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Employee Monitoring System Using Power BI

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***Abstract:** This paper introduces an HR attendance and task monitoring system, which has been developed utilizing Power BI. The system provides a comprehensive dashboard for HR personnel to visualize and track employee activity effectively. The dashboard includes key aspects such as Attendance Monitoring system works on real-time or historical attendance data can be showcased, letting HR to identifies trends, patterns, and potential attendance problems. Employee Skills & Roles this section presents a clear view of employee skillsets and assigned roles, helping in informed project allocation and resource management accurately. Project Assignments the dashboard keeps track of current project assignments for each employee, empowering HR to understand workload distribution and make adjustments when needed. By utilizing Power BI's data visualization and analysis abilities to the fullest extent, this system augments HR to gain crucial insights into employee activity. This assists in better decision-making in areas like attendance management, project allocation, and resource optimization, ultimately contributes to a more efficient and productive workforce.*

***Keywords:** Component, formatting, style, styling, insert.*

I. INTRODUCTION

Hr's dashboard is an integrated approach to monitor employees helps for better decision making for organization goals. the power bi dashboard helps for quick analysis and decrease the time and man power to analyse the data. most of the organizations are lacking towards the keen look on manpower and work allocation. it may cause consequences like work allocation to inappropriate skill person. attendance monitoring in an organization plays a crucial role in order to proper utilization of resource. organizations are monitoring attendance in through spreadsheets, it requires various calculations and tools in order extract insights and analyse the data based on requirement. dashboard and report generating is most fascinating and simple way to solve the problem in order to achieve organization goals.

The power bi dashboard which has access to hr can monitor employee's attendance, skillset, working project which can be used for further analysis. the dashboard visualizes the data in a simple understandable way and ease of access makes the hr to monitor and make decisions faster. the attendance monitoring helps to maintain a record of people, and visualizing the attendance in form of dashboard helps to understand the data easily through filters and gather required insights. the skillset dashboard helps to maintain a record of employees on basis of various aspects such as job role, skillset, experience level.

The visualization helps to give count of employees based on the criteria. the generated report can generate insights based on filters of various combinations of given criteria columns. the report gives the data of employee's lying on the criteria and it helps to hr to allocate work based on employee's skill, role etc. the project monitoring dashboard helps the hr to have clear information of employees working on project, present task they are doing, their role in project etc. the visualization of the project makes to get the insights in ease of access.

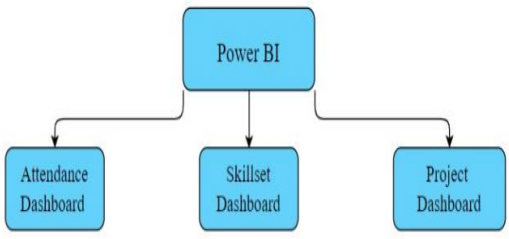


Fig.1 employee monitoring using power bi-making model

II. PROBLEM STATEMENT

The existing work consist of HR monitoring the attendance through spreadsheets, and time-consuming process. The existing system generated reports on average work delay, but didn't focus on nature of work of an employee, the system generated reports available resources and distribution of resources but it lacked in how resources are distributed among projects and employees available for further upcoming projects. The existing system availability with lack of resources, such as valid equipment, automation tools, or materials. This information aids in ensuring with insufficient resources. The existing systems are unable to pool the supportive operational activities. Most of these models are working with low built automation models such as Allocation of Resources and Address Resource Allocation.

III.PROPOSED SYSTEM

In this work, the focus is on addressing the daily operational needs of an organization, particularly emphasizing the importance of regular monitoring of various aspects related to employee management. These aspects include attendance tracking, assessing employee skill sets, job designations, and monitoring the projects employees are currently working on. The proposed system aims to streamline these processes, providing HR personnel with the necessary tools to monitor employee activities effectively and take necessary actions as needed.

The proposed system architecture offers a centralized solution by designing a comprehensive dashboard that consolidates all relevant information and functionalities. By incorporating all essential features into a single dashboard, the system enhances efficiency and ease of use for HR personnel, eliminating the need to navigate through multiple systems or platforms for different tasks.

