Internship/Mini Project Report

In Software Engineering {Jr. Backend Developer}

SUBMITTED BY

Nikam Tanmay Kisan-TE IT-38 (T190428538)

UNDER THE GUIDANCE OF,

Dr. Rajendra V. Babar

IN PARTIAL FULFILMENT OF INTERNSHIP AND MINI PROJECT TERM

WORK IN 6TH SEM OF INFORMATION TECHNOLOGY ENGINEERING, SAVITRIBAI PHULE PUNE UNIVERSITY

Sinhgad Institutes

An Internship and Mini Project Report

Submitted To Sinhgad Institute of Technology, Lonavala

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Acknowledgement

I want to thank my advisers and everyone at the company for their patience and assistance during my on-site training. Thanks to their guidance, I was able to develop my skill in Python, Backend and learn about [Conversation skills, Code Development with Logic Build up, and creating Python based AI Software's and studies understanding requirements and fulfilment]. These skills will help me to expand my resume and advance my career.

Information about the company:-

AV Advance Vision System Pvt. Ltd. is a Private Company established on date 03-Aug-2019. AV Advance Vision System Pvt. Ltd. is classified as Non-govt. company and is registered at Registrar of Companies located in ROC-Hyderabad. As regarding the financial status on the time of registration of AV Advance Vision System Pvt. Ltd. its authorized share capital is Rs. 40, 00,000 and its paid up capital is Rs. 40, 00,000.

Company's main goals are Software publishing based on AI under Surveillance, [Software publishing includes production, supply and documentation of ready-made (customized) software, operating systems software, and business & other applications software, computer Vision (CV) software for all platforms. Company includes providing the best solution in the form of custom software after analyzing the user's needs and problems. Custom software also includes made-to-order AI-Software based on requirements from specific Clients. Also, included are writing of software of any kind following directives of the Clients; Software Maintenance and Updates, Web-Page Dashboard Management]. It comes Under Division COMPUTER VISION AND RELATED ACTIVITIES and this come under section SaaS Activities.

AV Advance Vision System Pvt. Ltd. has in-house AI-product known as "Darsa Ai".

It is AI based product which provides multiple AI-software Solution like Attendance Management (FRS), Facility Automation, Health Safety &Environment and various service like alert Generation (Intrusion, Theft, Unauthorized trespass) and Product Management and test with AI (Accuracy, Trans-piracy, Error Finding, Error Solving, Suggestions, Active and Passive), Detection (Fire, Water-logging or level, Reaction Specific, Temperature) all with help of Normal CCTV Cameras.

Our Software are built in such a way that each and every camera becomes smart and makes life simple and safe.

Description of the Company's Profile and products

VISION

- To be the most user-friendly video analytics platform
- Secure. Protect and Monitor our clients' businesses
- Always strive to be better than yesterday

MISSION

At Darsa Ai, we all come together to work every day because we want to make world fully automated with help of AI. With current Situation & challenges, in field of Management and Business, Everyone need to manage their day to day work manually will makes task difficult and there is chance of getting it missed and various types of errors - without knowing what exactly needs to be done. . There's no one in this world who doesn't want to make his work automated and live a happy life without errors and less effort, it's just that they don't have right solution & environment to make this happen.

We are very passionate about it & our mission is to make a world Automated working on its own without any possible errors. We are excited to make this in an innovating & entertaining way using the best use of AI technology with human interaction.

CUSTOMER CENTRICITY

Our customers come first and form the core of our business - be it a new feature or product. Our products & services are designed around their needs and struggle. We continuously use customer feedback to improve our product & services. It is base for us to get better day by day.

INNOVATION

We strongly believe in nurturing Ai within our company because passion for their jobs and ability to think outside the box helps us to constantly innovate and improve our product, allowing us to deliver a better experience to our customers.

Information about the Internship Position:

I joined Area for an internship program in the capacity of a Backend Developer trainee. While the central focus was on Software tests and research on both the build side and also on API side, discussion with clients about ensuring the stability and working of the software product (Android and IOS Mobile applications) developed by the team, spotting out all the possible bugs and issues faced by the clients and making sure that those are getting corrected by the team, I also handled various other tasks as they occurred.

TOP FEATURES WHERE I SHOWED MY SKILLS:

- Backend Server Management
- Sentry Cloud management for Server Code
- Python Automation of API Working
- Leave Manage System (LMS)
- Ai based attendance and automated report generation
- Merging Frontend features to Backend Processing.

