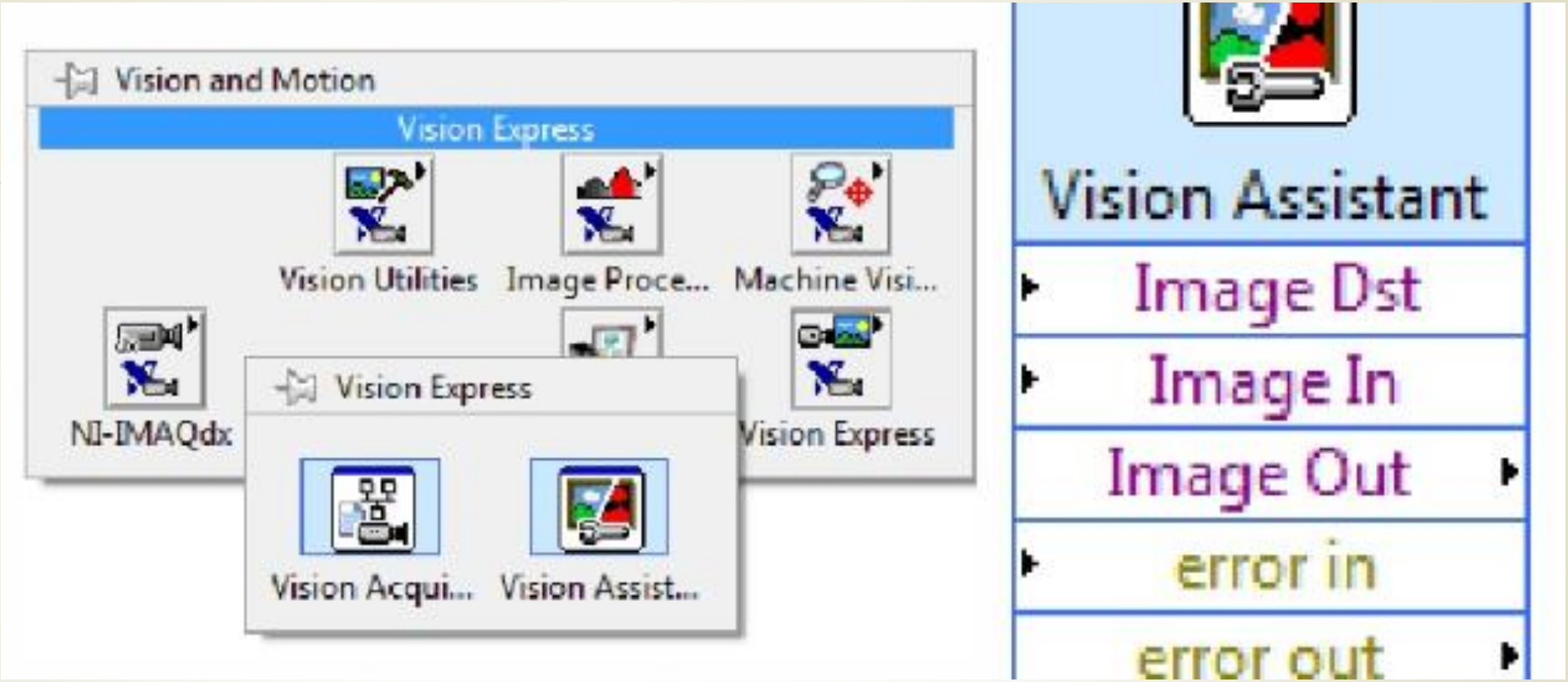
- Front Panel
- Vision Assistant
- Attendance & Absence
- Data (Excel File)

Front Panel


Capture
Image Out
Number of Matches (User 1)
0
Number of Matches (User 2)
0
Number of Matches (User 3)
0
Choose Camera
file path (dialog if empty)
file path (dialog if empty) 2
Matches (User 1)
Matches (User 2)
Matches (User 3)
Position
x 0.00
y 0.00
Angle 0.00
Scale 0.00
Score 0.00
Bounding Box
all rows
2
0
NATIONAL INSTRUMENTS
LabVIEW Evaluation Softw