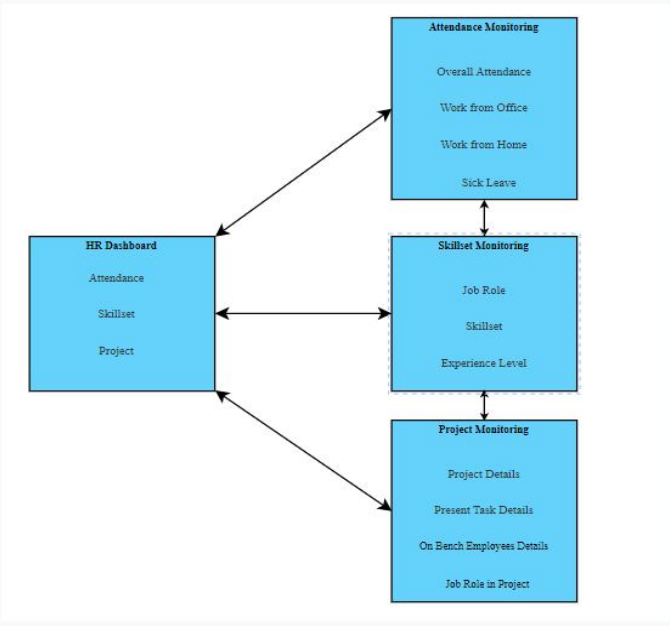


Fig.2 Proposed System Architecture

- First the HR home page dashboard is designed and navigation icons are used to navigate from one page to another.
- Attendance dashboard works on the aspects of organization's overall attendance and employee's individual attendance (i.e. work from home, work from office, sick leave).
- Skillset dashboard comprises of count and details of employees based on filters applied on dynamic need.

Project dashboard works with details of project and employees working with that project.

IV.PROPOSED SYSTEM

The Power BI dashboard is a visual tool makes a human understand and gain insights easily. In terms of designing dashboard, it is of three different parts with individual working model. The dashboard designed using interactive graphs and charts can help to monitor performance and other metrices. In addition of these the decision making in terms of productivity and achieve company goals.

Power BI Dashboards has following insights to present:

1) *Attendance Monitoring:* Give the HR a view of employee's attendance that includes the working location of employee. Using matrix individual's daily attendance can be represented. Charts and graphs help to analyse the attendance of an employee easily.
2) *Skillset Monitoring:* The HR who wants to know the count of employees based on skillset, job role, or work experience; the dashboard can present all the probable combination of above data.
3) *Project Monitoring:* The project monitoring dashboard makes an HR to know the work status and available employees for the new project. The employees involved in present project, their role in project and the present task an employee is working on, being visualising the above aspects can make HR to monitor and take necessary actions, allocate resources to employee.

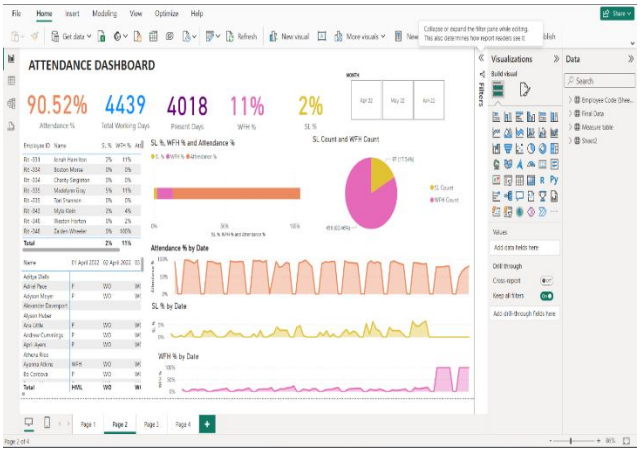


Fig.3 Attendance Dashboard

The attendance dashboard's main aspect is to monitor the employee's work location and availability of employee. The visualization of attendance dashboard includes following aspects.

a) Table: It helps for detailed examination of individual records and also it presents the raw data.
It shows the information of employee like Attendance%, Employee ID, Name, work from home, work from office, sick leave.

Employee ID	Name	SL %	WFH %	Attendance %
Rit -456	Adriel Pace	0%	0%	100.00%
Rit -484	Adyson Moyer	33%	7%	66.67%
Rit -404	Ana Little	5%	0%	71.43%
Rit -443	Andrew Cummings	0%	40%	95.24%
Rit -446	April Ayers	0%	0%	95.24%
Rit -452	Ayanna Atkins	0%	5%	95.24%
Rit -398	Bo Cordova	0%	21%	66.67%
Total		1%	9%	93.28%

Fig.3.1 Employee Attendance Table

b) Stacked Bar Chart: It is ideal for comparing values across various areas. The comparison shown in a horizontal bar. It compares the values between percentage of attendance, work from home and sick leave and all this data is calculated to out of 100%.