Description about Internship Experience:

As an intern in the Backend Engineering and Managing Clients with their requirements, I got a list of tasks to complete every day. To track the information about the stability of our software product, I had to meet/ talk with clients on almost a daily basis. Sometimes I met/ talked with around 6 to 7 clients per day and had to persuade them to consider various latest features and software stability that Area could undertake for them. Additionally, I worked on API Creation and backend data handling and used to make lists of all possible test cases and performed as a first user perspective for offering the non-vulnerable end product for all connected entities and clients.

Additionally, I also used to attend the incoming queries and concerns of the clients and users on prior basis to understand all the problems and difficulties that they face while using our software applications.

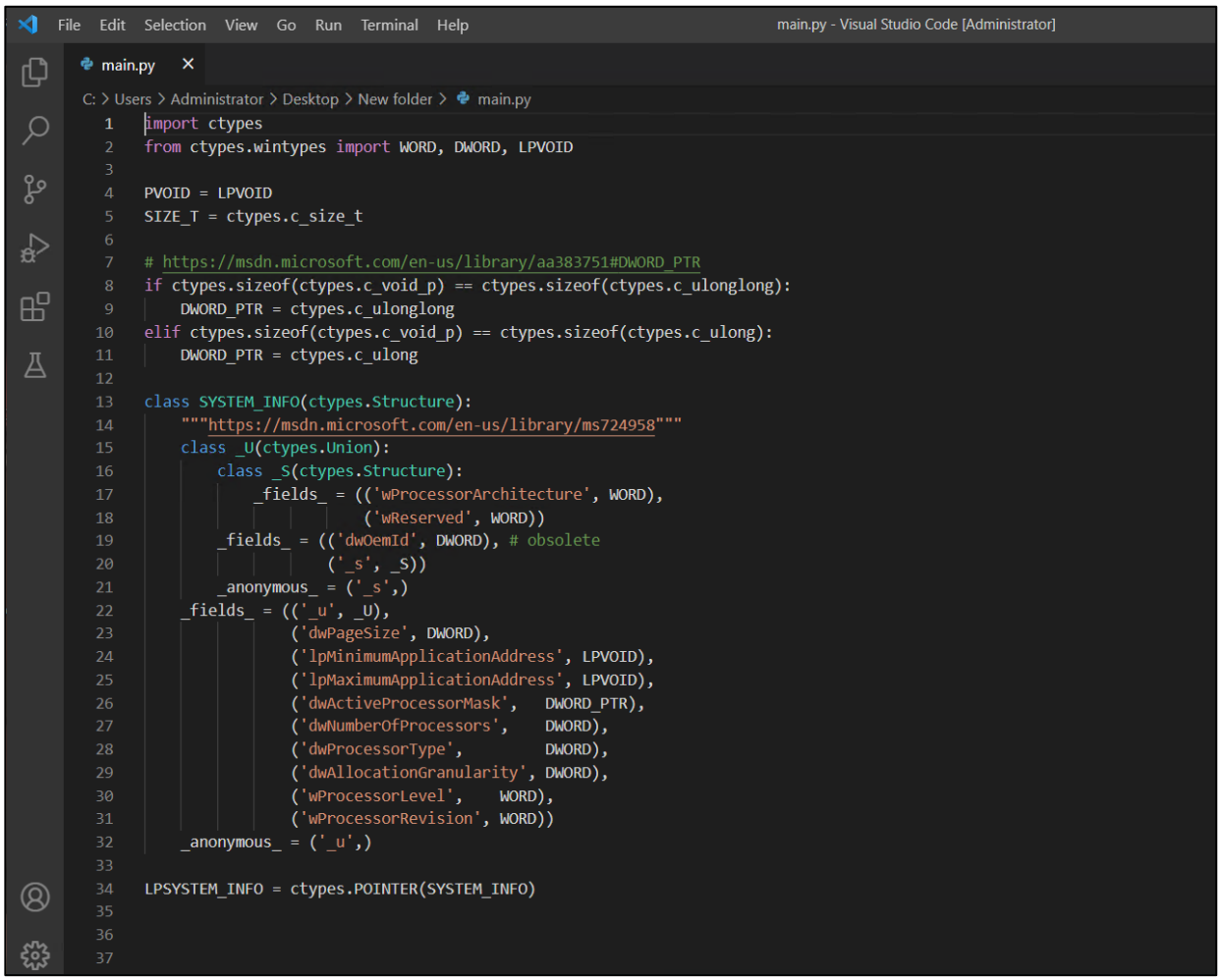
I used to clarify all the possible concerns that might face by clients on both the technical and non-technical understandings and perspectives. Meanwhile I also learnt the customer interactions in professional way by listening them properly to solve their concerns and queries.

