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Employee Appreciation Based On Customer Satisfaction Using IBM Cognitive Services

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Abstract: ***The way we treat your employees is the way they treat your customers According to a recent article, creating an employee recognition culture can increase employee retention by up to 31%. Employee recognition is the process of showing appreciation for an employee's achievements, actions, and contributions. In big companies (Amazon/Swiggy/Uber) appreciation is given to the employees based on the customer feedback or satisfaction (chat process/ voice process). Analysing all the feedback of each customer towards an employee work manually is a tedious job. The main objective of this guided project is to appreciate the employee work based on analysis of customer feedback. We are designing an application where the HR/ user can upload the feedback report of all the employees. The analysis of each employee report is displayed on the Web application in the form of Bar charts.***

Keywords: IBM Cognos, HR and Employee Recognition.

I. INTRODUCTION

Customer satisfaction is an emerging issue for the organizations today especially the firms that are operating beyond the boundaries. The satisfied customer is a permanent advertisement and good will of the company, so they are now putting their efforts to satisfy the customer up to maximum level. In researching satisfaction, firms generally ask customers whether their product or service has met or exceeded expectations. Thus, expectations are a key factor behind satisfaction. When customers have high expectations and the reality falls short, they will be disappointed and will likely rate their experience as less than satisfying. For this reason, a luxury resort, for example, might receive a lower satisfaction rating than a budget motel—even though its facilities and service would be deemed superior in "absolute" terms.

Today it's an era where the information technology has made great progress. Latest IT techniques and instruments have made this earth like a global village and many things across the boundaries are now in access of the human beings. The firms competing for their business are also taking effect from globalization. Now they have their customers overall the world and satisfaction is compulsory for all the customers, at domestic and foreign, level to be satisfied. Emergence of worldwide production markets enabled broader access to a range of foreign products and services for consumers and companies. It is particularly movement of material and goods between and within national boundaries. International trade in manufactured goods increased more than 100 times. So to retain the customer overall the world the customer satisfaction is compulsory. Many techniques are used to check the customer satisfaction about some particular company. One phenomenon says that the satisfied employees can create the customer satisfaction. Here the topic is also concerned with appreciation of employees and satisfaction of customer in services sector. A satisfied customer may be retained for a long time, so satisfactions will improve the overall performance of the company. As satisfied customer will make the good will in other general public so he will be a resource of advertisement for the company. Services sectors are dominant and have major role now as other manufacturing and production sectors have been affected due to adverse load shedding. They are also showing good performance. So it was decided to study the relationship in services sector about employee satisfaction through appreciation and customer satisfaction.

We are in the midst of a major transformation in the workplace. In the industrial era, the focus was on task-oriented laborers whose primary output came from their hands. In the information age, knowledge embodied in employees became a central component of the economy. Now we are entering the cognitive era. In this new era, in which machines are able to learn, reason and interact with humans naturally,1 the boundaries between people and technology become blurred. Rather than diminishing the role of people, in the cognitive era people are at the forefront of working with and realizing the benefits from new technologies to achieve more than was ever possible before. In fact, the cognitive era is just as much the human era. It is a time when work can be a more rewarding experience for employees.

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II. LITERATURE SURVEY

OriolIglesias, Markovic, and Rialp (2019) discussed that, "the building a favorable sensory brand experience is crucial in services settings to strengthen the competitive position of a brand and its equity. The study investigates the effect of sensory brand experience on brand equity in the banking industry, through customer satisfaction and customer affective commitment. It also examines whether employee empathy moderates the impacts of sensory brand experience on customer satisfaction and customer affective commitment. Based on data collected through a panel of 1739 customers, the hypothesized structural model is tested using path analysis. Results show that sensory brand experience has a positive indirect impact on brand equity, through customer satisfaction and customer affective commitment. Customer satisfaction positively influences customer affective commitment, and employee empathy negatively moderates the relationship between sensory brand experience and customer satisfaction."

