SOFTWARE ENGINEERING LAB.

ASSESSMENT 5

1. RISK ASSESSMENT

PROJECT RISK ASSESSMENT

Project Name: AI BASED ATTENDANCE SYSTEM		**Project Size:**	**NA**
Project Manager: ANANYA.U/MOUNIKA RUDRARAJU/HANEESHA		**Date: 18-04-2024**	
Risk Score: 310		**Risk Rating:**	**300 or higher: HIGH RISK**

Project Risk Score & Risk Rating Guidelines	
0 to 110:	LOW RISK
115 to 290:	MEDIUM RISK
300 or higher:	HIGH RISK

#	Risk Category	Score	Comments
	BUSINESS RISK	120	N/A
1	**Implementation complexity and impact to processes and business areas:**	40	
	- Implementation is complex with many areas impacted and new methods introduced	40	
2	**Business Dependencies that might impact implementation:**	40	
	- Yes, there are key business dependencies that might impact project implementation	40	The identified business dependencies highlight critical aspects such as registration processes, database management, attendance tracking, security measures, and integration requirements. Addressing these dependencies effectively is essential for the successful implementation of the facial recognition-based attendance system.
3	**Outages required during the implementation:**	40	
	- Outages to be planned during business hours	40	Since the implementation involves significant system changes and integration, it may require downtime to minimize disruptions to ongoing operations. Planning outages during business hours allows for real-time monitoring and immediate support if issues arise.
	TECHNOLOGY RISK	150	N/A
4	**Type of Project:**	30	
	- New development – replace existing system	30	Implementing a new development to replace an existing system introduces complexities such as data migration, user training, and system integration. Careful planning and stakeholder involvement are crucial to ensure a smooth transition and minimize disruptions to the existing operations while maximizing the benefits of the new facial recognition-based attendance system
5	**External Vendor Involvement:**	20	
	- Yes, an existing external vendor will be used	20	External vendors will be used for the purchase of cameras, etc

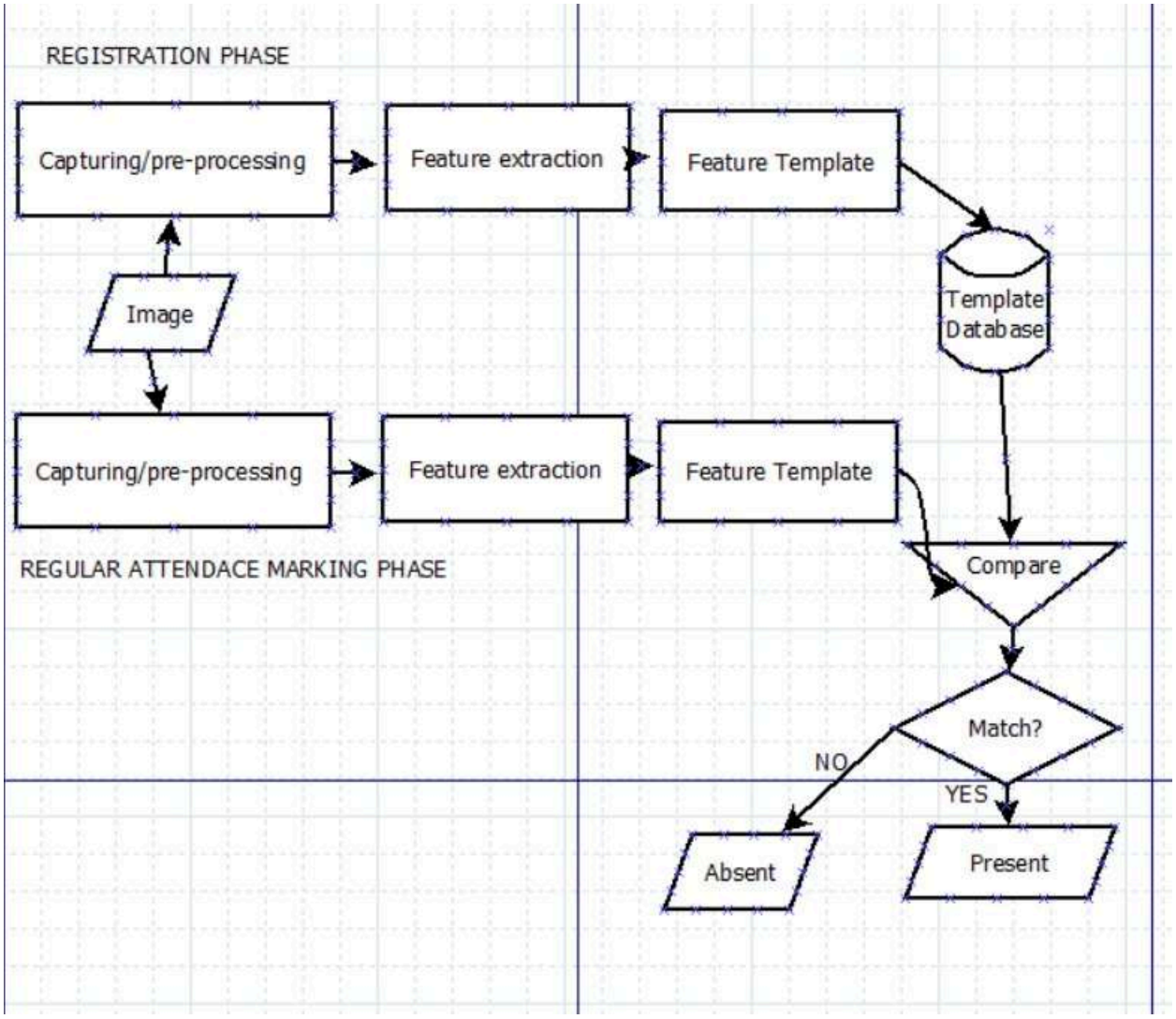
6	**Level of vendor support necessary for the technology after implementation:**	30	
	- Minor support necessary (e.g., maintenance only)	30	We need vendor support for maintenance and servicing of cameras,
7	**Newness of Technology (hardware, systems, databases, communication, etc.) used in the project:**	30	
	- New to University Services	30	Since the project involves implementing a facial recognition-based attendance system within a university setting, it introduces new technology to the university's service offerings. This may pose challenges related to adaptation, training, and integration with existing systems.
8	**Availability of Project Team Resources**	40	
	- The project will require external resources	40	Implementing a facial recognition-based attendance system may require specialized expertise in areas such as computer vision, machine learning, and database management. Depending on the existing skill sets within the project team, external resources may be needed to supplement the team with the necessary expertise.
	IMPLEMENTATION RISK	40	N/A
9	**Will the Office for General Counsel or Purchasing be used during the negotiation, creation, or modification of the contract?**	30	
	- Yes, the OGC and Purchasing will be involved, but in a limited capacity	30	Project involves purchasing new hardware or software, contracting with external vendors for services such as system integration or consulting, or any other procurement activities requiring contractual agreements, then the OGC and Purchasing departments may need to be involved to ensure legal compliance and proper procurement procedures are followed.
10	**Has the Business Case been developed, reviewed and approved:**	10	
	- Yes, the Business Case/justification is documented and fully approved	10	
11	**Additional project risks not previously addressed [1]:**	0	
	-	0	
	-	0	
	-	0	
	TOTAL PROJECT RISK SCORE	310	FINAL PROJECT RISK RATING: [RATING]

Top 5 Risks are:

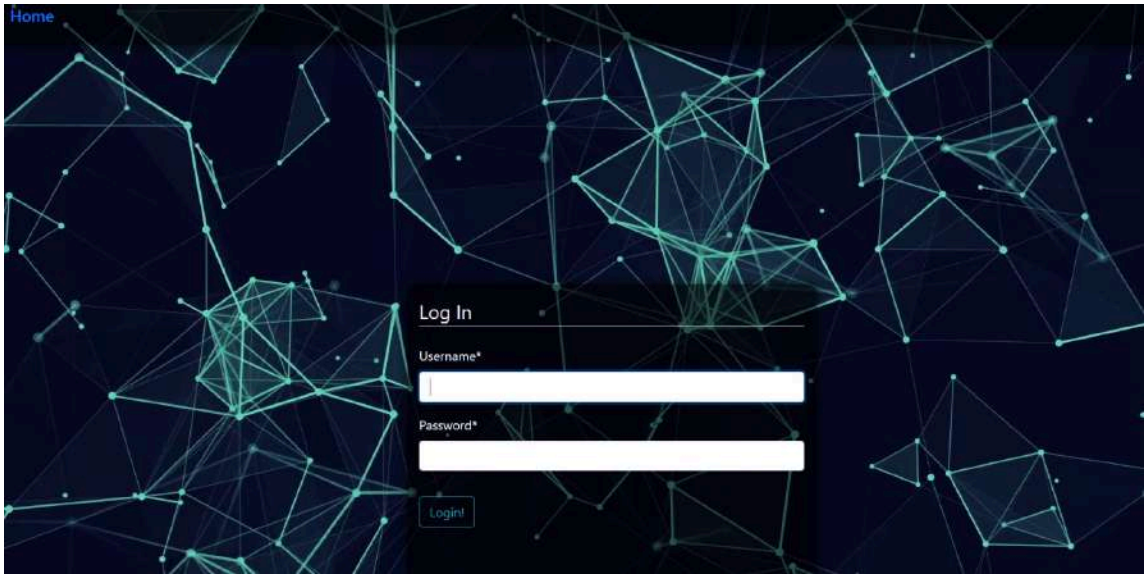
#	Risk statement: Condition	Risk statement: Consequence	(Scale 1-100%) Probability	(Scale 1-10) Impact	Exposure	Mitigation	Contingency	Triggers	Assignee
1	Privacy Concerns: Compromise of individual's privacy due to storage of facial data.	Breach of privacy could lead to legal repercussions, loss of trust from stakeholders, and damage institutions reputation	70%	8	7.2	Implement strict access controls and encryption measures for storing facial templates and attendance records. Obtain explicit consent from students for data collection and usage.	Have a response plan for data breaches, including notification procedures and legal assistance. Conduct regular privacy audits to ensure compliance with regulations.	After deployment.	Security team of the organization,
2	Possible denial of service attack.	Non-availability of the system to the customers and end users.	70%	10	7	Use of firewall technology, and procedures for keeping such technology updated.	Use of intrusion detection software to prevent denial of service attacks. Develop, test, and regularly review recovery procedures.	Start of project	IT manager, network manager

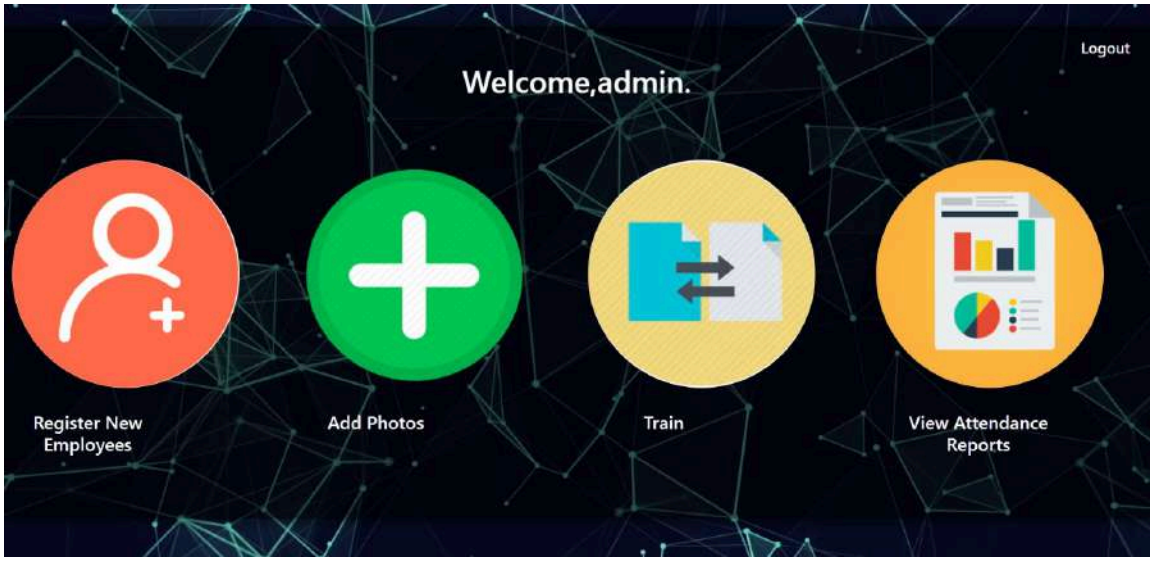
3	System Security: It encompasses threats like hacking, data breaches, and malware attacks.	A security breach could result in the theft or manipulation of sensitive data, disruption of attendance tracking, and compromised system integrity. It may lead to legal liabilities, financial losses, and erosion of trust among stakeholders.	80%	8	6.4	Implement robust authentication mechanisms and encryption protocols to protect the database. Regularly update software and conduct security audits to identify vulnerabilities.	Have backup systems in place to restore data in case of a security breach. Establish incident response procedures for immediate action in case of a breach.	When a decision is made about the percentage of nonstandard data and its impact on the system	Product manager
4	Accuracy and Reliability of Recognition: This risk relates to the system's ability to accurately and reliably recognize individuals based on their facial features. It encompasses factors such as variations in lighting conditions, facial expressions, and c	Inaccurate recognition may lead to incorrect attendance records, administrative challenges, and dissatisfaction among users. It could undermine the system's credibility and result in errors in decision-making processes.	90%	9	8	Conduct thorough testing of facial recognition algorithms under various conditions. Provide training to users for optimal positioning during enrollment and attendance sessions.	Implement manual attendance tracking procedures as a backup. Develop algorithms to detect and flag instances of low confidence in recognition results.	Increase in reports of recognition errors Changes in environmental conditions affecting recognition	Project Manager AI Development Team
5	Technical Failures: This risk involves potential failures in hardware or software components of the facial recognition system, leading to system downtime or performance degradation. It includes issues such as hardware malfunctions, software bugs, and connectivity problems.	Technical failures may disrupt attendance tracking processes, causing inconvenience to users and affecting operational efficiency. It could result in delays, loss of productivity, and reputational damage if not addressed promptly.	80%	10	7	Regular maintenance of hardware and software components to prevent failures. Have redundancy built into critical components to minimize downtime.	Maintain a support team for quick response to technical issues. Keep backup systems ready for immediate deployment in case of failures.	Increase in system error reports Hardware or software upgrades	IT Manager System Administrators
6	Ethical and Legal Compliance: This risk pertains to the ethical considerations and legal requirements associated with the use of facial recognition technology for attendance tracking. It encompasses issues such as consent, bias, discrimination, and compliance with data protection laws.	Failure to adhere to ethical and legal standards may lead to public backlash, regulatory fines, and legal disputes. It could tarnish the institution's image, undermine trust with stakeholders, and result in long-term reputational damage.	80%	6	5.8	Conduct thorough research on ethical considerations and legal requirements related to facial recognition technology. Ensure transparency in data usage and provide avenues for individuals to address concerns.	Have legal counsel available to address any legal challenges or disputes. Establish clear guidelines for ethical use of facial recognition technology and enforce them rigorously.	Changes in privacy regulations Increase in ethical concerns raised by stakeholders	Legal Counsel Compliance Officer

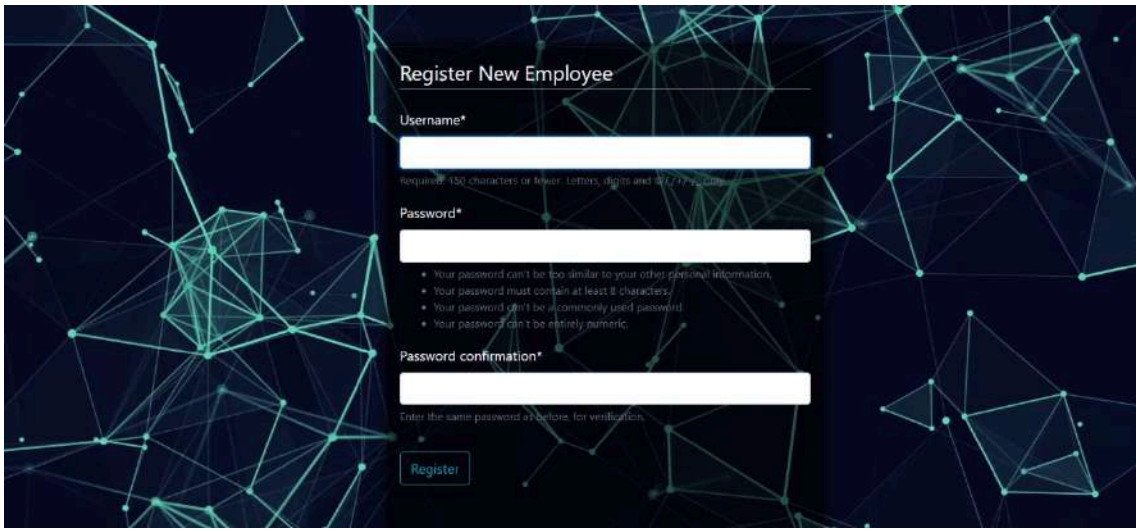
2. Architecture:

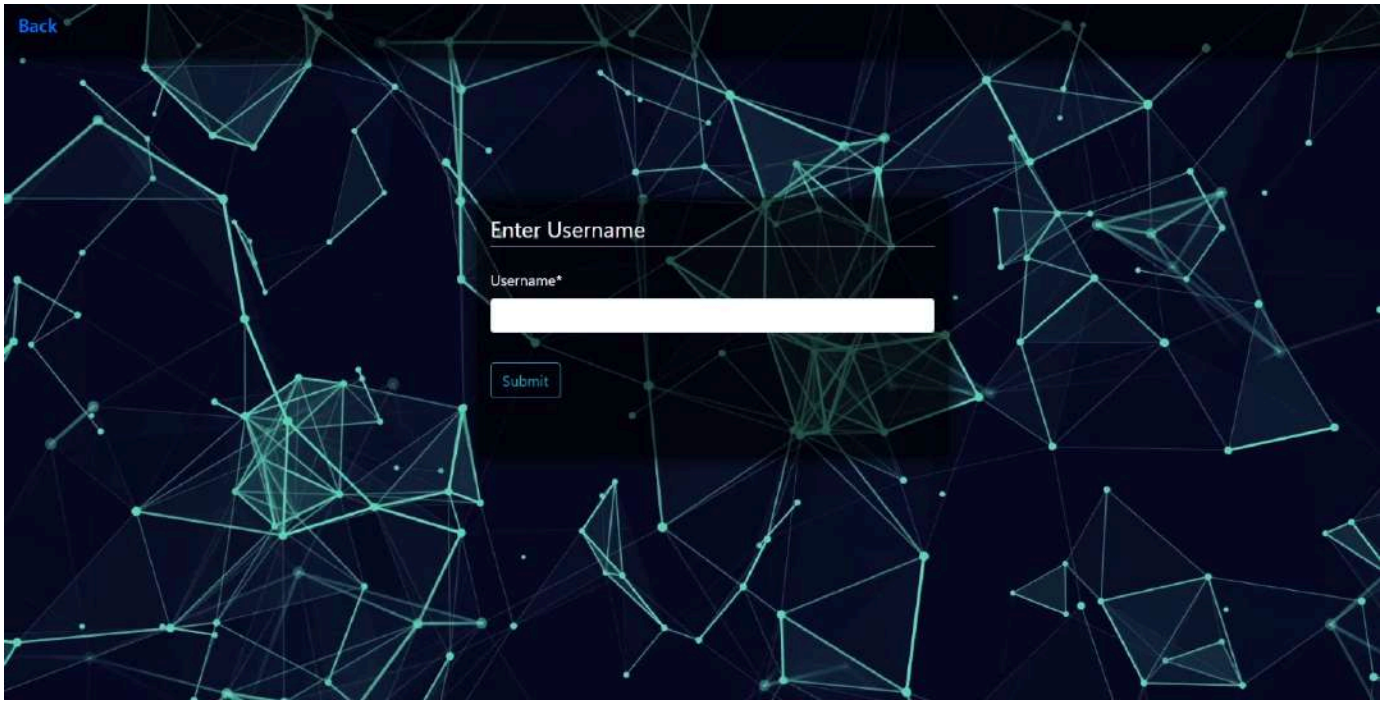


3. Prototype

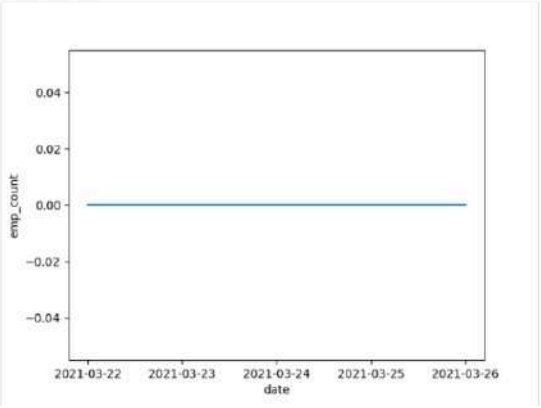

Home
Log In
Username*
Password*
Login!


Logout
Welcome,admin.
Register New Employees
Add Photos
Train
View Attendance Reports