The following tasks I undertook during the Internship:

- Managing the data using Backend Admin Access
- Observing all the data on microscopic and Technical way
- Finding all the errors and doubtful data received from the users
- Automating reports and uploading it to Sentry Server for presentation to the clients on Web Page for easy access
- Meeting and liaising with clients
- Writing, Creating and Managing Python Code and SQL queries for Server and Backend Management
- Exploring Python Modules on daily basis for new automation API code.

Information of project I undertook during the Internship:-

During the whole internship period my flashlight on working was to create, update and test backend code, API and Automation with help of Python. Designing and Creating various API for all frontend processing and linking all API to Automation code in backend and creating various branches and manipulating i.e., creating, editing, merging and defecting branches. Sometimes various code makes previous API misbehave and need to revert the new Updates to older version and optimize the data to make processes faster and help frontend to do faster processes and make a quick responses. Designed wholesome OTP management API and Automation to it with help of Python and SQL sub-quarries for employee login for LMS and Attendance Regularization.



1. Functional testing test cases

There are a lot of hands involved in creating a backend for API and Frontend processes. These stakeholders may have different expectations. Functional code determine if an Ai based Software is in compliance with these various requirements and uses. It examines and validates all functions, features, and competence of a product.

Twelve functional Software case scenario:-

1. The software working as designed whenever it starts and stops
2. The software performs accordingly on various client server and limitation is intel processor

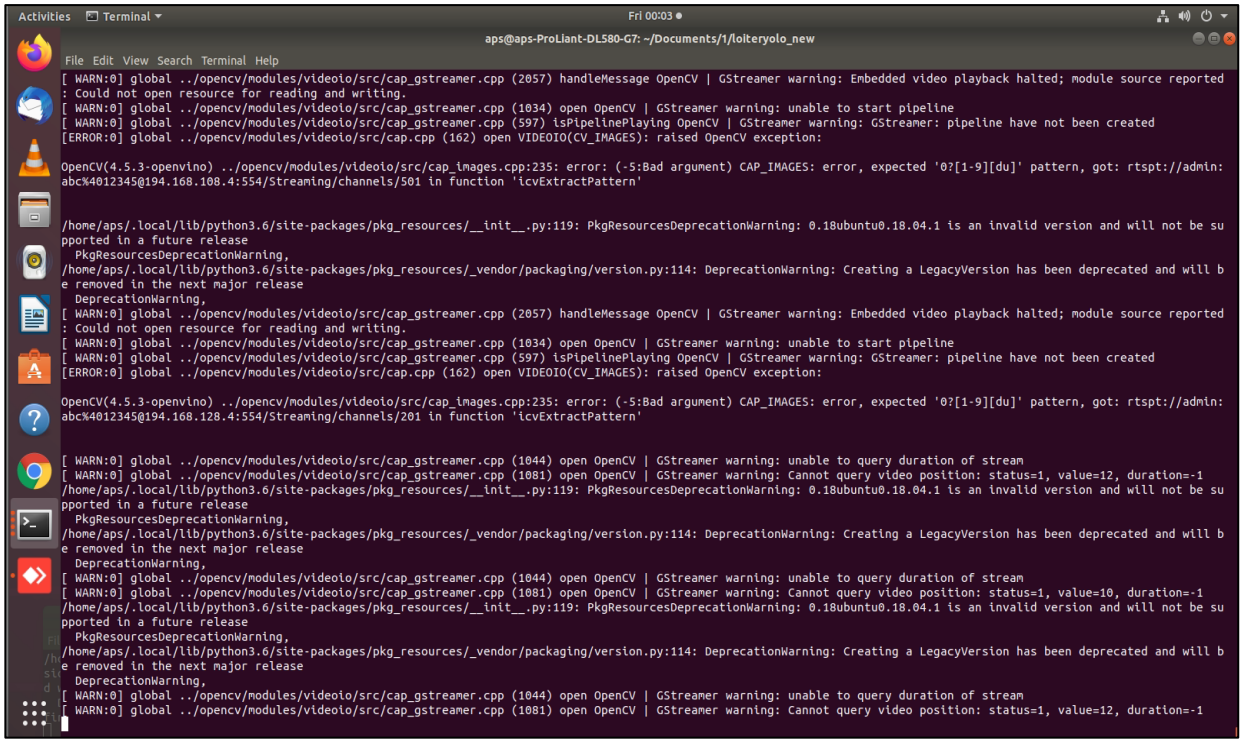
3. The software behaves accordingly when faced with external interruptions
4. (I.e. receiving SMS, minimized during an incoming phone call, etc.)
5. The user able to download and install the app without issues
6. The device able to multitask as expected when the app is in use or running in the background
7. Other applications perform satisfactorily once the app is installed
8. Social network options such as sharing, posting, etc. working as required
9. Mandatory fields working as required
10. The app support payment gateway transactions
11. Page scrolling scenarios working as expected
12. Navigation between various modules as expected
13. Appropriate error messages received as necessary