Mohammad, Quoquab, Halimah, and Thurasamy, (2019) studied that, "there is an on-going debate about the role of workplace internet leisure and whether it is a vice or virtue. Considering this, the purpose of this paper is to examine the effect of workplace internet leisure on workplace outcome variables such as employee satisfaction and employee productivity in the Malaysian context. Findings reveal that workplace internet leisure, workplace internet leisure policy and workplace autonomy orientation affect employees' satisfaction. Additionally, the mediating role of ES was found to be significant."

Jayendira Sankar (2018) concluded that "the relationship between service quality and customer satisfaction in the familiar retail outlets of Chennai. The general objective of this study is to determine the relationship between service quality and customer satisfaction, and also investigate the strategies utilized by an organization to deliver exceptional service quality and customer satisfaction through customer service. These objectives were tested by three hypotheses. It is also clear from this research that customer service has impact on service quality perception and customer satisfaction."

Hashim, Wang, Yasmeen, Mofrad, and Waheed, (2018) the article expands "current knowledge by assessing how employee engagement is transformed into corporate image and customer satisfaction. Unexplored in earlier studies, the article undisclosed the role that service quality plays in this transformation. Developed through an extensive literature survey, the conceptual model is empirically tested, with survey data collected from 261 customers and 261 managerial employees. The results show that, first, focusing on employee engagement can both lead to a favorable corporate image and enhance customer satisfaction. Second, service quality has a significant positive effect both on customer satisfaction and on corporate image. Third, service quality positively mediates the relations among employee engagement, customer satisfaction and corporate image. The article concludes with the study's qualification, plus some practical and theoretical implications, suggesting future research directions.

III.SYSTEM DESIGN

System design thought as the application of theory of the systems for the development of the project. System design defines the architecture, data flow, use case, class, sequence and activity diagrams of the project development.

A. IBM Cognos Analytics

IBM Cognos Analytics is a set of business intelligence tools available on cloud or on- premise. The primary focus is in the area of Descriptive Analytics, to help users see the information in your data through dashboards, professional reporting and self-service data exploration. In this work, we used the IBM cognos data analytics for analysing the crop yield data.

Following are important features of IBM Cognos:

1) *Get Connected* - Connect your data effortlessly Import data from CSV files and spreadsheets. Connect to cloud or on-premises data sources, including SQL databases, Google BigQuery, Amazon, Redshift, and more.
2) *Prepare your Data* – Prepare and connect data automatically Save time cleaning your data with AI-assisted data preparation. Clean and prep data from multiple sources, add calculated fields, join data, and create new tables.
3) *Build Visualizations* - Create dynamic dashboards easily Quickly create compelling, interactive dashboards. Drag and drop data to create auto- generated visualizations, drill down for more detail, and share using email or Slack.
4) *Identify Patterns* – Uncover hidden patterns Ask the AI assistant a question in plain language, and see the answer in visualization. Use time series modelling to predict seasonal trends.
5) *Generate Personalised Reports* – Create and deliver personalized reports Keep your stakeholders up-to-date, automatically. Create and share dynamic personalized, multi-page reports in the formats your stakeholders want.

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6) *Gain Insights* - Make confident data decisions Get deeper insights without a data science background. Validate what you know, identify what you don't with statistically accurate time-series forecasting and pinpoint patterns to consider.
7) *Stay Connected* – Go Mobile Stay connected on the go with the new mobile app. Access data and get alerts right from your phone.