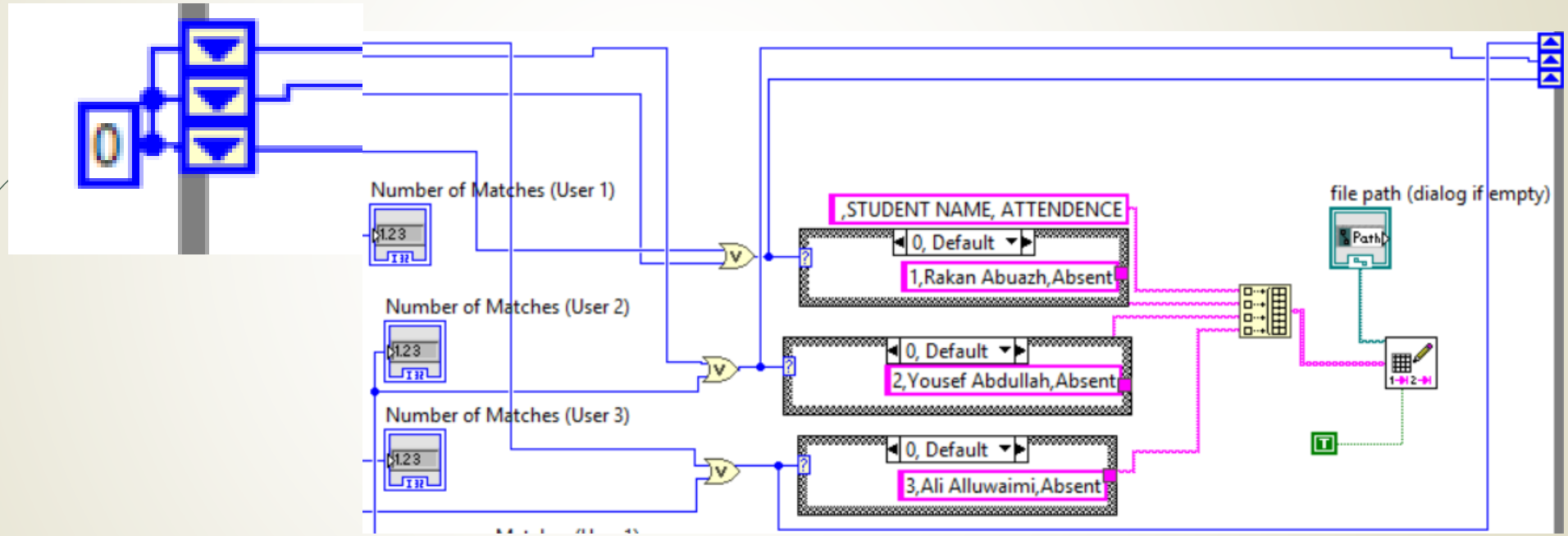
Vision Assistant



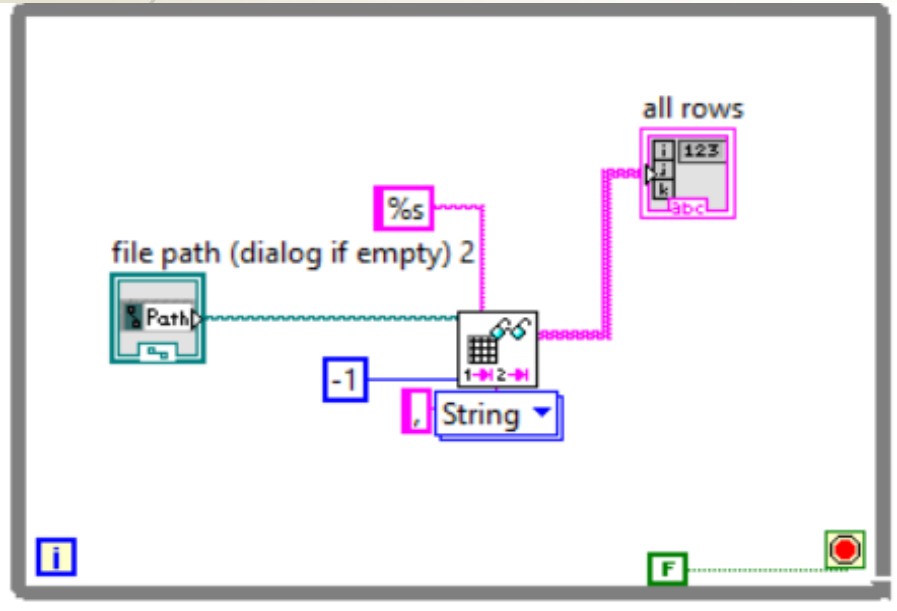


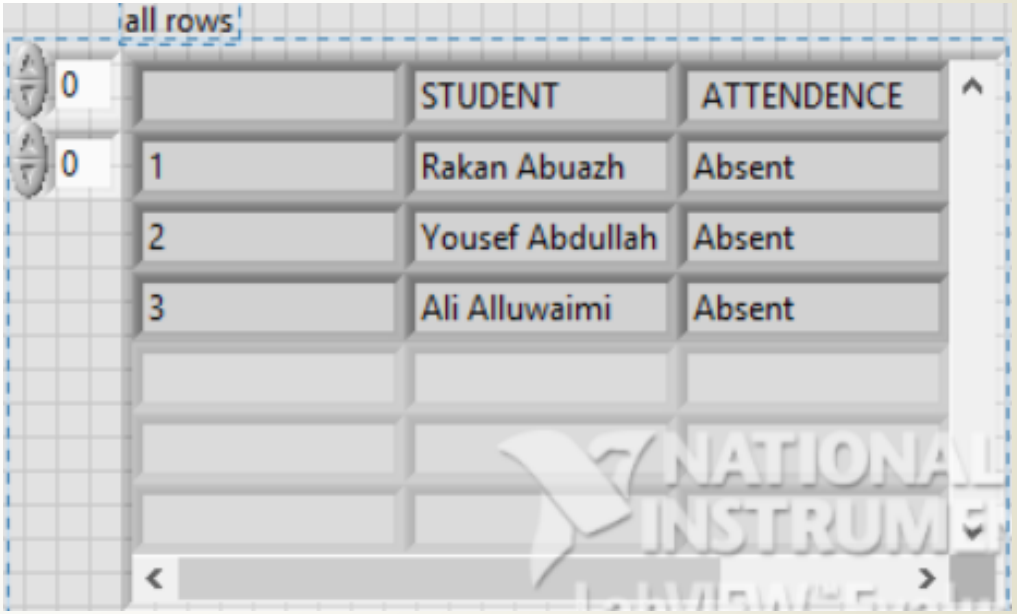
- Vision Assistant helps us to perform Machine Vision Algorithm: Pattern Matching on our images.
- This allows us to detect faces of student in a group of class. First one must add student faces as template
- this program is to create a database of images using which images will be compared.

Attendance & Absence



Data (Excel file)





Data (Excel file)

Attendance Sheet

		STUDENT NAME	ATTENDENCE	DATE STAMP	TIME STAMP
0					
0	1	Rakan Abuazh	Absent	--	--
	2	Yousef	Absent	--	--
	3	Ali Alluwaimi	Absent	--	--

Plan (Current Semester)

Title: Face Detection and Recognition Student Attendance System

Student 1: Rakan Abuazh 201500472 (RA)
Student 2: Ali Alluwaimi 201100094 (AA)
Student 3: Yousef Abdullah 201403345 (YA)
Student 4: Yusef Aldakhail 201601279 (YD)
Advisor: Dr. Jawad Alasad