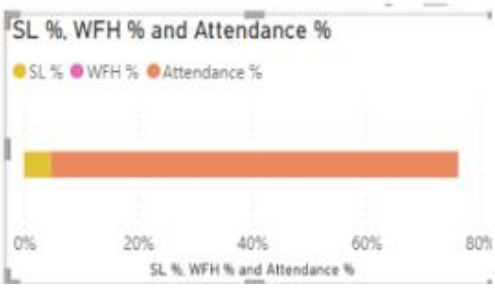


Fig.3.2 Percentage of Attendance Stacked Bar Chart

c) Stacked Area Chart: It is used to analyse trends in a particular time frame.
It represents data in a horizontal plane where the data is on Y-axis and date or timeline is on X-axis.



Fig.3.3 Stacked Area Chart

d) Pie Chart: A pie chart is used visualise the comparison of data between two to five categories of values.
It compares data count of employees between Sick leave and Work from home.



Fig.3.4 Count of sick leave and work from home Pie Chart

e) Slicer: Select the data by dynamically changing based on criteria, this interacting tool enables user to select the criteria from multiple options.
In this it shows values of available dates.



Fig.3.5 Date Slicer

f) Cards: The cards is an graphical element to showcase a particular data point in an informative manner.

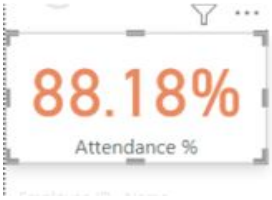


Fig.3.6 Attendance % Card

g) Skillset Dashboard

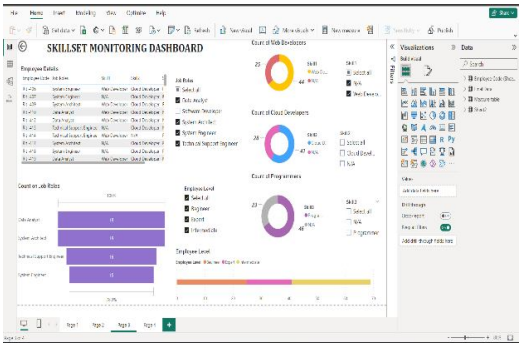


Fig. 4 Skillset Dashboard

The skillset dashboard comprises of monitoring and get count of employees under a combination of skillset, job role, experience of employee. The dashboard contains following aspects:

1) Table: It helps for detailed examination of individual records and also it presents the raw data (i.e. Employee ID, Name, Job role, Skill, Experience).



Employee Details

Employee Code	Job Roles	Skill1	Skill2	Skill3
Rit -410	Data Analyst	Web Developer	Cloud Developer	N/A
Rit -412	Data Analyst	Web Developer	Cloud Developer	N/A
Rit -413	Technical Support Engineer	N/A	Cloud Developer	N/A
Rit -415	Software Developer	Web Developer	Cloud Developer	N/A
Rit -419	Data Analyst	Web Developer	Cloud Developer	N/A
Rit -427	Data Analyst	Web Developer	N/A	N/A
Rit -436	Technical Support Engineer	Web Developer	Cloud Developer	N/A
Rit -441	System Architect	Web Developer	N/A	N/A
Rit -442	Data Analyst	N/A	Cloud Developer	N/A
Rit -443	System Architect	Web Developer	Cloud Developer	N/A
Rit -448	Technical Support Engineer	Web Developer	N/A	N/A
Rit -451	System Architect	Web Developer	N/A	N/A

Fig 4.1 Employee Skillset Table

2) Funnel Chart: It is a sequential process and shows how data changes through a system or process. In this the category of values shown is job roles and count of job roles shows the change of values.

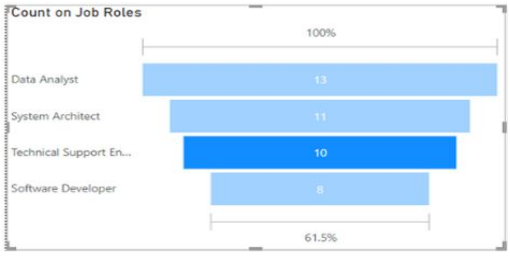


Fig. 4.2 Count of Job Roles Funnel

3) Stacked Bar Chart: It is ideal for comparing values across various areas. The comparison shown in a horizontal bar. It compares the values of experience level of employee.

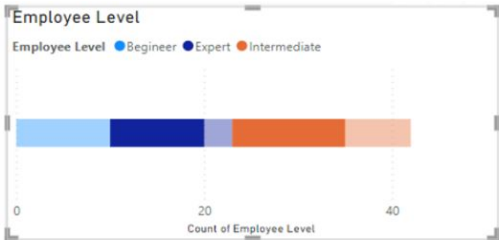


Fig4.3 Employee Experience Stacked bar chart

4) Donut Chart: A donut chart is similar working with pie chart but varies with visualization as a donut chart is in form of hole in circle.