There are two ways to run functional testing: **scripted** and **exploratory**.

Scripted

Scripted test execution is just that – a structured, scripted activity where testers follow predetermined steps. This allows QA testers to compare actual results with expected ones.

These types of tests are usually confirmatory in nature, meaning you are confirming that the app can perform the intended function. Testers generally find more issues when they have more flexibility in the test design.



Exploratory

Exploratory testing investigates and discovers bugs and errors on the fly. It allows for testers to uncover software issues manually that are often unanticipated; where the QA team tests in a manner how most users may actually use the app. Coined by Cem Kaner in 1984, exploratory testing "emphasizes the personal freedom and responsibility of the individual tester to continually optimize the quality of their work by treating test-related learning, test design, test execution, and test result interpretation as mutually supportive activities that run in parallel throughout the project."

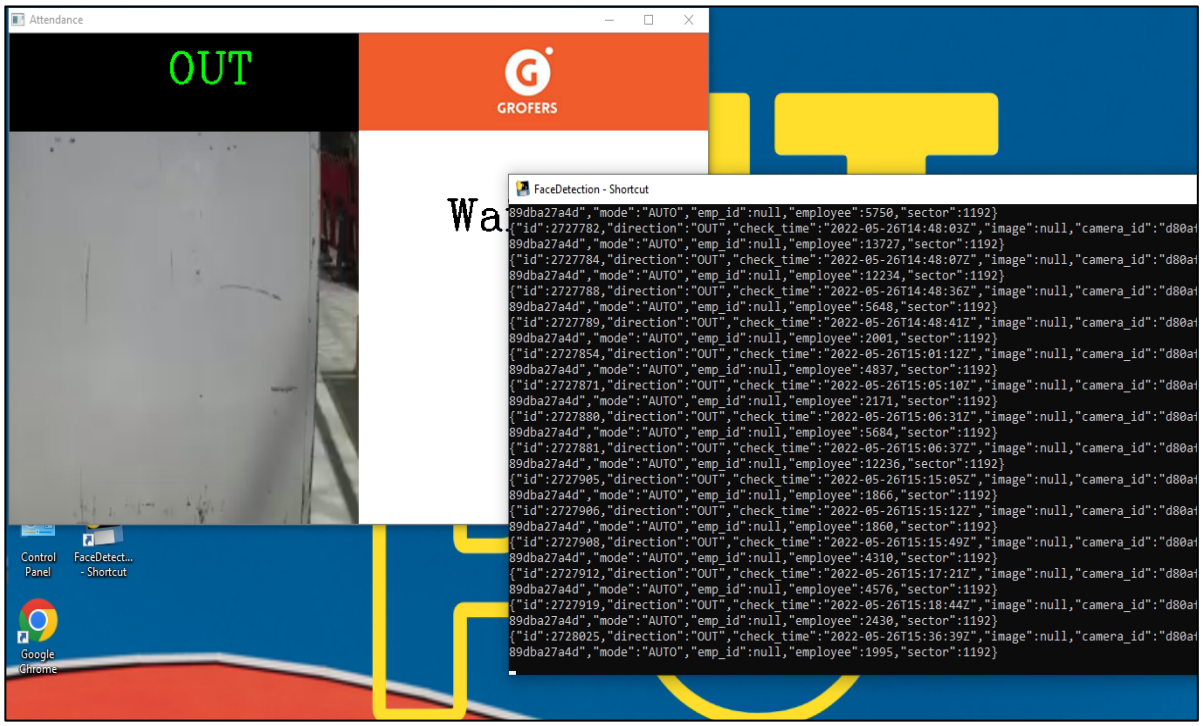
Related: Scripted vs. Exploratory Testing: Is one better than the other.