B. HR and People Analytics

Analytics is the interpretation of data pattern that assist decision- making and performance improvement. HR analytics is defined as the process of measuring the impact of HR metrics, such as time to hire and retention rate on business performance. IBM Cognos Analytics integrates reporting, modelling, analysis, exploration, dashboards, stories, and event management so you can understand your organization's data, and make effective business decisions. A dashboard helps you to monitor events or activities at a glance by providing key insights and analysis about your data on one or more pages or screens. In this project, we visualize, analyse and gain most of the insights by creating a dashboard. In certain situations, report consumers would like to analyse combinations of disparate facts in the context of some common dimensional attributes rather than treat each fact independently in a sub query and then merge the results together. The latter is what IBM Cognos Analytics does when perform a multi-fact query and is referred to by IBM Cognos as a "stitch query". IBM Cognos Analytics provides templates that contain predefined designs and grid lines for easy arrangement and alignment of the visualizations.
Having a powerful engine that can provide you with deep insights and automate things like planning, budgeting, and forecasting can help you to take your organization to the next level. By enabling you to create a single source of truth and visibility to all your data, which is also able to scale the same robust planning across your organization will help connect each different line of business at your organization.

C. System Architecture

HR analytics is a methodology for creating insights on how investments in human capital assets contribute to the success of four principal outcomes: (a) generating revenue, (b) minimizing expenses, (c) mitigating risks, and (d) executing strategic plans. This is done by applying statistical methods to integrated HR, talent management, financial, and operational data. Analytics is the interpretation of data patterns that assist decision-making and performance improvement. HR analytics is defined as the process of measuring the impact of HR metrics, such as time to hire and retention rate on business performance. In this project, we visualize, analyse and gain most of the insights by creating a dashboard. IBM Cognos Analytics provides dashboards and stories to communicate your insights and analysis. You can assemble a view that contains visualizations such as a graph, chart, plot, table, map, or any other visual representation of data. Explore powerful visualizations of your data in IBM Cognos Analytics and discover patterns and relationships that impact your business. A dashboard helps you to monitor events or activities at a glance by providing key insights and analysis about your data on one or more pages or screens.

The following are the modules in our work:

- Create IBM services
- Upload feedback data to cloudant database
- Node-Red application building
- Add And Configure Tone Analyser Node
- Parse Tone Analyser Output
- Display The Analysis
- Save the sentiment In DB

1) *Database Description:* Our work had been created using our own database in JSON format. We can add the text and the user i.e, customer and agent. By using this feedback documents the employee sediment analysis is shown in the form of bar graph. In Bar graph the feedback of the employee is shown according to the reviews given by the customers.
2) *Create IBM services:* Create IBM services i.e tone-analyser which uses linguistic analysis to detect emotional and language tones written in text. After successfully creating the service you will get redirected to the tone-analyser page, where you will find different options. You will find credentials like apikey, url etc, which will be used to configure in node-red. Create node-red service which is used to create event-based apps with simple flow-based programming.

3) *Upload feedback Data to Cloud ant Database:* We have to store the database with feedbacks of each employee. Usually, every company has its own database where all the details are stored. As we cannot access the private data we would like to create our own data replicating the process. The document will be in the JSON form.