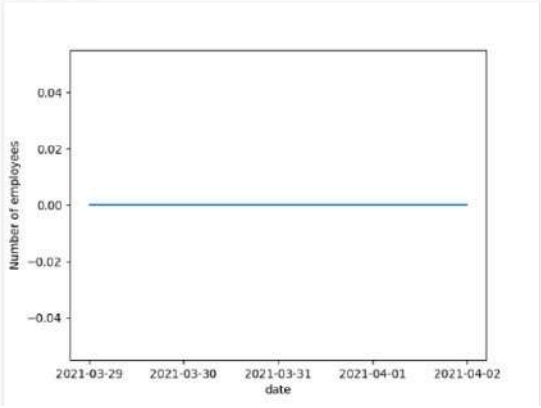

Register New Employee
Username*
Password*
Password confirmation*
Register



Last Week



This Week



Attendance

Select Duration

Date from*

January

1

2024

Date to*

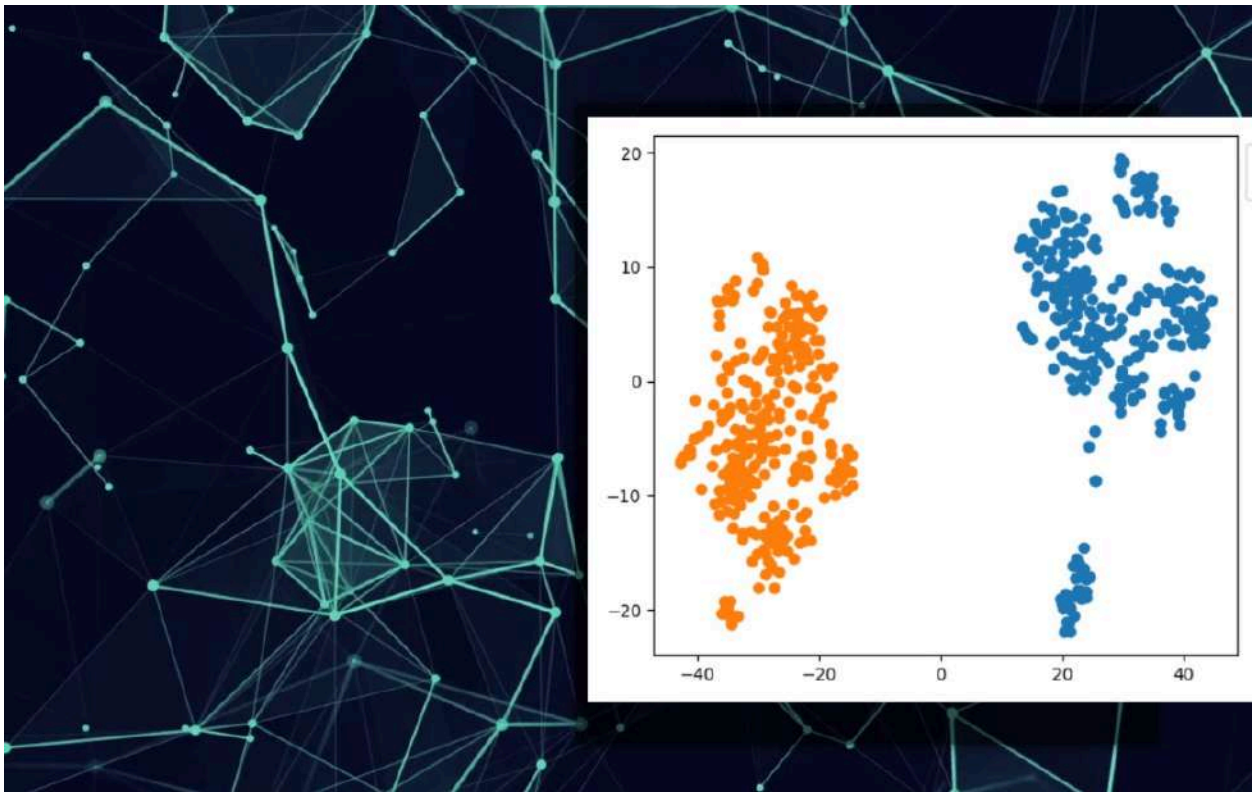
April

4

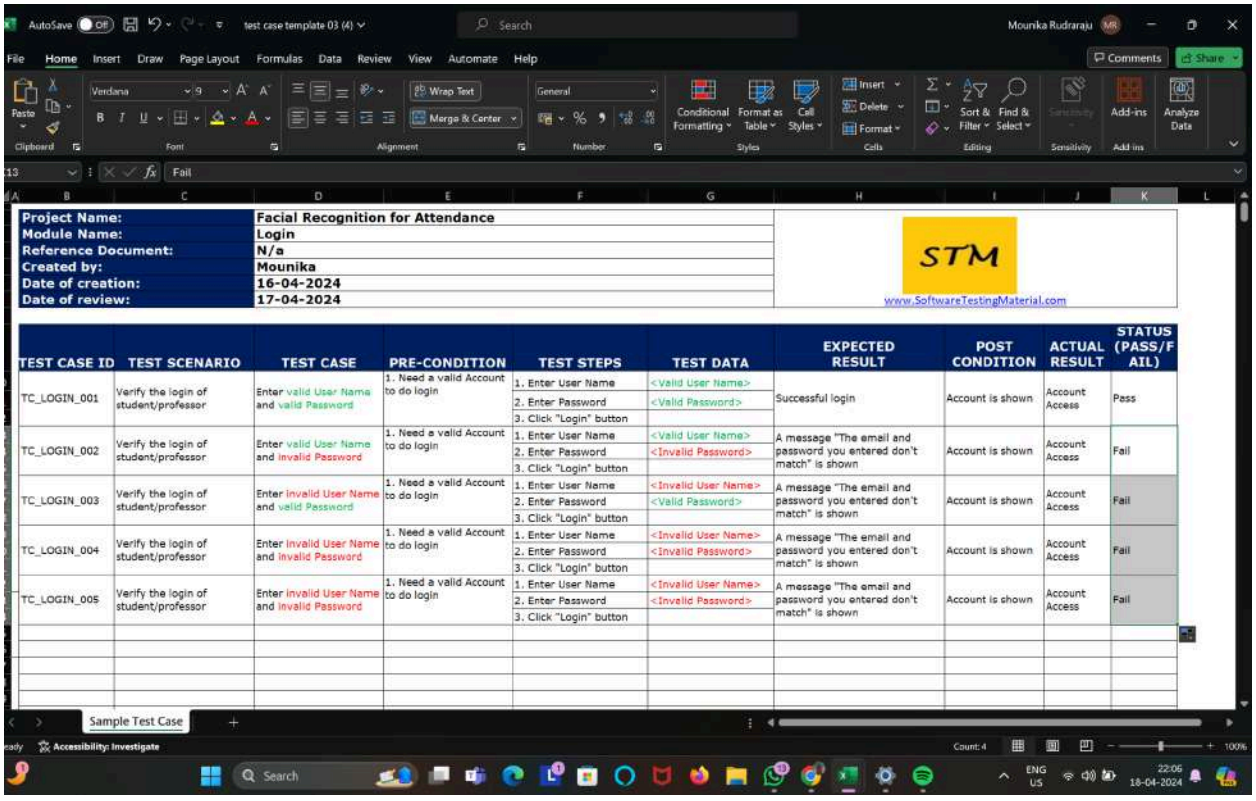
2024

Submit

Date	Employee	Present	Time in	Time out
April 3, 2024	ANANYA.U	P	April 3, 2024 10:30 a.m.	-



4. Manual Testing



Project Name:	**Facial Recognition for Attendance**
Module Name:	**Login**
Reference Document:	**N/a**
Created by:	**Mounika**
Date of creation:	**16-04-2024**
Date of review:	**17-04-2024**

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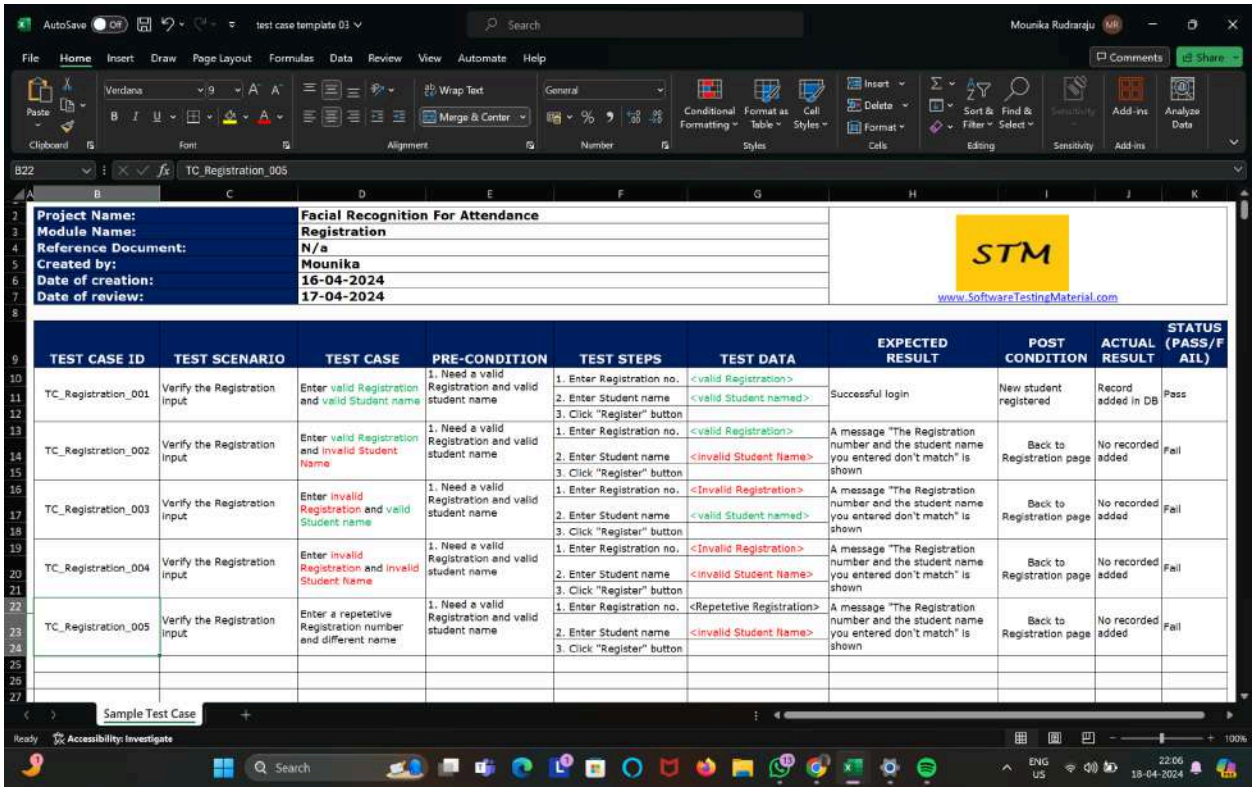
TEST CASE ID	TEST SCENARIO	TEST CASE	PRE-CONDITION	TEST STEPS	TEST DATA	EXPECTED RESULT	POST CONDITION	ACTUAL RESULT	STATUS (PASS/FAIL)
TC_LOGIN_001	Verify the login of student/professor	Enter valid User Name and valid Password	1. Need a valid Account to do login	1. Enter User Name 2. Enter Password 3. Click "Login" button	<Valid User Name> <Valid Password>	Successful login	Account is shown	Account Access	Pass
TC_LOGIN_002	Verify the login of student/professor	Enter valid User Name and invalid Password	1. Need a valid Account to do login	1. Enter User Name 2. Enter Password 3. Click "Login" button	<Valid User Name> <Invalid Password>	A message "The email and password you entered don't match" is shown	Account is shown	Account Access	Fail
TC_LOGIN_003	Verify the login of student/professor	Enter invalid User Name and valid Password	1. Need a valid Account to do login	1. Enter User Name 2. Enter Password 3. Click "Login" button	<Invalid User Name> <Valid Password>	A message "The email and password you entered don't match" is shown	Account is shown	Account Access	Fail
TC_LOGIN_004	Verify the login of student/professor	Enter invalid User Name and invalid Password	1. Need a valid Account to do login	1. Enter User Name 2. Enter Password 3. Click "Login" button	<Invalid User Name> <Invalid Password>	A message "The email and password you entered don't match" is shown	Account is shown	Account Access	Fail
TC_LOGIN_005	Verify the login of student/professor	Enter invalid User Name and invalid Password	1. Need a valid Account to do login	1. Enter User Name 2. Enter Password 3. Click "Login" button	<Invalid User Name> <Invalid Password>	A message "The email and password you entered don't match" is shown	Account is shown	Account Access	Fail



Project Name:	**Facial Recognition For Attendance**
Module Name:	**Registration**
Reference Document:	**N/a**
Created by:	**Mounika**
Date of creation:	**16-04-2024**
Date of review:	**17-04-2024**