2. Performance testing test cases

The primary objective of performance testing is to ensure the performance and stability of your mobile application.

Eight performance test case scenarios:

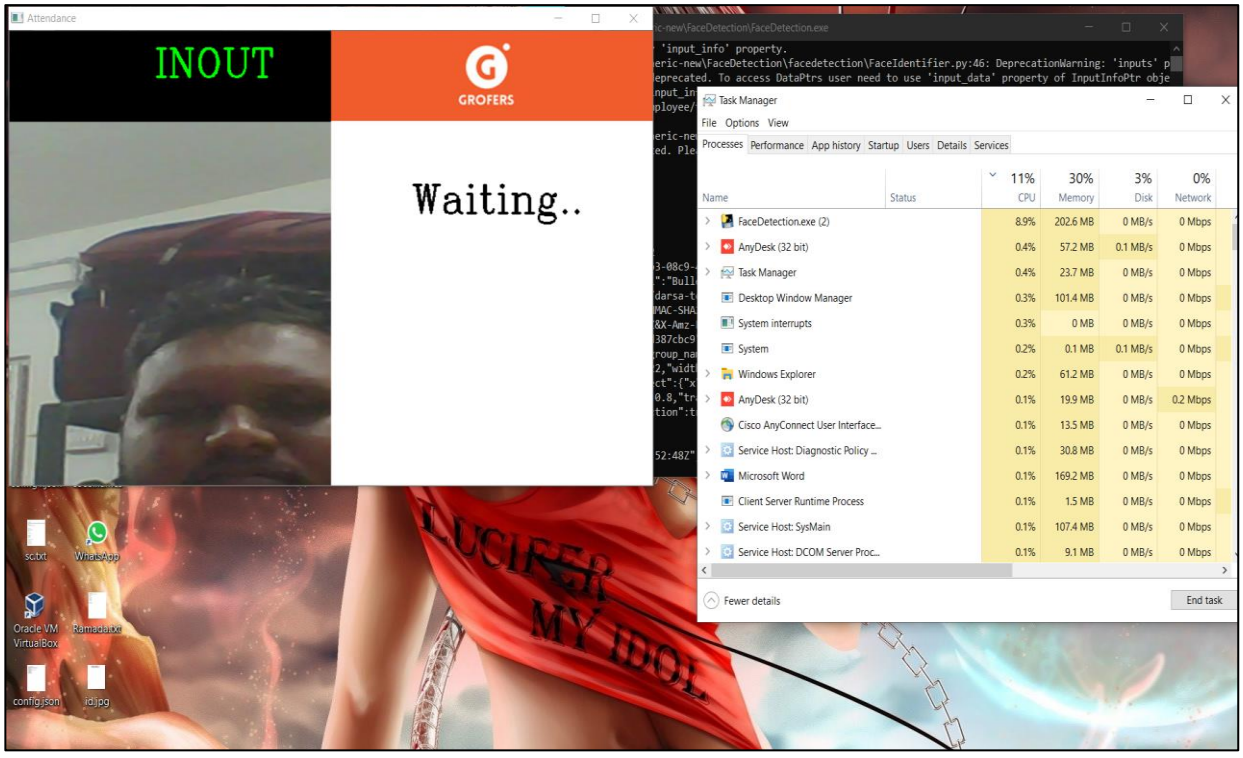
1. The app handles projected load volumes.
2. The various mobile app and infrastructure bottlenecks preventing the app from performing as expected.
3. The response time as expected.
4. CPU and RAM consumption, memory leaks and camera performance within required guidelines.
5. The current network coverage able to support the software at peak, average, and minimum user levels.
6. Any performance issues if the network changes to/from WIFI and 2G/3G/4G.
7. The app performs during intermittent phases of connectivity.
8. Existing client-server configurations providing the optimum performance level.



3. CPU and RAM usage Optimization

While CPU and RAM usage is a huge component of performance of server, CV developers must make it a top priority. Software are becoming more demanding in terms of processing power, so when designing your AI based software using Open CV understand that CPU -heavy software kill server processes and make it slow and deaf.