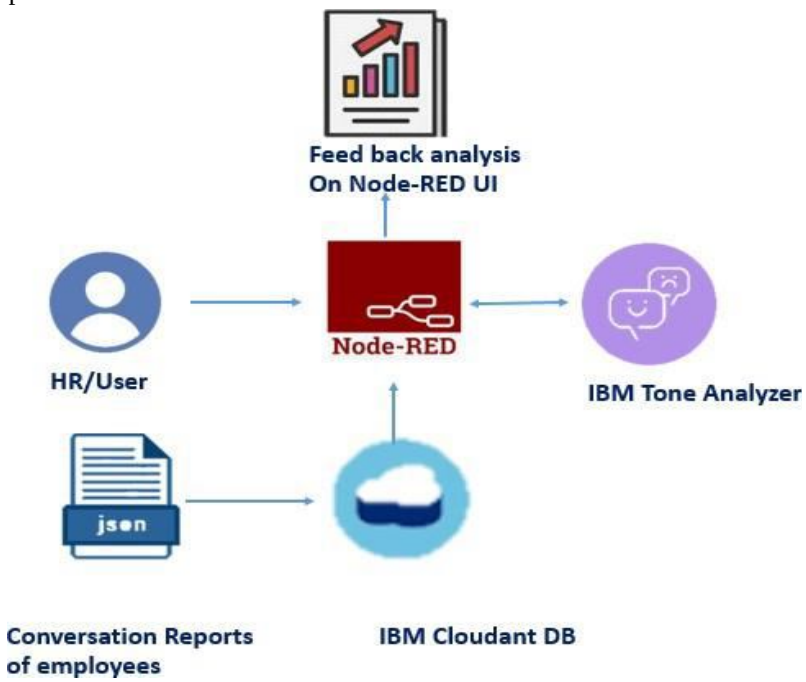


Fig. 1 Architecture Diagram

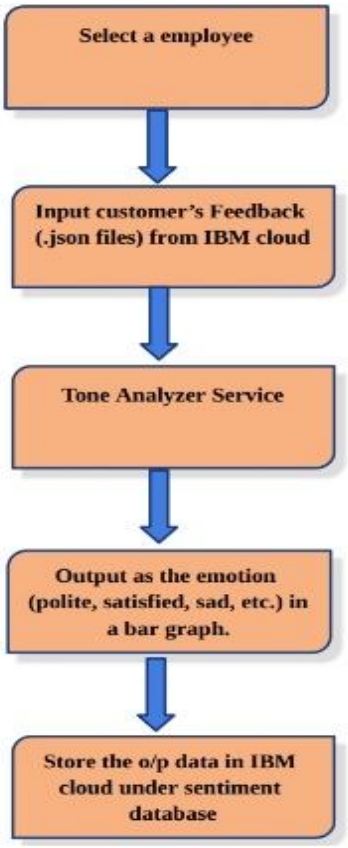


Fig. 2 Flow Chart

4) *Node-Red Application Building:* Node-red application is build. It gives a flow-based development tool for visual programming developed by IBM for wiring together hardware devices, APIs. 1.Configure employee selection dashboard: Navigate to your Node-RED flow editor. 2.Fetch the documents from DB : Whenever the user selects an employee from Dropdown, the documents created with respect to the employee should be fetched. to do si, drag the Cloudant DB node and configure the properties. Give the name of the created database i.e, Employee and search option as _id. Add a debug node and wire them together select any of the employee names and see the output on the debug sidebar on the flow tab . Expand the object and you can see the whole document is fetched from DB.
5) *Parse The DB Output:* Now we would like to grab the conv variable so drag function node Double click on Function node and write the below code msg.payload=msg.payload.conv return msg;
6) *Add And Configure Tone Analyser Node:* Now the time to analyse the feedbacks in the fetched document so add the tone analyser and debug node Double click on the Tone Analyser and configure the details. Paste the API key and URL that you have saved earlier and click on done Deploy the flow Go to UI select an employee name and Observe the output on the debug sidebar Expand the elements in the payload object, you can observe the analysed sentiment of each text in the document fetched.
7) *Display the Analysis:* Now plot the sentiment score on the dashboard using a bar chart and drag chart node. Double click on the chart node configure the dashboard select add newui_group click on the edit icon. Name the group as Sentiment of Conversation select the same tab. Click on add Deploy the flow go to the UI select the employee name and the graph should be displayed.
8) *Save the sentiment In DB:* You can also save the sentiments in db by adding Cloudantdb output node .Let's parse the output of the tone and save the parsed tones on DB. Double click on the function node, Add the code below and click on done. Double click on Cloudant DB node and configure the node as follows Give a database name sentiment (creates a new database on the name given) select the option as insert (inserts the data to DB). Deploy the flow Go to the dashboard select the employee name analysis will be shown and at the same time sentiments are stored in the DB Go to Cloudant DB ,Open the created Sentiment Database, Observe the sentiments are stored.