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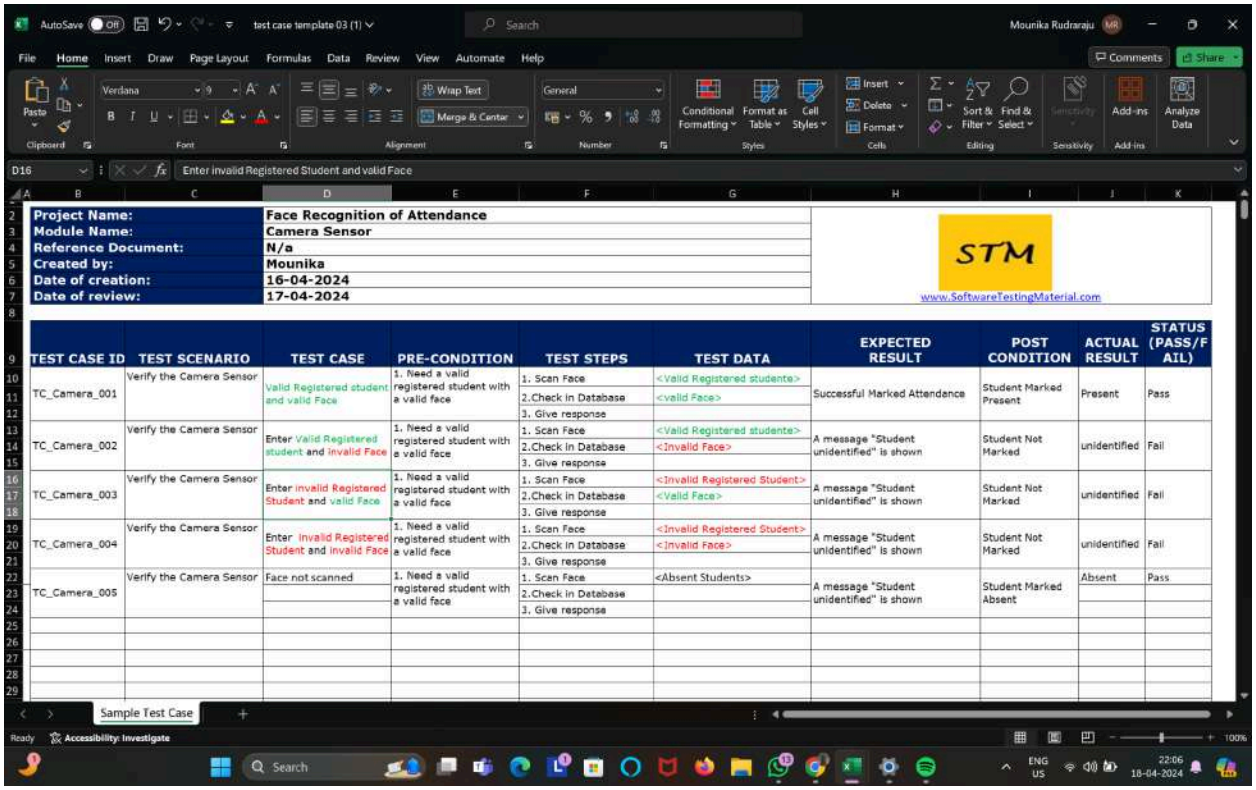
TEST CASE ID	TEST SCENARIO	TEST CASE	PRE-CONDITION	TEST STEPS	TEST DATA	EXPECTED RESULT	POST CONDITION	ACTUAL RESULT	STATUS (PASS/FAIL)
TC_Registration_001	Verify the Registration input	Enter valid Registration and valid Student name	1. Need a valid Registration and valid student name	1. Enter Registration no. 2. Enter Student name 3. Click "Register" button	<valid Registration> <valid Student named>	Successful login	New student registered	Record added in DB	Pass
TC_Registration_002	Verify the Registration input	Enter valid Registration and invalid Student Name	1. Need a valid Registration and valid student name	1. Enter Registration no. 2. Enter Student name 3. Click "Register" button	<valid Registration> <invalid Student Name>	A message "The Registration number and the student name you entered don't match" is shown	Back to Registration page	No recorded added	Fail
TC_Registration_003	Verify the Registration input	Enter invalid Registration and valid Student name	1. Need a valid Registration and valid student name	1. Enter Registration no. 2. Enter Student name 3. Click "Register" button	<Invalid Registration> <valid Student named>	A message "The Registration number and the student name you entered don't match" is shown	Back to Registration page	No recorded added	Fail
TC_Registration_004	Verify the Registration input	Enter invalid Registration and invalid Student Name	1. Need a valid Registration and valid student name	1. Enter Registration no. 2. Enter Student name 3. Click "Register" button	<Invalid Registration> <invalid Student Name>	A message "The Registration number and the student name you entered don't match" is shown	Back to Registration page	No recorded added	Fail
TC_Registration_005	Verify the Registration input	Enter a repetetive Registration number and different name	1. Need a valid Registration and valid student name	1. Enter Registration no. 2. Enter Student name 3. Click "Register" button	<Repetetive Registration> <invalid Student Name>	A message "The Registration number and the student name you entered don't match" is shown	Back to Registration page	No recorded added	Fail



Project Name:	**Face Recognition of Attendance**
Module Name:	**Camera Sensor**
Reference Document:	**N/a**
Created by:	**Mounika**
Date of creation:	**16-04-2024**
Date of review:	**17-04-2024**

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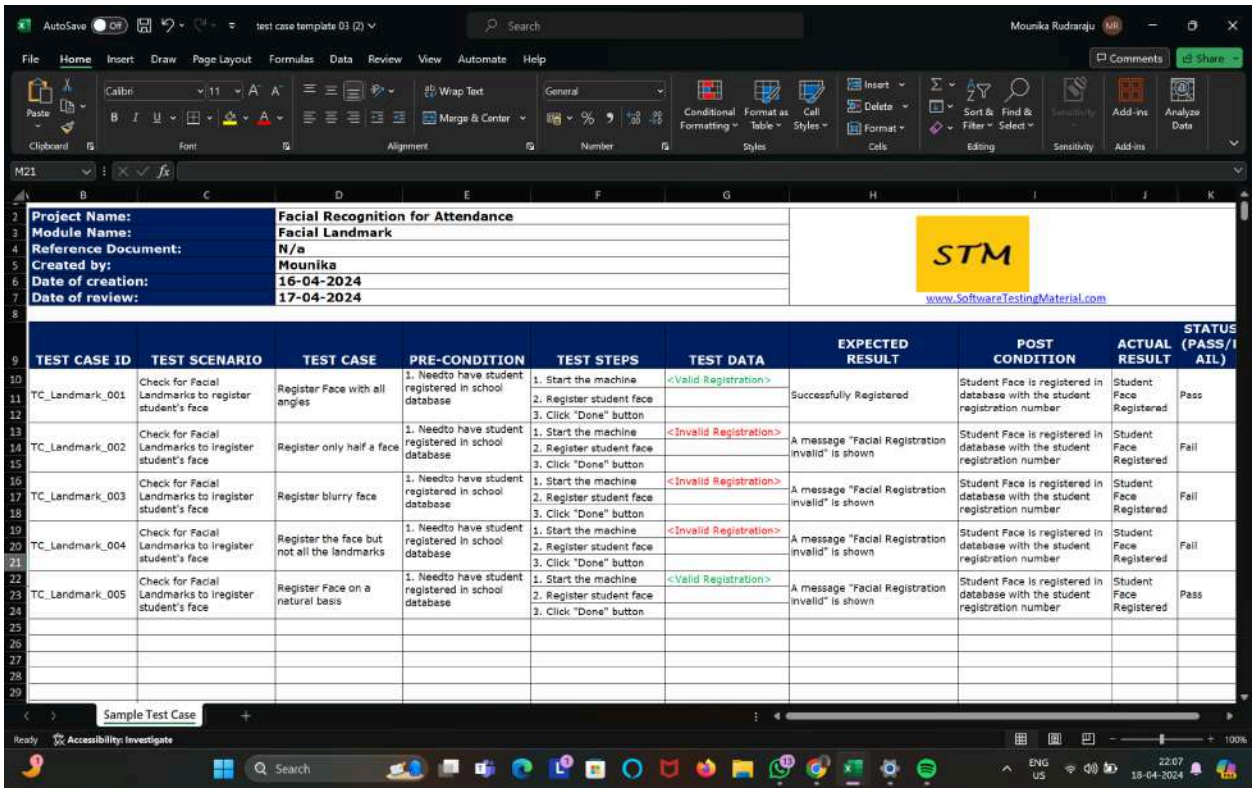
TEST CASE ID	TEST SCENARIO	TEST CASE	PRE-CONDITION	TEST STEPS	TEST DATA	EXPECTED RESULT	POST CONDITION	ACTUAL RESULT	STATUS (PASS/FAIL)
TC_Camera_001	Verify the Camera Sensor	Valid Registered student and valid Face	1. Need a valid registered student with a valid face	1. Scan Face 2.Check in Database 3. Give response	<Valid Registered students> <valid Face>	Successful Marked Attendance	Student Marked Present	Present	Pass
TC_Camera_002	Verify the Camera Sensor	Enter Valid Registered student and Invalid Face	1. Need a valid registered student with a valid face	1. Scan Face 2.Check in Database 3. Give response	<Valid Registered students> <Invalid Face>	A message "Student unidentified" is shown	Student Not Marked	unidentified	Fail
TC_Camera_003	Verify the Camera Sensor	Enter invalid Registered Student and valid Face	1. Need a valid registered student with a valid face	1. Scan Face 2.Check in Database 3. Give response	<Invalid Registered Student> <Valid Face>	A message "Student unidentified" is shown	Student Not Marked	unidentified	Fail
TC_Camera_004	Verify the Camera Sensor	Enter Invalid Registered Student and Invalid Face	1. Need a valid registered student with a valid face	1. Scan Face 2.Check in Database 3. Give response	<Invalid Registered Student> <Invalid Face>	A message "Student unidentified" is shown	Student Not Marked	unidentified	Fail
TC_Camera_005	Verify the Camera Sensor	Face not scanned	1. Need a valid registered student with a valid face	1. Scan Face 2.Check in Database 3. Give response	<Absent Students>	A message "Student unidentified" is shown	Student Marked Absent	Absent	Pass



