

Feedback System for Seminar Using Cloud Based Data Management with Easy Data Collection and Relevant Data Retrieval Techniques.

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Abstract: Emerging technology has expanded the seminar sessions being conducted all over the cities. People are becoming more ambitious and to attend seminars is one of the convenient way to gain knowledge. More the number of sessions, more contact details of the participants taking part in seminar increases. Before the emergence of the technology, the feedback of the seminar conducted and participant's details were taken manually or participants had to type so many things. Administrating a large number of contacts manually and the feedback analysis is becoming a very tedious and time-consuming task for the organization. Participants find filling feedback forms as boring and tedious at the end of session, therefore resulting in less number of responses for feedback.

The system is developed for the feedback collection with details of participants and analysis using cloud computing. Cloud usage gives easy access for retrieval of data. The deployed system will be effective for educational institutes for managing student data as well as in organizations for managing meeting details and employee data.

Keywords - Cloud Computing, Natural Language Processing, Sentiment Analysis, QR Code, Summarizer.

I. INTRODUCTION

As mentioned in the title Feedback System is designed to overcome many traditional ways to collect feedback and overcome their drawbacks. Collection of data through simple and interactive forms, obtaining inputs with questions and then storing them on cloud for easy retrieval and organization of information/contacts has made this process easy and less tedious.

This system utilises Amazon Web Service's Relational Database Service, Comprehend, Elastic Cloud Compute. These services provide a smooth environment for our system to run. Using cloud services has its own advantages and disadvantages. These are to be considered while in development as well as deployment stage.

Working of the system is divided into two parts Administrator and Participant. The role of the participant (the only source of data generation) is a must to this system. The administrator then uses this generated data to analyse and visualize the data into some promising results.

II. LITERATURE REVIEW

As the technology is increasing, there is a large amount of data generated. The extracting of information from raw data is carried through Natural Language Processing (NLP). In this paper, Natural Language Processing (NLP) techniques for opinion mining and sentiment analysis are reviewed. Some of the steps like structuring text, extracting features, segmentation tokenization are required to carry out NLP. Tokenization is the main stage to carry NLP for which specific tools are available like Fudan NLP tool, Language Technology Platform, Niu Parser, etc. The basic point to carry opinion mining and sentiment analysis is extracting sentiments from the data or information. The sentiment or emotion analysis is carried out through NLP in three levels: document level, sentence level and fine grained level. [3]

Since sentiment analysis is part of the data mining that can observe public development about various topics and products. It is also the main part of natural language processing, machine learning, text analysis, biometrics, computational linguistics methods. We are choosing student's feedbacks for sentiment analysis because it offers improvements in the session we have developed an NLP based preprocessed data framework to filter feedbacks where we incorporate Bag of Word model and TF-IDF (Term Frequency - Inverse Document Frequency) model concept to sentiment analysis. In NLP Technique, stemming, POS tagging, lemmatization, tokenization, removal of stopwords, named entity recognition, coreference resolution, and text modeling as TF IDF and Bag of Word Model has done[1]. To identify the sentiment of the feedbacks by defining positive and

negative polarity is the main aim. We utilize these feedbacks as crude data. At that point, we use the proposed technique that gives the assessment of feedback. To sentiment analysis, the student's feedback data is using data extraction, lemmatization, tokenization, stemming, stopwords removal, parts of speech tagging, named entity recognition, create a data frame, text modeling, a classifier model and each of these processes has its own algorithm and packages to be processed. TF-IDF model has used to find out important words from feedback to predict sentiment.

The process of generating the shortened adaptation of the given data(text) which provides appropriate information to the user is called Text Summarization. Content of the summarization depends on the user's need. Two types of summarization can be there. First, Topic-oriented summaries which tells about the passion of the user's topic and takes the specific information from the text which is related to the topic. Second, Generic summaries cover as much as data keeping in mind the topic of interest. This paper mostly focuses on the multi-document extractive generic text summarization [5] that is to generate the summary from various documents but related to the same topic. In extractive summarization[5] subdivision of the sentences is chosen from the original information whereas in abstractive summarization the information in the document is reword. More accurate results are obtained by exactly extractive summaries. More over this paper focuses on the new method called LexRank which measures the eigenvector centrality in a graph to know which sentence is important. It also shows how it is calculated and how it is better than other using salience.[5]

Text summarization is the process of compressing a set of data computationally, to create a subset (a summary) that represents the most important or relevant information within the original content. Text summarization is basically used in things like natural language processing, information retrieval, text compression, email thread summarization. In this research work, the text summarization models have been built using the TextRank algorithm, though algorithms like LexRank, LSA have been used earlier[2]. Text summarization can be used in huge organizations or companies, where scientists or employees only have to go through summarized versions of documents. This paper proposed the solution for summarizing Education News Articles using the following phases: data collection, pre-processing, creation of summarizers, and performances evaluation. In the first phase data is collected and datasets are formed. In preprocessing phase tokenization takes place i.e breaking of information into words, symbols and meaningful words which are known as tokens. Incomplete sentences and duplicate sentences are removed. Three experiments have been carried out using LexRank, TextRank, and Latent Semantic Analysis to develop the text summarizers and the performance of the models have been evaluated by comparing model summaries with predefined gold summaries.[2]