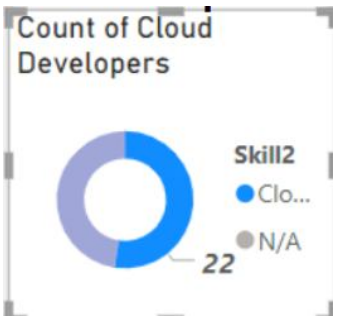


Fig4.4 Count of Employees in skillset Donut chart

5) Slicer: Select the data by dynamically changing based on criteria, this interacting tool enables user to select the criteria from multiple options. In this it shows values of job roles.



Fig4.5 Job Role Slicer

6) Project Dashboard

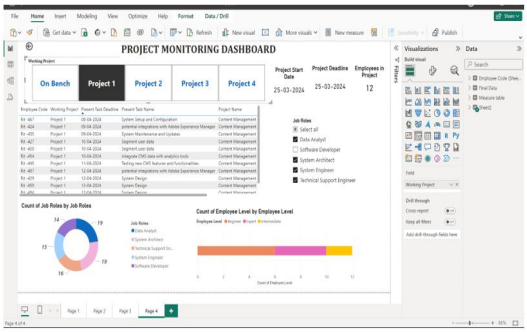
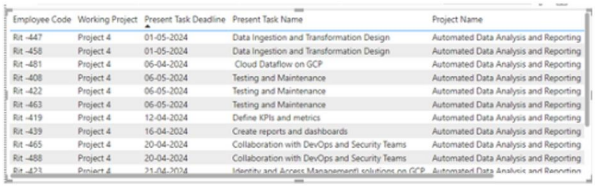


Fig 5 Project Dashboard

a) Table: It helps for detailed examination of individual records and also it presents the raw data (i.e. Employee ID, Name, Job role, Skill, Experience, Project info).



Employee Code	Working Project	Present Task Deadline	Present Task Name	Project Name
Rit -447	Project 4	01-05-2024	Data Ingestion and Transformation Design	Automated Data Analysis and Reporting
Rit -458	Project 4	01-05-2024	Data Ingestion and Transformation Design	Automated Data Analysis and Reporting
Rit -481	Project 4	06-04-2024	Cloud Dataflow on GCP	Automated Data Analysis and Reporting
Rit -408	Project 4	06-05-2024	Testing and Maintenance	Automated Data Analysis and Reporting
Rit -422	Project 4	06-05-2024	Testing and Maintenance	Automated Data Analysis and Reporting
Rit -463	Project 4	06-05-2024	Testing and Maintenance	Automated Data Analysis and Reporting
Rit -419	Project 4	12-04-2024	Define KPIs and metrics	Automated Data Analysis and Reporting
Rit -439	Project 4	16-04-2024	Create reports and dashboards	Automated Data Analysis and Reporting
Rit -465	Project 4	20-04-2024	Collaboration with DevOps and Security Teams	Automated Data Analysis and Reporting
Rit -488	Project 4	20-04-2024	Collaboration with DevOps and Security Teams	Automated Data Analysis and Reporting

Fig 5.1 Project Details Table

b) Slicer: Select the data by dynamically changing based on criteria, this interacting tool enables user to select the criteria from multiple options. In this it shows values of working projects.



Fig 5.2 Working Project Slicer

c) Cards: The cards is an graphical element to showcase a particular data point in an informative manner.

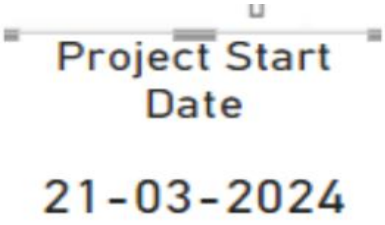


Fig 5. 3 Project Date Card

d) Donut Chart: A donut chart is similar working with pie chart but varies with visualization as a donut chart is in form of hole in circle. It is describing the job roles based on project