Project Name:	**Facial Recognition for Attendance**
Module Name:	**Facial Landmark**
Reference Document:	**N/a**
Created by:	**Mounika**
Date of creation:	**16-04-2024**
Date of review:	**17-04-2024**

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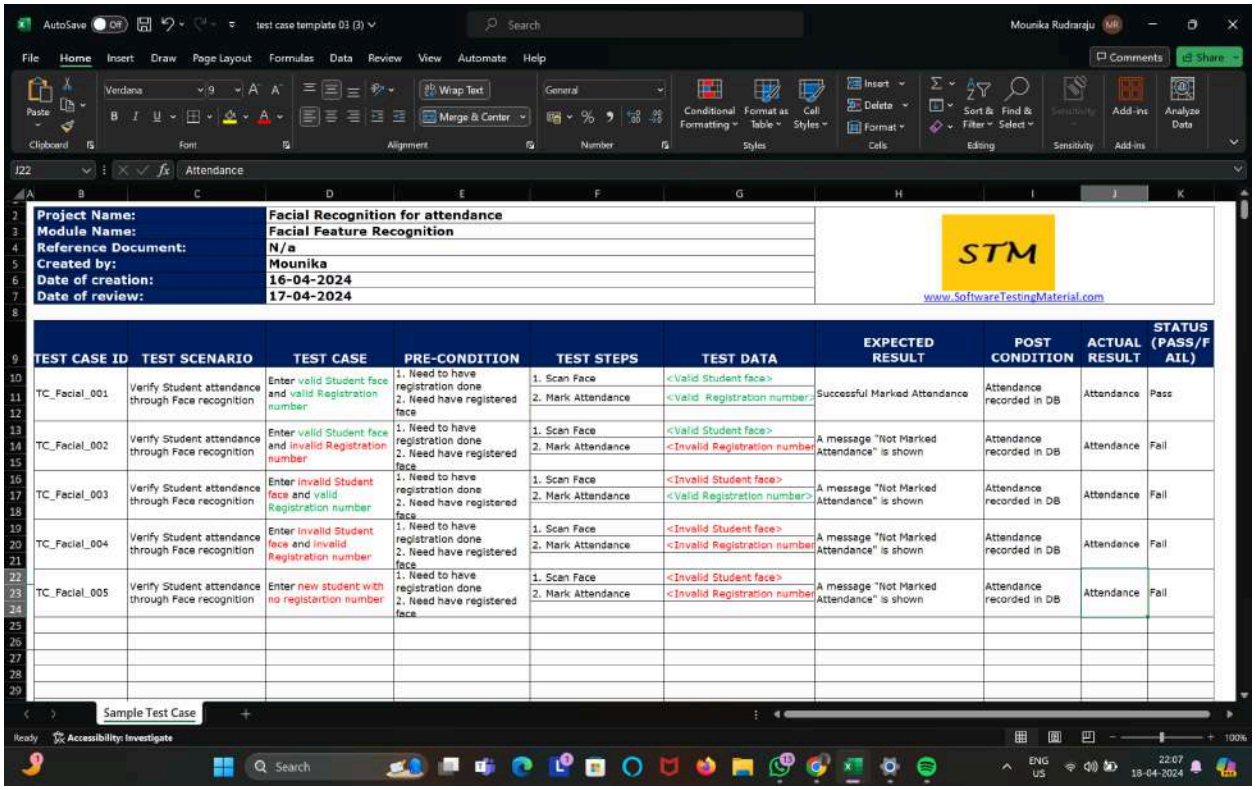
TEST CASE ID	TEST SCENARIO	TEST CASE	PRE-CONDITION	TEST STEPS	TEST DATA	EXPECTED RESULT	POST CONDITION	ACTUAL RESULT	STATUS (PASS/FAIL)
TC_Landmark_001	Check for Facial Landmarks to register student's face	Register Face with all angles	1. Needto have student registered in school database	1. Start the machine 2. Register student face 3. Click "Done" button	<Valid Registration>	Successfully Registered	Student Face is registered in database with the student registration number	Student Face Registered	Pass
TC_Landmark_002	Check for Facial Landmarks to iregister student's face	Register only half a face	1. Needto have student registered in school database	1. Start the machine 2. Register student face 3. Click "Done" button	<Invalid Registration>	A message "Facial Registration invalid" is shown	Student Face is registered in database with the student registration number	Student Face Registered	Fail
TC_Landmark_003	Check for Facial Landmarks to iregister student's face	Register blurry face	1. Needto have student registered in school database	1. Start the machine 2. Register student face 3. Click "Done" button	<Invalid Registration>	A message "Facial Registration invalid" is shown	Student Face is registered in database with the student registration number	Student Face Registered	Fail
TC_Landmark_004	Check for Facial Landmarks to iregister student's face	Register the face but not all the landmarks	1. Needto have student registered in school database	1. Start the machine 2. Register student face 3. Click "Done" button	<Invalid Registration>	A message "Facial Registration invalid" is shown	Student Face is registered in database with the student registration number	Student Face Registered	Fail
TC_Landmark_005	Check for Facial Landmarks to iregister student's face	Register Face on a natural basis	1. Needto have student registered in school database	1. Start the machine 2. Register student face 3. Click "Done" button	<Valid Registration>	A message "Facial Registration invalid" is shown	Student Face is registered in database with the student registration number	Student Face Registered	Pass



Project Name:	**Facial Recognition for attendance**
Module Name:	**Facial Feature Recognition**
Reference Document:	**N/a**
Created by:	**Mounika**
Date of creation:	**16-04-2024**
Date of review:	**17-04-2024**