To analyse sentiments of the input data the sentiment analysis term is used. In this work, sentiment analysis of student's feedback is performed using the ontology-based technique is proposed to generate summary of the input data. The process of breaking down of data into such a form that it can useful to other users in the form of important knowledge is known as data analytics. Data analytics process helps us to understand better the real scenario of the user's work. With the help of this process better decisions can be made. Various actions such as inspection, cleansing, transformation and modelling are performed to discover the knowledge from the present data which are collectively known as the data analytics process. To easily utilize the raw data by the users during the decision-production, it is converted here into useful form.

In big data analysis, there are three major categories in which the data can be differentiated. 1. structured 2. semi-structured and 3. unstructured[4]. Natural language Processing is an application of computational linguistics. To interpret the text and make it analysable NLP (Natural language Processing) is used. Natural language Processing is the area of Computer Science and Artificial Intelligence (AI). It deals with the interaction and interpretation of computer and human natural language has been primarily used in the area of Sentiment analysis.

In interaction of robots in human natural language with humans plays a very important role in the area of artificial intelligence. It includes various techniques for automatic generation, manipulation as well as analysis of the natural human language.

Sentiment analysis deals with feedback and perspective of humans related to emotions and attitude about some scenario or the event.

Feedback mining is most useful in various fields like commercial product reviews, social media analysis, movie reviews and educational material reviews etc. And also, the semantic analysis is an important technique in creation of recommender systems. The participants give the text reviews like online reviews, comments or the feedbacks on the social media sites, e-commerce websites. And these text reviews are an important source of user's opinions/feedbacks. The sentiment analysis is done to check the positive, negative and neutral opinion of users about products.

The text summarization technique includes following steps:[4]

1. Dataset inherited:- The data which is given as input will be taken from historical data.
2. Data Pre-processing:- The data which is taken as input will be pre-processed i.e. the unwanted data will be removed in the second phase.
3. Analysing features of the Dataset: - The dataset which is pre-processed and on that data algorithm of n-gram is applied for the feature extraction
4. Chat Summarization: - In the last phase, depending upon the occurrences of each word rating is given to that word and the words with maximum rating is considered as most important words and that are included in the final chat summary and others are removed.

III. SYSTEM ARCHITECTURE

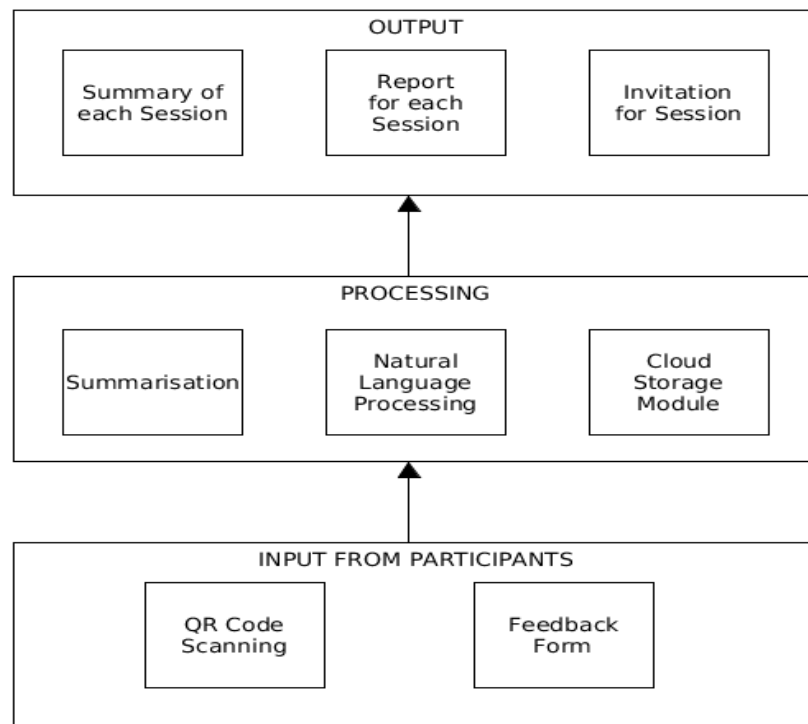


Fig.1 Architecture of System

1. Input from Participants

- a. **QR code Scanning:** QR code is used in the system so that participants get connected to the server to answer the question and fill the feedback.
- b. **Feedback Form:** After the session and feedback form is provided to fill the personal details and the area of interest for which they can attend the future session conducted on it