Learning Outcome Assesment 3 | **Spring 2019/2020**

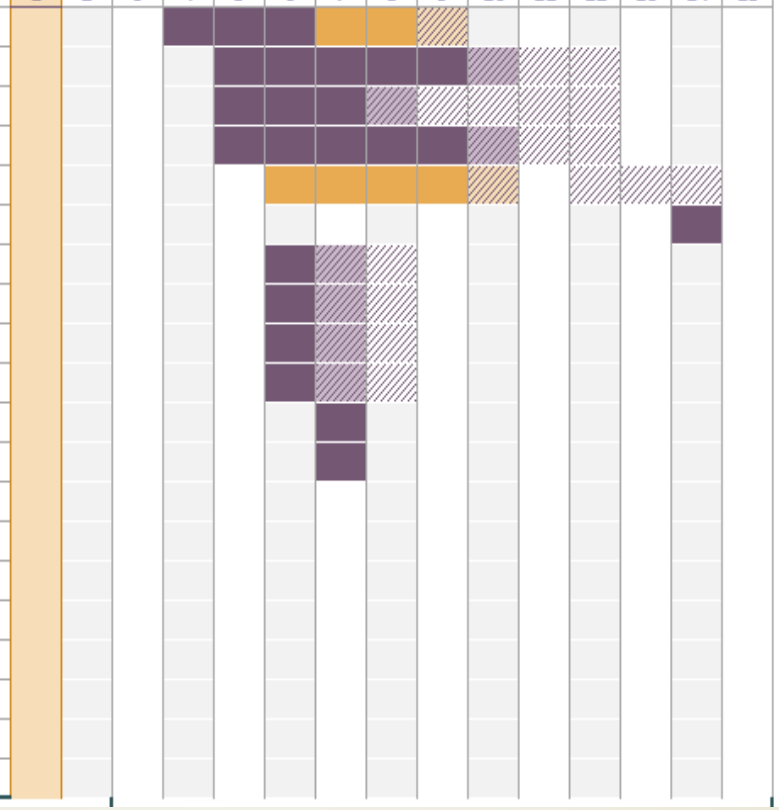
Project PLAN

Instructor: Dr. Sadiq Alhuwaidi

Period Highlight: 1 | Plan | Actual | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION	Assigned To	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Design subsystem 1 (LABVIEW)	4	3	ALL	4	6	85%
Study and learn about LABVIEW	5	8	ALL	5	6	92%
Practice and start building the code	5	8	ALL	5	4	80%
Writing code to recognize the face	5	8	ALL	5	6	90%
Review and correct mistakes	12	3	AA	6	5	85%
Test the code functionality	14	1	YD	14	1	75%
Prepare midterm Presentation	6	3	ALL	6	2	50%
Prepare Project Objectives & Spec	6	3	RA	6	2	90%
Prepare project new slides	6	3	YA	6	2	60%
Planning & Budget new estimate	6	3	AA	6	2	80%
Finalize and review PPT	7	1	ALL	7	1	40%
Design subsystem 2 (Message system)	7	1	ALL	7	1	10%
Choose the message system			AA			20%
Getting components of Subsystem 2			RA, YA			0%
connect and do subsystem 2			ALL			0%
Test Subsystem 2			YD			0%
Test the whole system			ALL			30%
Prepere the poster			AA, RA			0%
Prepapre final report			YA			50%
Prepapre final presentation						30%

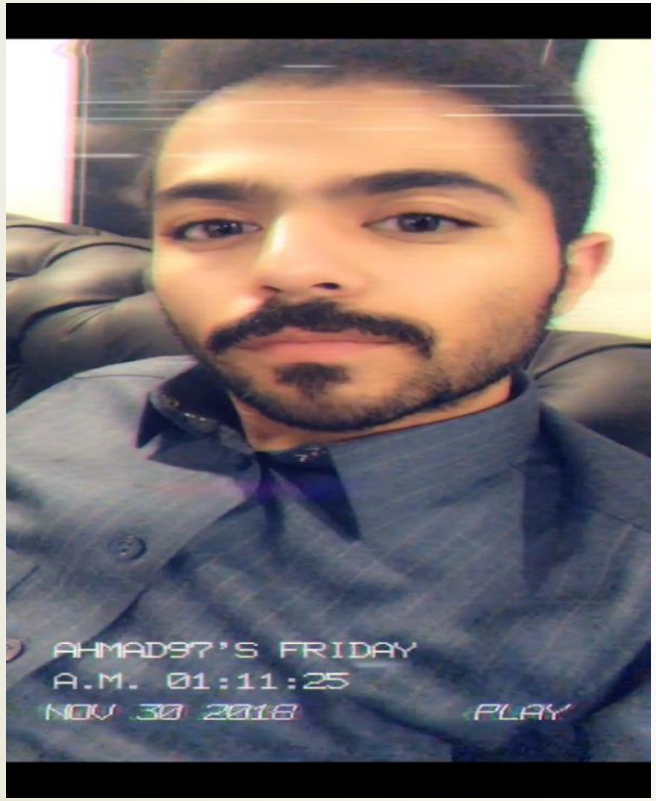
Periods (Weeks 1-15)