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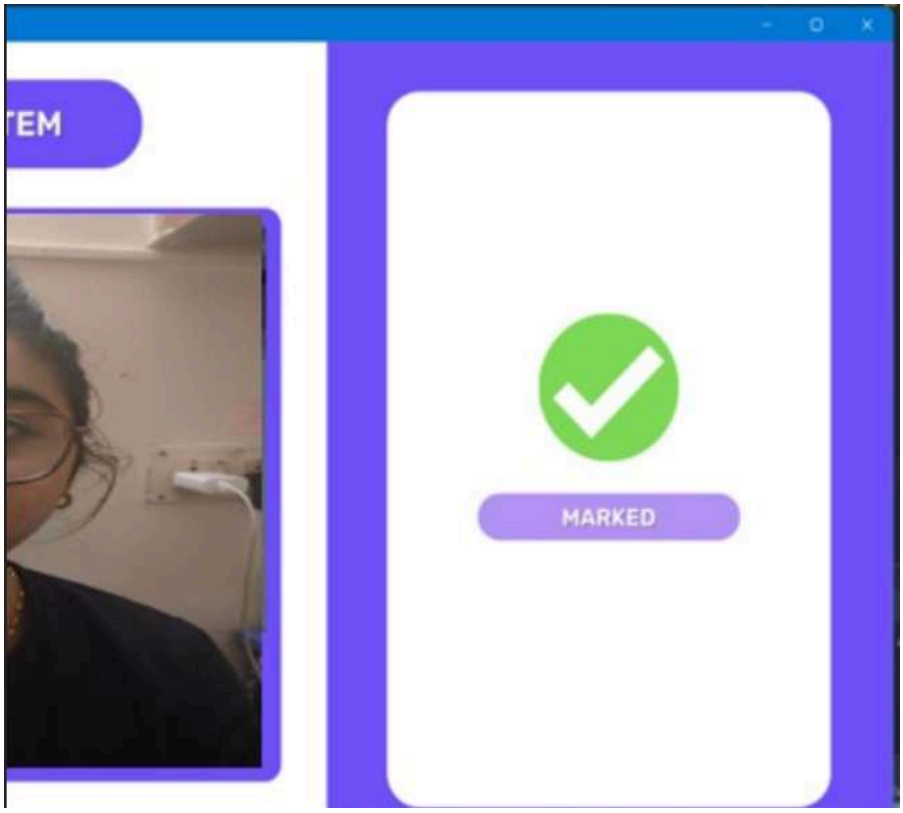
TEST CASE ID	TEST SCENARIO	TEST CASE	PRE-CONDITION	TEST STEPS	TEST DATA	EXPECTED RESULT	POST CONDITION	ACTUAL RESULT	STATUS (PASS/FAIL)
TC_Facial_001	Verify Student attendance through Face recognition	Enter valid Student face and valid Registration number	1. Need to have registration done 2. Need have registered face	1. Scan Face 2. Mark Attendance	<Valid Student face> <Valid Registration number>	Successful Marked Attendance	Attendance recorded in DB	Attendance	Pass
TC_Facial_002	Verify Student attendance through Face recognition	Enter valid Student face and invalid Registration number	1. Need to have registration done 2. Need have registered face	1. Scan Face 2. Mark Attendance	<Valid Student face> <Invalid Registration number>	A message "Not Marked Attendance" is shown	Attendance recorded in DB	Attendance	Fail
TC_Facial_003	Verify Student attendance through Face recognition	Enter invalid Student face and valid Registration number	1. Need to have registration done 2. Need have registered face	1. Scan Face 2. Mark Attendance	<Invalid Student face> <Valid Registration number>	A message "Not Marked Attendance" is shown	Attendance recorded in DB	Attendance	Fail
TC_Facial_004	Verify Student attendance through Face recognition	Enter invalid Student face and invalid Registration number	1. Need to have registration done 2. Need have registered face	1. Scan Face 2. Mark Attendance	<Invalid Student face> <Invalid Registration number>	A message "Not Marked Attendance" is shown	Attendance recorded in DB	Attendance	Fail
TC_Facial_005	Verify Student attendance through Face recognition	Enter new student with no registartion number	1. Need to have registration done 2. Need have registered face	1. Scan Face 2. Mark Attendance	<Invalid Student face> <Invalid Registration number>	A message "Not Marked Attendance" is shown	Attendance recorded in DB	Attendance	Fail

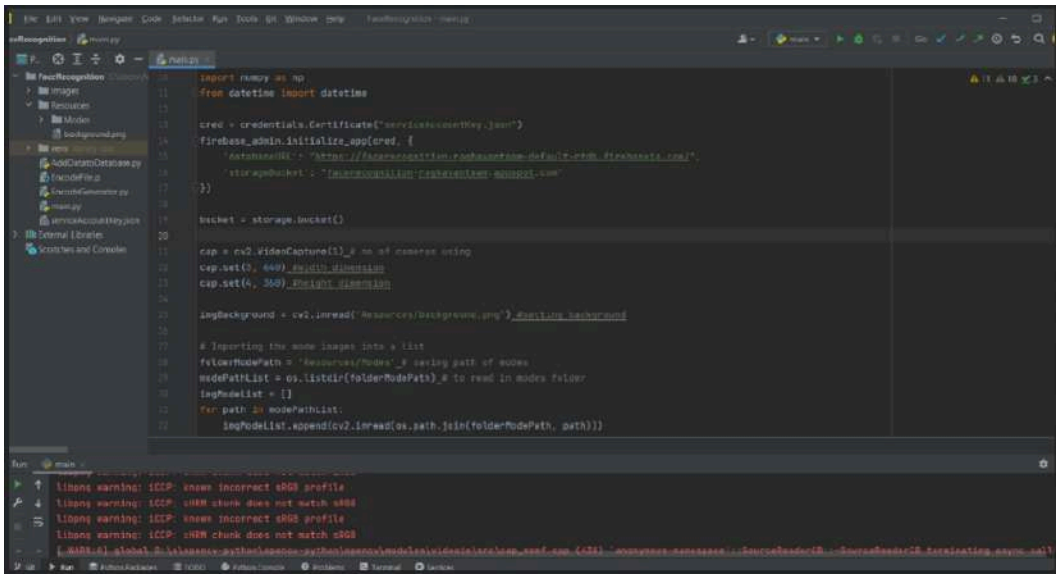
5. Automated Testing

```python
from selenium import webdriver
from selenium.webdriver.common.by import By
import  time

driver = webdriver.Firefox()
driver.implicitly_wait(10)


driver.get("https://localhost:facial recognition.com/")  #Importing facial recognition module
time.sleep(5)

def test_case_1():
    # Test case 1: Add a new person to the system and verify attendance
    new_person_id = facial_recognition_module.add_person("John Doe", "john_doe.jpg")
    facial_recognition_module.capture_image()
    if facial_recognition_module.recognize_person() == new_person_id:
        print("Test case 1 passed: New person added and recognized successfully")
    else:
        print("Test case 1 failed")

def test_case_2():
    # Test case 2: Take attendance of known person
    facial_recognition_module.capture_image()
    if facial_recognition_module.recognize_person() is not None:
        print("Test case 2 passed: Known person recognized and attendance marked")
    else:
        print("Test case 2 failed")

def test_case_3():
    # Test case 3: Verify attendance of unknown person
    facial_recognition_module.capture_image()
    if facial_recognition_module.recognize_person() is None:
        print("Test case 3 passed: Unknown person not recognized")
    else:
        print("Test case 3 failed")

```

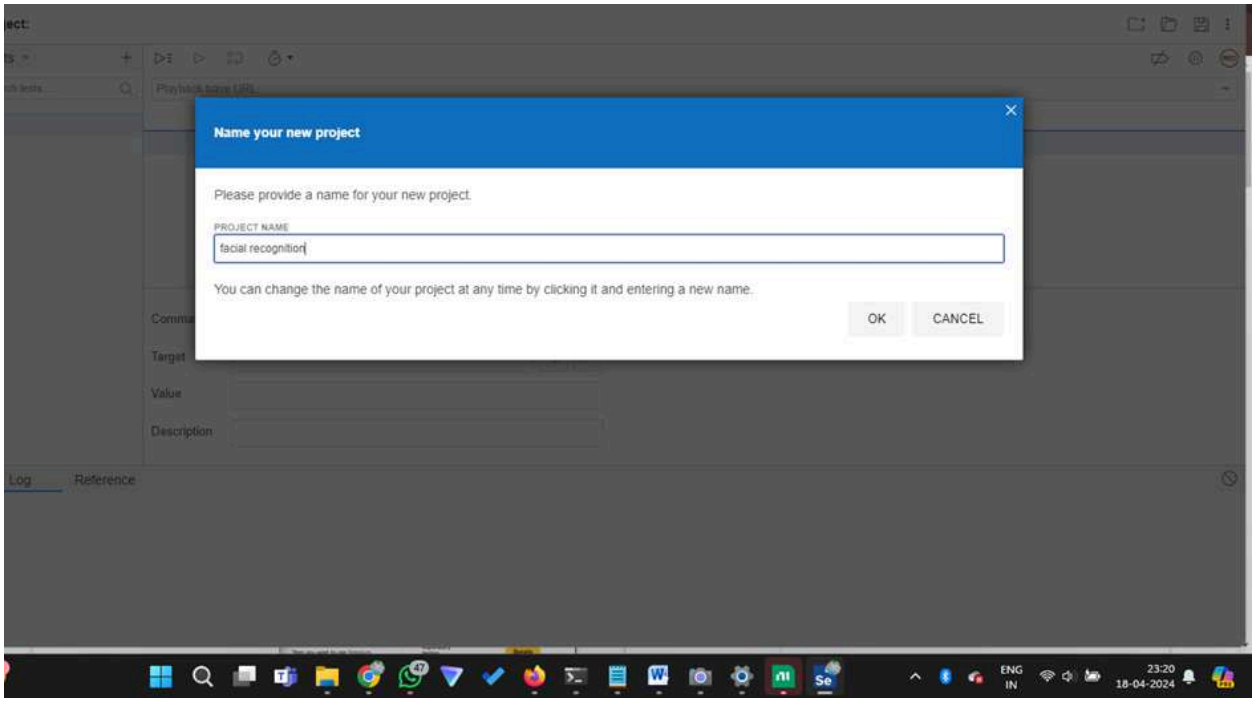
```python
def test_case_3():
    # Test case 3: Verify attendance of unknown person
    facial_recognition_module.capture_image()
    if facial_recognition_module.recognize_person() is None:
        print("Test case 3 passed: Unknown person not recognized")
    else:
        print("Test case 3 failed")

def test_case_4():
    # Test case 4: Ensure system handles errors gracefully
    try:
        facial_recognition_module.capture_image()
        facial_recognition_module.recognize_person()
        print("Test case 4 passed: System handled operations gracefully")
    except Exception as e:
        print(f"Test case 4 failed: {e}")

if __name__ == "__main__":
    # Run test cases
    test_case_1()
    test_case_2()
    test_case_3()
    test_case_4()