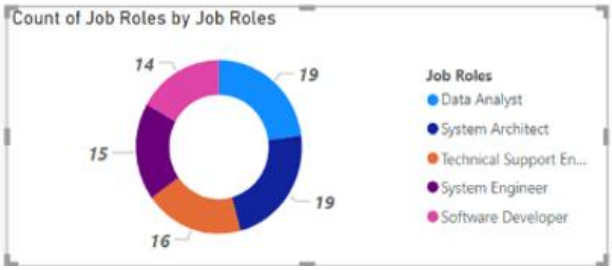


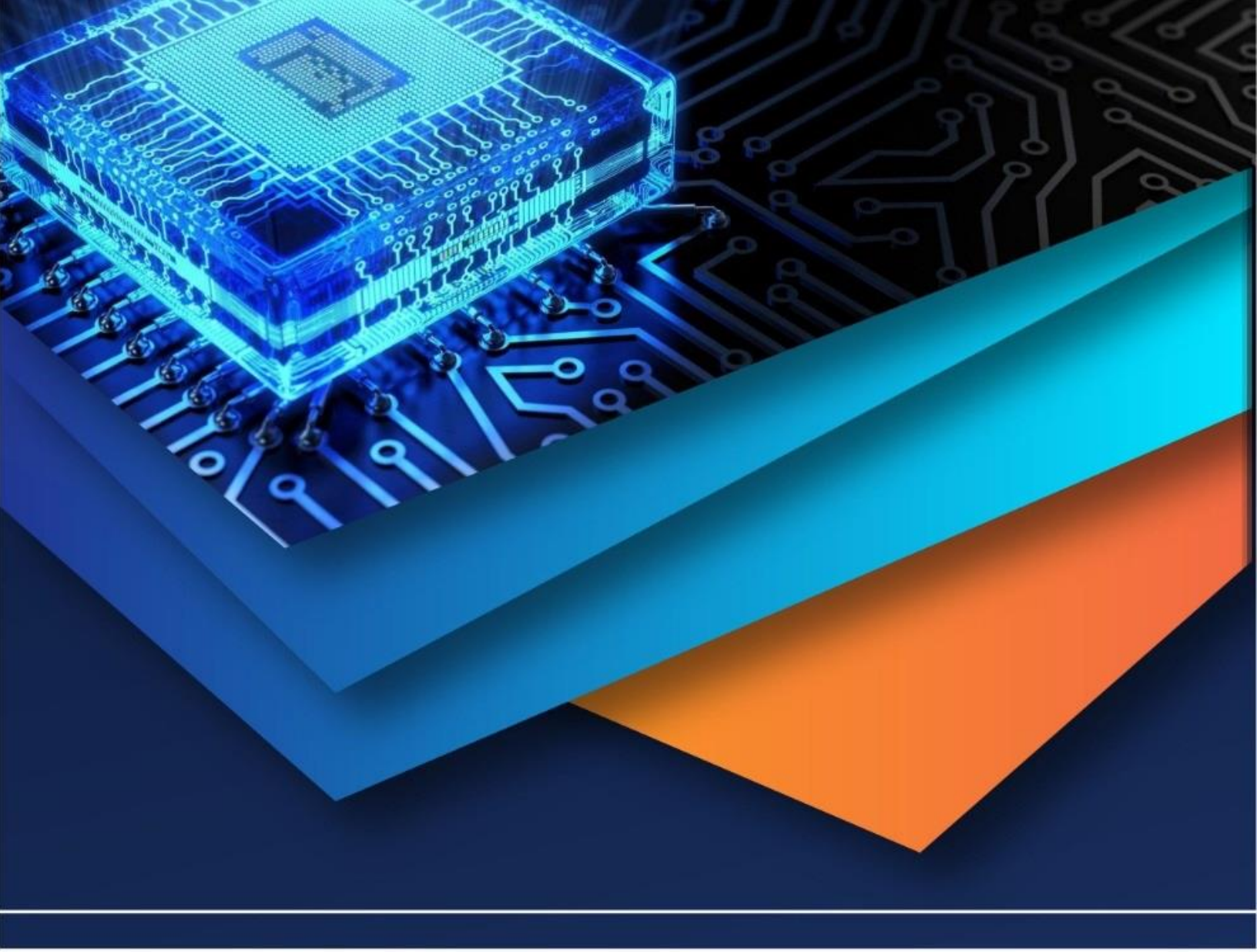
Fig 5. Count of Job Roles Donut Chart

V. CONCLUSIONS & FUTURE SCOPE

The above model is built using Power BI dashboard, enhances the user with ease of understanding, and works primary purposes of an HR monitoring the employee for attendance, skillset. It further helps to get a spreadsheet report based on applied dynamic filtering. The above dashboards keep HR to allocate work to appropriate person and align the person to accomplish the task on time.
The future scope of the paper is furnishing to accomplish above task on real time data furtherly making data to be updated time basis. Develop an hourly attendance tracker within the dashboard for real-time monitoring of employee presence. Using the real-time data the model is built using skill, job role, experience to create automated recommendation system for task allocation based using AI and Cloud servers.
Enable managers to update project assignments and task statuses within the platform for real-time project tracking. Even the working location of the employee to be notified to the dashboard of HR. Adding extended security to features to the Dashboard to protect the Report generated from insights data.

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