Server hardware – including CPU and RAM life – varies from model and manufacturer. As such, CV development teams must have a variety of new and legacy devices at hand in their AWS Server lab. Additionally, from a Server perspective, the test environment needs to replicate real-world uses including OS, network conditions (3G, 4G, Wi-Fi), and multitasking.



4. Usability Testing Test Cases

The usability testing of software provides end-users with an easy-to use and intuitive interface. This type of testing is usually performed manually, to make sure that software is easy to use and meets the expectations of real-life users.

5. Compatibility testing test cases

Compatibility testing is performed to safeguard against errors as devices have different specification, size, resolution, etc. It allows to determine that a software works consistently across various platforms and environments.

Six compatibility test case scenarios:

1. Have you tested on the top software testing tools and operating systems?
2. The software work with varying parameters, such as bandwidth, operating speed, capacity, etc.
3. The software work properly with various OS like windows, Linux, UNIX, etc.
4. The Software's user interface (UI) remain consistent, visible, and accessible on various screen sizes.
5. The text readable for all users.
6. The app work seamlessly across various configurations.

6. Security testing test cases

Security testing ensures that the software's data and networking security requirements are met as per guidelines. It focuses on identifying possible security risks and vulnerabilities so that the application is not exploited and data is protected.

Twenty-four security testing scenarios for mobile applications*:*

1. Can the software withstand any brute force attack to guess a person's username, password, or any personal Details and client Details to be exposed?
2. Does the software permit an attacker to access sensitive content or functionality without proper authentication? This includes making sure the communications with the backend are properly secured.
3. Is there a strong password protection system within software and backend processes?
4. Verify dynamic dependencies.
5. Measures taken to prevent attackers from accessing these vulnerabilities.
6. What steps have been taken to prevent SQL injection related attacks.
7. Identify and recover any unmanaged code scenarios.
8. Ensure whether certificates are validated and if the software code implements Certificate Pinning or not.
9. Protect the software and the network from denial of service attacks.
10. Analyse data storage and validation requirements.
11. Create session management for preventing unauthorized users to access unsolicited information.
12. Check to see if cryptography code is broken and repair what's found.
13. Are business logic implementations secured and not vulnerable to any attack from outside.
14. Analyse file system interactions, determine any vulnerability, and correct these problems.
15. What protocols are in place should hackers attempt to reconfigure the default landing page.
16. Protect against malicious client-side injections.
17. Protect against malicious runtime injections.
18. Investigate and prevent any malicious possibilities from file caching.
19. Protect against insecure data storage in the app's keyboard cache.

20. Investigate and prevent any malicious deeds from cookies.
21. To provide regular audits for data protection analysis.
22. Investigate and prevent any malicious deeds from custom created files.
23. Prevent memory corruption cases.
24. Analyse and prevent any vulnerabilities from different data streams.

8. Recoverability software testing test cases

Recovery testing is a non-functional testing technique that determines how quickly a mobile application can recover after experiencing a system crash or hardware failure.

Five recoverability testing scenarios questions:

1. The software resume at the last operation in case of a hard reboot or system crash
2. If any – is causing crash recovery and transaction interruptions
3. Effective is the application recovery after an unexpected interruption or crash
4. How to handle auto RE-Start during a power failure.
5. The expected process when the app needs to recover data directly affected by a failed connection

9. Regression testing test cases

QA and Software app testing don't end once an application is released. When an app is updated – even small changes can create unexpected problems. Therefore regression testing is key.

The purpose of regression testing is to make sure that new code changes in software do not cause bugs or breaks.