```

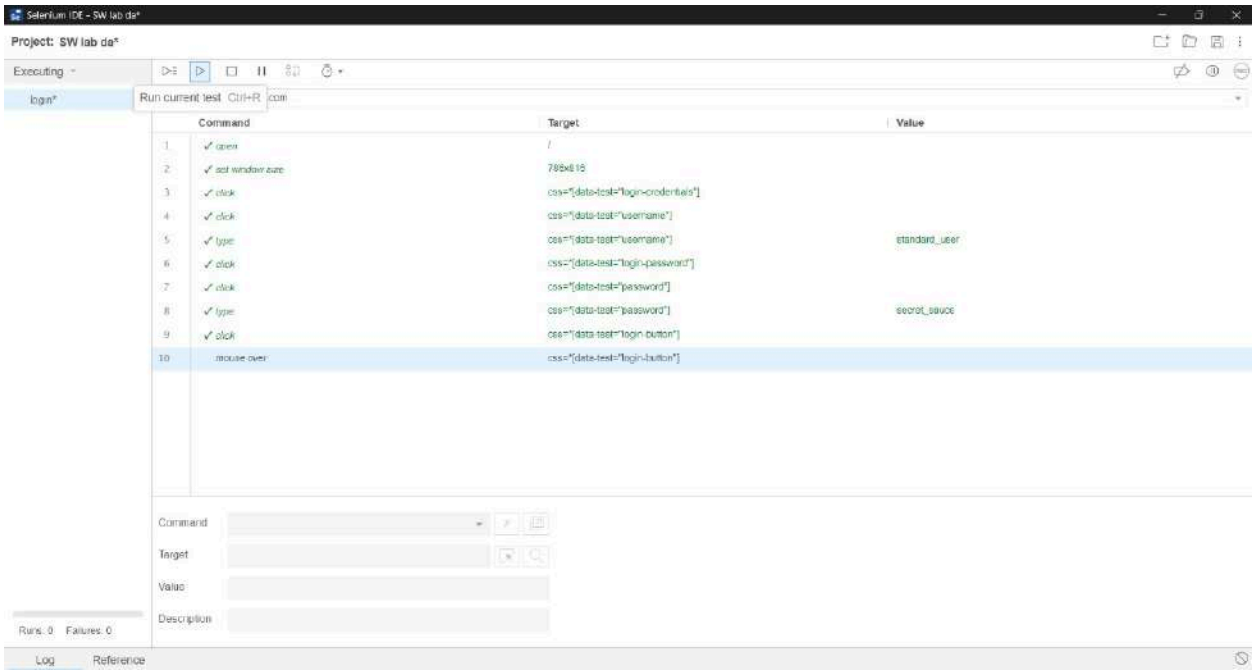


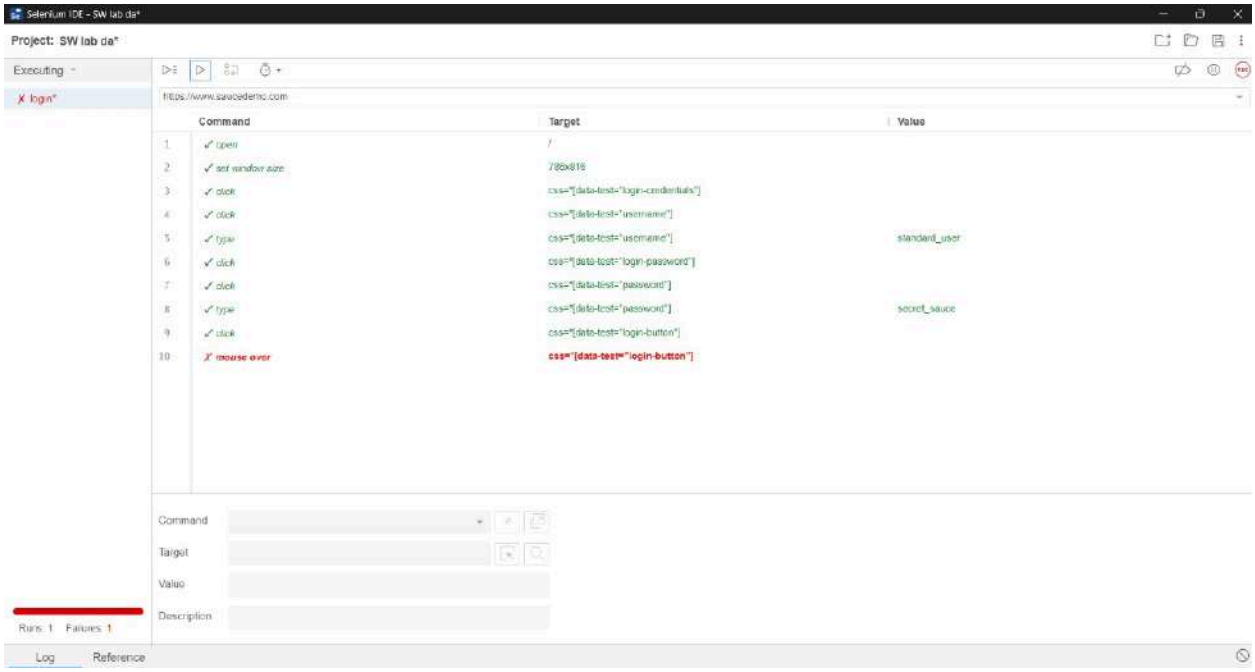
Testing for errors



```
"C:\Users\Naga umesh\PycharmProjects\FaceRecognition\venv\Scripts\python.exe" "C:\Users\Naga umesh\PycharmProjects\FaceRecognition\main.py"
Traceback (most recent call last):
  File "C:\Users\Naga umesh\PycharmProjects\FaceRecognition\main.py", line 32, in <module>
    imgModeList.appen(cv2.imread(os.path.join(folderModePath, path)))
AttributeError: 'list' object has no attribute 'appen'
[ WARN:0] global D:\a\opencv-python\opencv-python\opencv\modules\videoio\src\cap_msmf.cpp (438) `anonymous-namespace'::SourceReaderCB::~SourceReaderCB terminating async callbac

Process finished with exit code 1
```


Name your new project
Please provide a name for your new project.
PROJECT NAME
facial recognition
You can change the name of your project at any time by clicking it and entering a new name.
OK
CANCEL
Target
Value
Description
Log
Reference
ENG
IN
23:20
18-04-2024


Selenium IDE - SW lab da*
Project: SW lab da*
Executing
login*
Run current test Ctrl+R
Command
Target
Value
1 open /
2 set window size 788x816
3 click css="[data-test="login-credentials"]
4 click css="[data-test="username"]
5 type css="[data-test="username"] standard_user
6 click css="[data-test="login-password"]
7 click css="[data-test="password"]
8 type css="[data-test="password"] secret_sauce
9 click css="[data-test="login-button"]
10 mouse over css="[data-test="login-button"]
Command
Target
Value
Description
Runs: 0 Failures: 0
Log
Reference


Selenium IDE - SW lab da*
Project: SW lab da*
Executing
login*
https://www.saucedemo.com
Command
Target
Value
1 open /
2 set window size 786x816
3 click css="[data-test="login-credentials"]
4 click css="[data-test="username"]
5 type css="[data-test="username"] standard_user
6 click css="[data-test="login-password"]
7 click css="[data-test="password"]
8 type css="[data-test="password"] secret_sauce
9 click css="[data-test="login-button"]
10 mouse over css="[data-test="login-button"]
Command
Target
Value
Description
Runs: 1 Failures: 1
Log
Reference