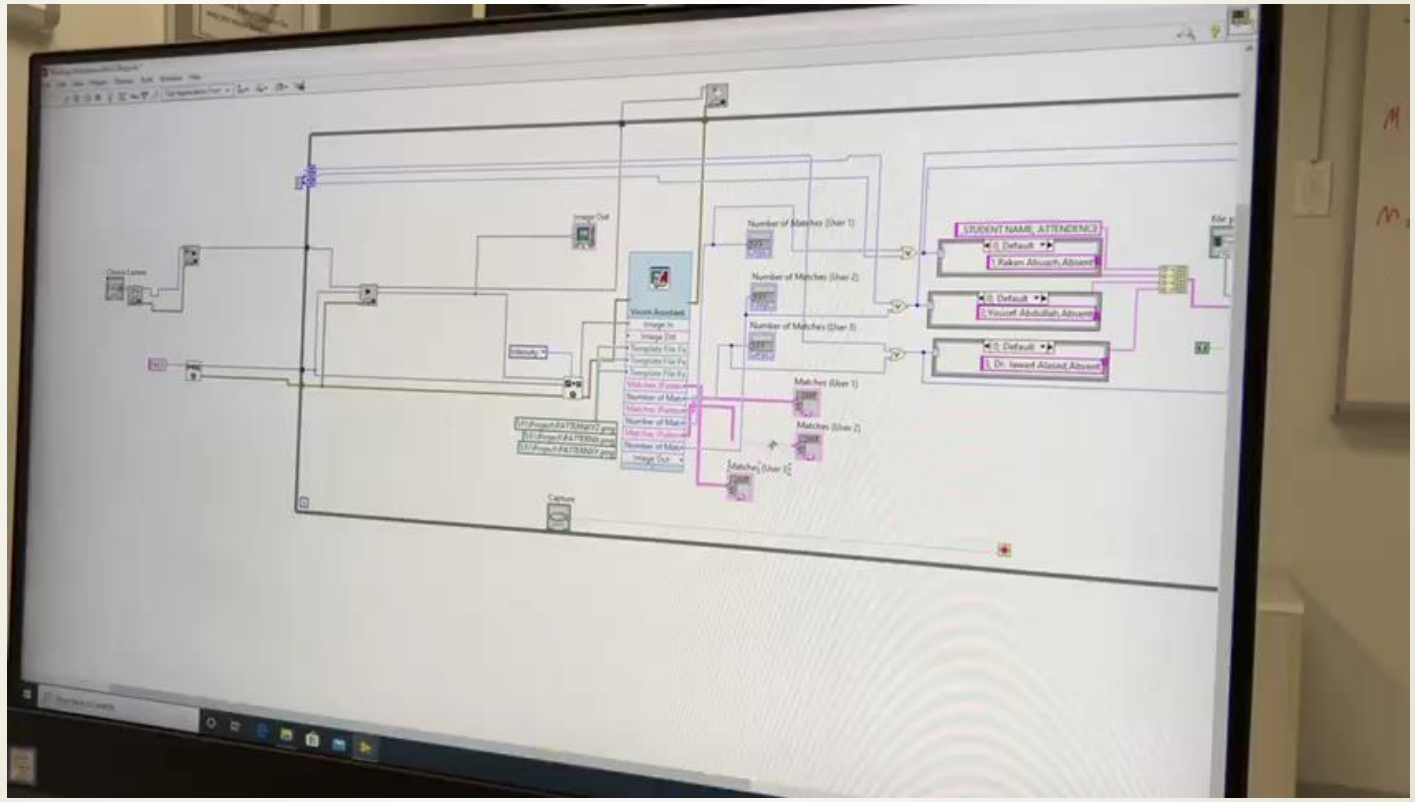
Challenges

- Face Detection Parameters
- Calibrating The Excel Sheet
- Facial Hair Issuing The Score
- Twins

Challenges



Project Video



References

- https://www.researchgate.net/publication/326986115_Face_Detection_and_Recognition_Student_Attendance_System
- https://eie.uonbi.ac.ke/sites/default/files/cae/engineering/eie/AUTOMATED%20ATTENDANCE%20MACHINE%20USING%20FACE%20DETECTION%20AND%20RECOGNITION.pdf
- http://eprints.utar.edu.my/2832/1/EE-2018-1303261-1.pdf
- Robinson-Riegler, G., & Robinson-Riegler, B. (2008). *Cognitive psychology: applying the science of the mind*. Boston, Pearson/Allyn and Bacon.
- Margaret Rouse. (2012). *What is facial recognition? - Definition from WhatIs.com*. [online] Available at: http://whatis.techtarget.com/definition/facial-recognition [Accessed 25 Mar. 2018].
- Solon, O. (2017). *Facial recognition database used by FBI is out of control, House committee hears*. [online] the Guardian. Available at: https://www.theguardian.com/technology/2017/mar/27/us-facial-recognitiondatabase-fbi-drivers-licenses-passports [Accessed 25 Mar. 2018].