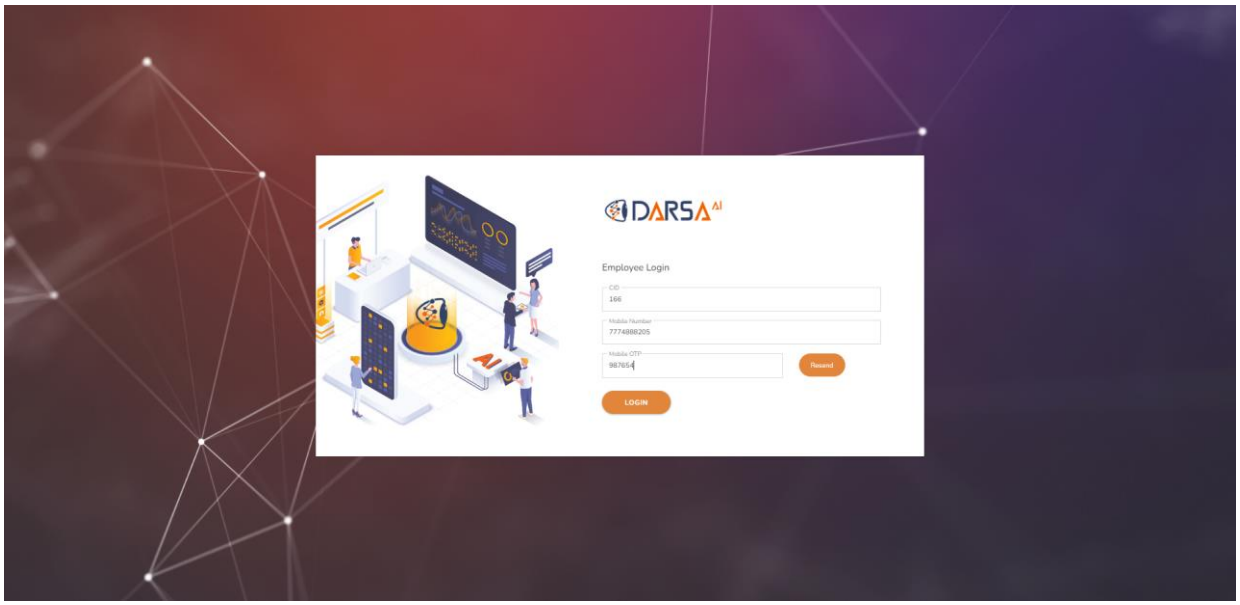
Related: When to use regression testing

Four regression testing scenarios for mobile applications:

1. Check any changes to existing functionality.
2. Check new changes implemented.
3. Check new features added.
4. Check for possible side effects after changes are launched.

Considering all these scenarios, conditions and performing the related tasks with different scenarios, at the end of the day.

Project Details:

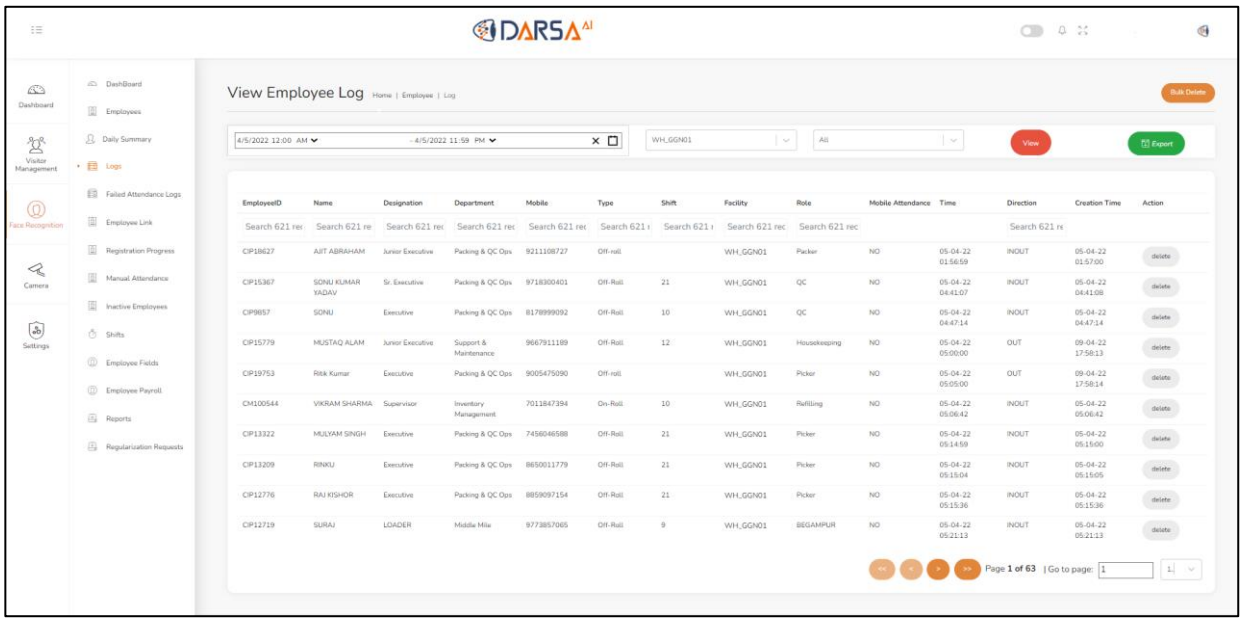


Darsa Ai is Smart Software based AI Software for Facility and provide Android & IOS Attendance by AV Advance Vision System:

Darsa Ai offers the smart Ai solution for managing Employee and Employee leave Management with proper Ai build auto generated report and make this process simple for HR process simple. Whole some employee management System SaaS Management and quick deployment of the software for various solutions like Facility Automation, Surveillance, Barcode with quick reader and pallet mapping and stock groover at warehouse, web Attendance and mobile Attendance App.

Recently, Traffic management system Backend Design and Loop configuration of traffic management with vehicle count, traffic control and vehicle type management.

Software applications include various types of features like tracking the daily Data with records, creating facility Week off plans accordingly, tracking the daily attendance Record and summarize the logs of employees at the Facility Company Level.


DARSA AI
Dashboard
Visitor Management
Face Recognition
Camera
Settings
DashBoard
Employees
Daily Summary
Logs
Failed Attendance Logs
Employee Link
Registration Progress
Manual Attendance
Inactive Employees
Shifts
Employee Fields
Employee Payroll
Reports
Regularization Requests
View Employee Log
Home | Employee | Log
Bulk Delete
4/5/2022 12:00 AM
4/5/2022 11:59 PM
WH_GGN01
All
View
Export
EmployeeID
Name
Designation
Department
Mobile
Type
Shift
Facility
Role
Mobile Attendance
Time
Direction
Creation Time
Action
CIP18627 AJIT ABRAHAM Junior Executive Packing & QC Ops 9211108727 Off-roll WH_GGN01 Packer NO 05-04-22 01:56:59 INOUT 05-04-22 01:57:00 delete
CIP15367 SONU KUMAR YADAV Sr. Executive Packing & QC Ops 9718300401 Off-Roll 21 WH_GGN01 QC NO 05-04-22 04:41:07 INOUT 05-04-22 04:41:08 delete
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CIP19753 Ritik Kumar Executive Packing & QC Ops 9005475090 Off-roll WH_GGN01 Picker NO 05-04-22 05:05:00 OUT 09-04-22 17:58:14 delete
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Conclusion:

The work experiences I encountered during the internship allowed me to develop [Agile testing Method, API testing, Customer Relationship Management]. I think I still need to work on my [Automation Testing, Cloud Testing, API Testing skills and SQL, PYTHON, XML automation testing tools]. However, the overall experience was positive, and everything I learned will be useful in my future career in this field. I am thankful to my advisers, boss, manager and colleagues for guiding me on frequent basis and also providing me all the required basic knowledge to work on the allotted profile, also for trusting me even I was a fresher without any related background and giving me the chance to gain the actual work experience and knowledge in the corporate world.

Suggestions / Recommendations for improvement to industry:-

The work experiences I encountered during the internship allowed me to develop [Agile testing Method, API testing, Customer Relationship Management]. I think I still need to work on my [Automation Testing, Cloud Testing, API Testing skills and SQL, XML automation testing tools]. However, the overall experience was positive, and everything I learned will be useful in my future career in this field.

On this node I can suggest to the corporation that, the company should more focus on the functional skills improvement to the interns/ fresher. Company helps a lot to learn but the teaching and acknowledgement style is very poor, intern need to observe, adjust and apply the basics Om their own when they start working with the corporation.

Company can also focus on skill based payments than keeping the restricted scope to look future with the company while working as an intern than keeping the short term work relation with the fresher or intern.

Attendance Record:

There was no any kind of attendance during the internship but I had to send the Daily working report to the managing director and HR of the company. I was reporting as the proof of working and reporting my daily performed tasks during my internship position.

List of reference (Library books, magazines and other sources):-

As company focus mainly on Ai based Software Solution therefore here is company's site link to reach us that refer to- https://www.darsa.ai

Also to work with the company the basic requirements that on should avail by studying or gaining the knowledge of following books and skills-

1. Software Testing (Analytical observation skill, high performing ability to capture the faults or bugs on company's backend mobile applications)
2. App development skills (Having relevant knowledge of Python, Java and SQL)
3. Having brilliant Customer interaction skills
4. Having great skill and knowledge of taking Customer Success feedback after sell service.

- **Reference links-**

1. Python.org