IV.RESULTS

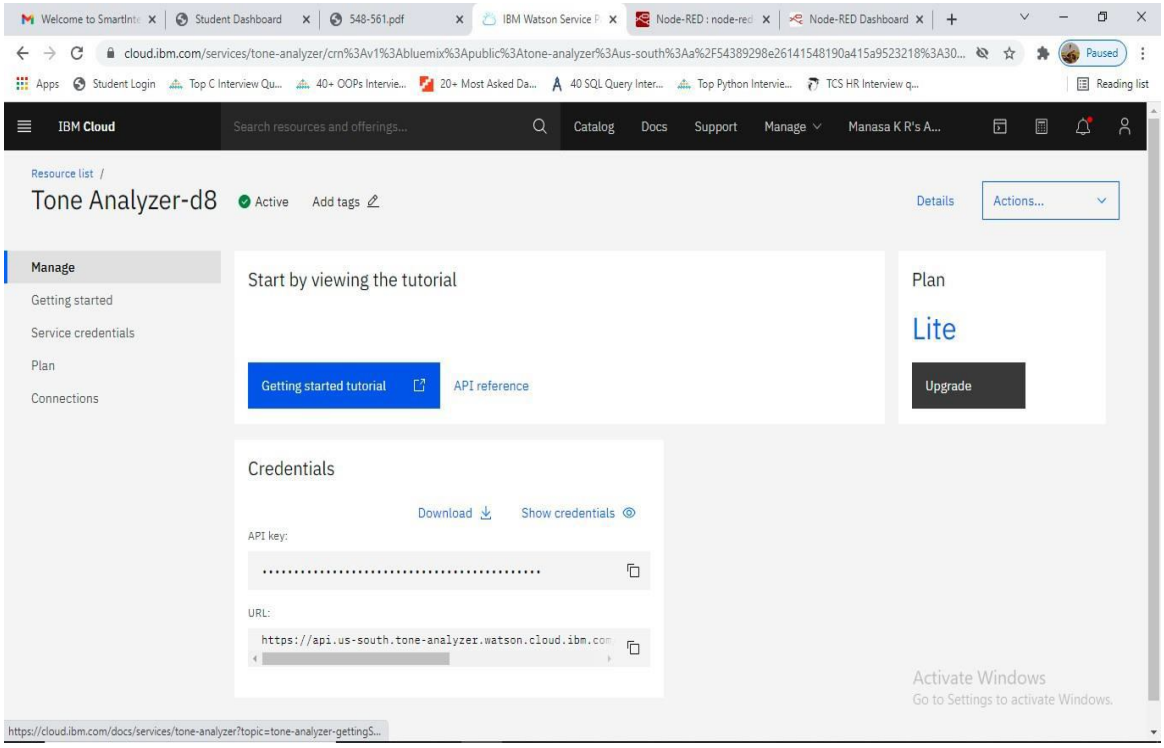


Fig. 3 Tone-Analyzer service

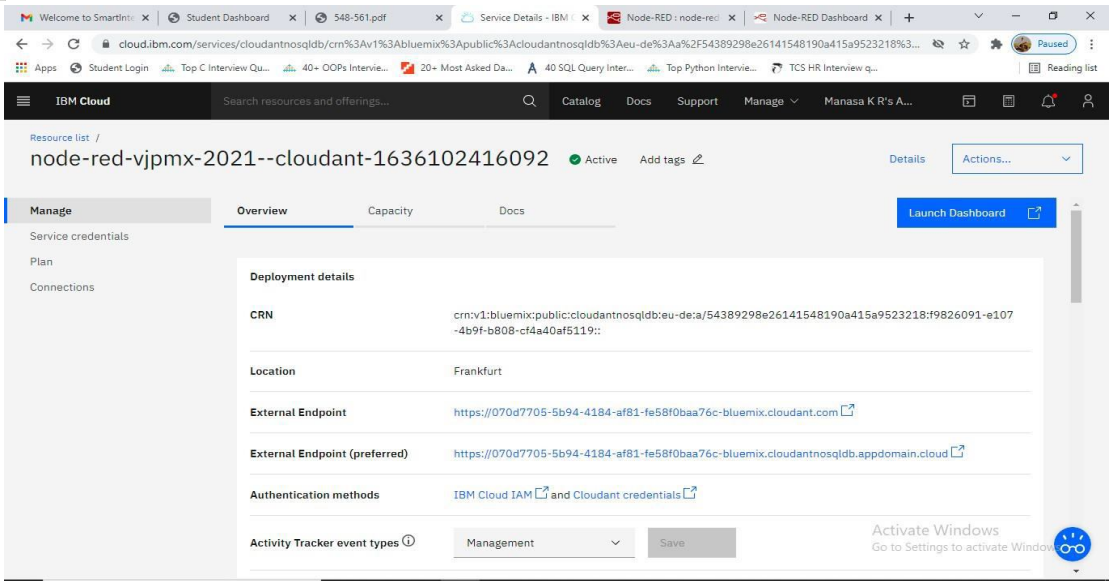


Fig. 4 Node-Red Service

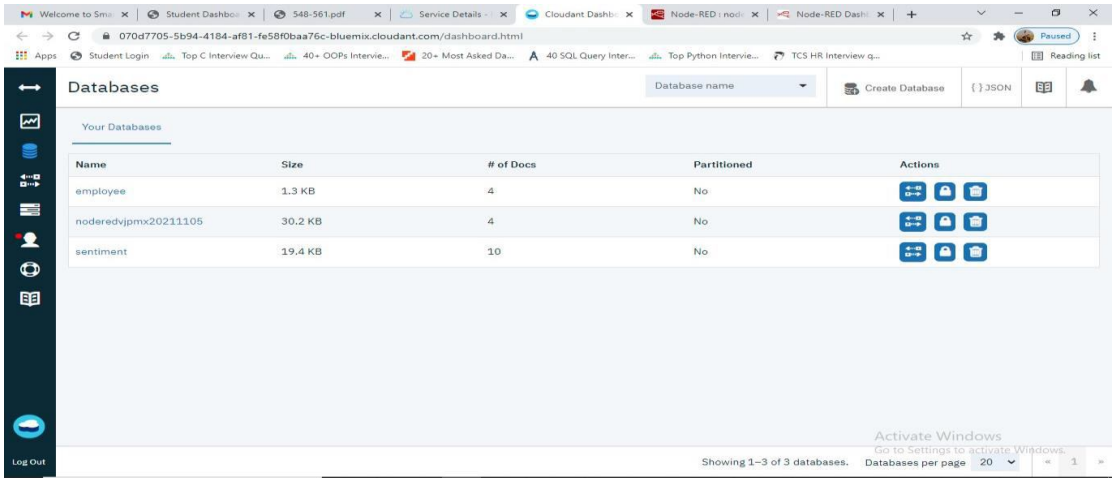


Fig. 5 Cloudant Database Screen

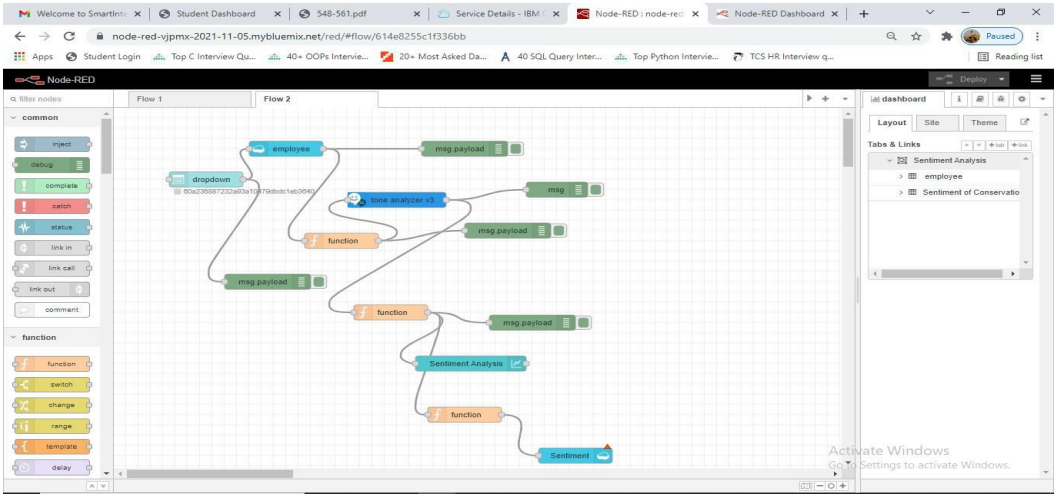


Fig.6 Back-End Flow using Node-Red app

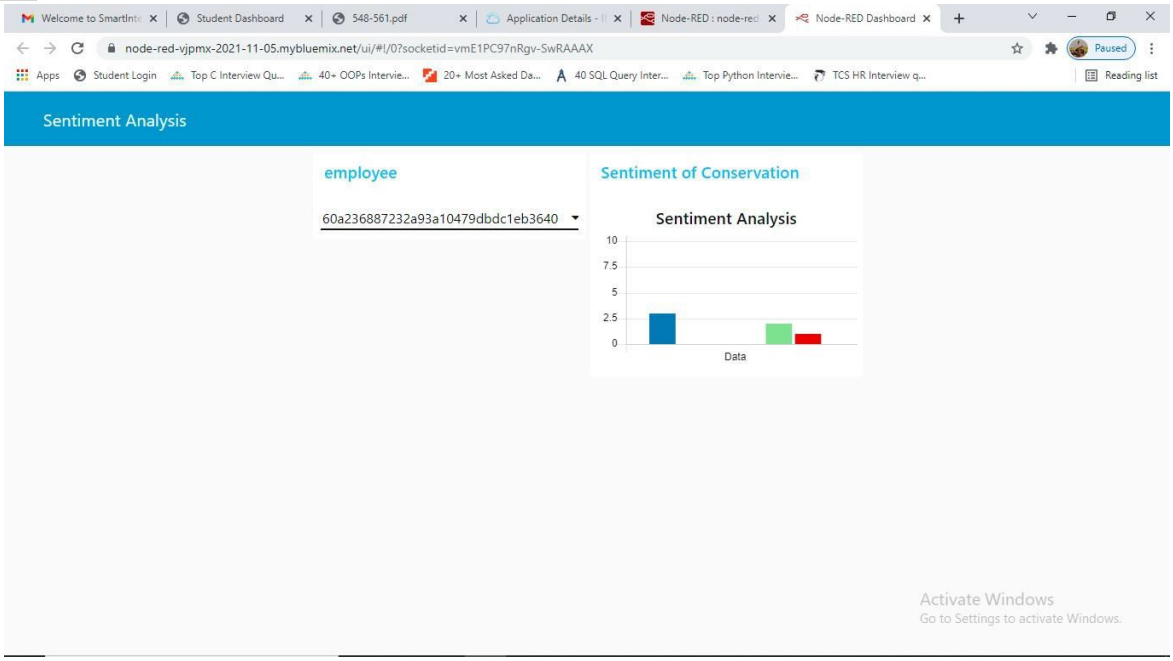


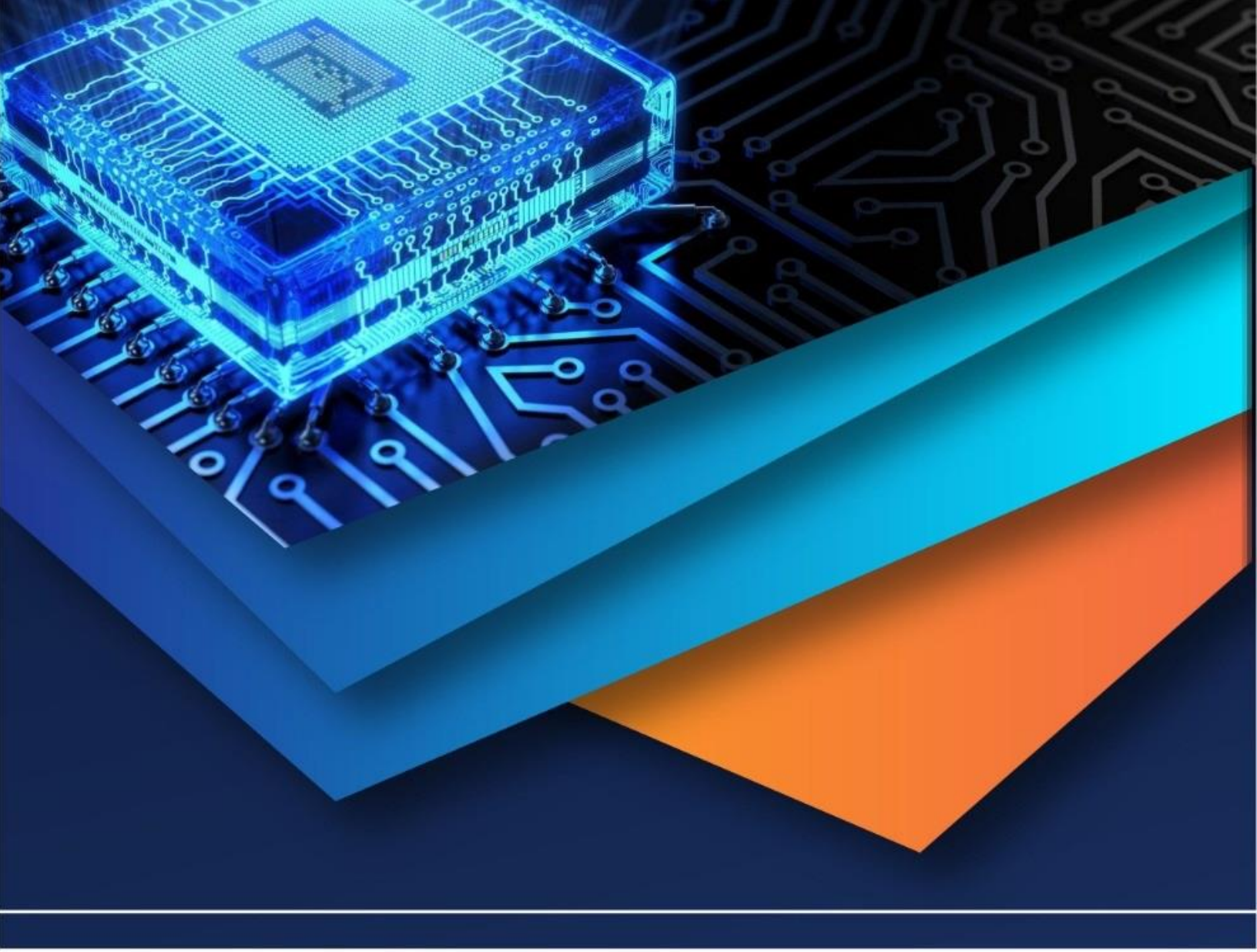
Fig. 7 Display of Employee Analysis

V.CONCLUSION

This work focused on demonstrating the data and creates the report of employees. This may be used for generating report for predictive analysis, which will help in formulating the strategies. Data analysis and management systems were some of the first applications to incorporate artificial intelligence (AI)/machine learning (ML) for automating information collection, analysis, and dissemination. Similar trends can now be observed in the data visualization space, with automated systems leveraging ML models trained on common user patterns and task execution to construct UI dashboards. This Employee Work Appreciation application is used for deciding whether the employee's work is up to the mark or not. This system can also be used for employees to check whether they receiving good or bad feedback from the customers so that they will improve their work. Finally the analysis of each employee report is displayed on the Web application in the form of Bar charts.

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