2. Processing

- a. **Cloud Storage Module:** All the data collected through the participants like personal details, etc and the internal data of the system is stored on cloud for easy access and infinity storage space.
- b. **Natural Language Processing:** Natural language processing is a field of computer science and artificial intelligence which focus on the interactions between computers and human languages, in particular how to program computers to process and analyse large amounts of natural language data being generated. NLP in our proposed system is used to carry out sentiment analysis to differentiate between negative and positive feedback and also summarize the feedback for future reference of the facilitator. The feedbacks are broken into sentences and words, also known as tokens and the meaningful words are separated. Meanwhile the duplicate and meaningless sentences are discarded. Stopwords are also removed from the data.
- c. **Summarization:** Text summarization is the process of compressing a set of data computationally, to create a subset or a summary that represents the most important or relevant information within the original content. All the feedback collected from students are gathered for preprocessing for each session. Tokenization and removal of stopwords is carried out. Obtained data is passed to summarizer (LexRank Summarizer) object. The summarizer object gives final output as summary text.

3. Output

- a. **Summary of each session:** For each session analysis automated summary is generated.
- b. **Invites for session:** Emails are sent to the participants who frequently attend the session and also based on the interest of their field.
- c. **Report for each session:** Graphs are generated based on the analysis of the data so that conclusions can be drawn. Most of the analysis is done from the sentiment analysis system.
- d. Certificates are directly sent on the email after the feedback is filled by the participants.

IV. ALGORITHM

1. Sentiment Analysis Algorithm:

- a. Obtain the text/dataset on which analysis is to be performed.
- b. Tokenize the textual data i.e. (separating the words).
- c. Normalize the data i.e. (bring word to its canonical form).
 - o Tag the words obtained using POS.
 - o Obtain the lemmatized words.
- d. Remove stop words from the textual data.
- e. Obtained output can now be used to calculate word density i.e. the count of each words.
- f. Create a cleaned dictionary for both positive and negative words.
- g. Create a dataset by combining the two lists.
- h. Train model to get output.

2. Summarization and Factor List Algorithm:

- i. Collect the data required to summarise and to count factors affecting the feedback.
- ii. Summarise
 - a. Create a PlainTextParser document by passing the data to summarise.
 - b. Then summarise the PlainTextParser document using LexRankSummarizer object.
- iii. To find factors affecting feedback
 - a. Clean the data by removing punctuation marks and tokenize the data.
 - b. Remove the stop words from the tokens.
 - c. Compare the tokenized words obtained from the feedback to the List of factors and obtain the factors for that session.

V. PROCESS FLOW

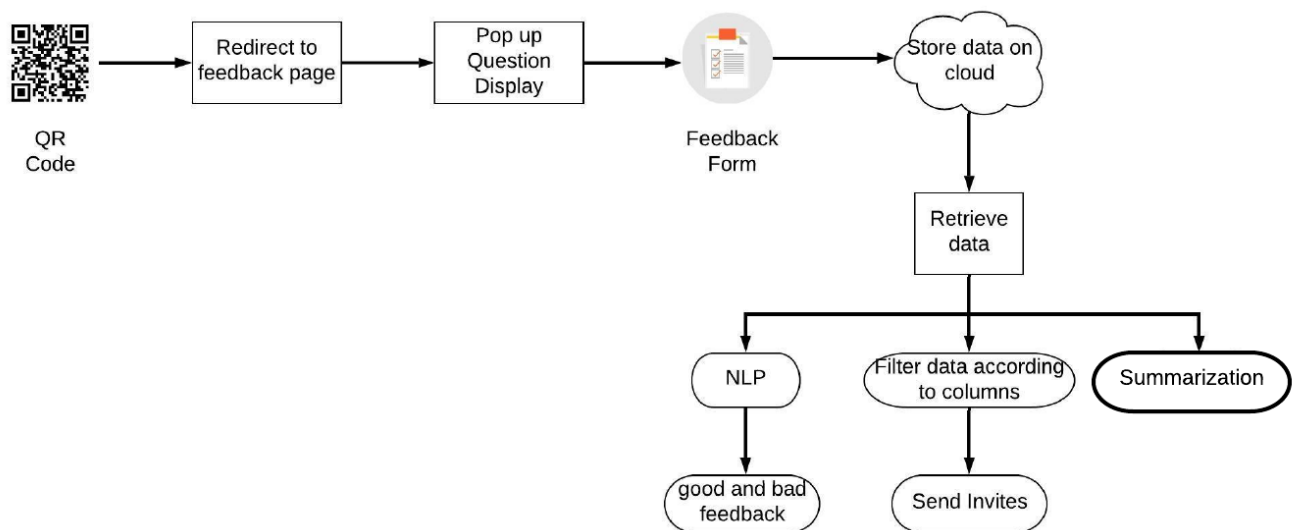


Fig.2 System Process Flow

• Participant Side

- o Participants scan the QR code displayed on the screen and get connected to the system for the particular session.
- o Questionnaire pop questions of YES/NO answer are displayed on the mobile screen which has to be responded by accepting the notification access.
- o At the end of the session feedback form has to be filled by them regarding their personal details, area of interest, etc.
- o After submitting the feedback form, a dynamic certificate for that session is generated and sent to the participants on their email.

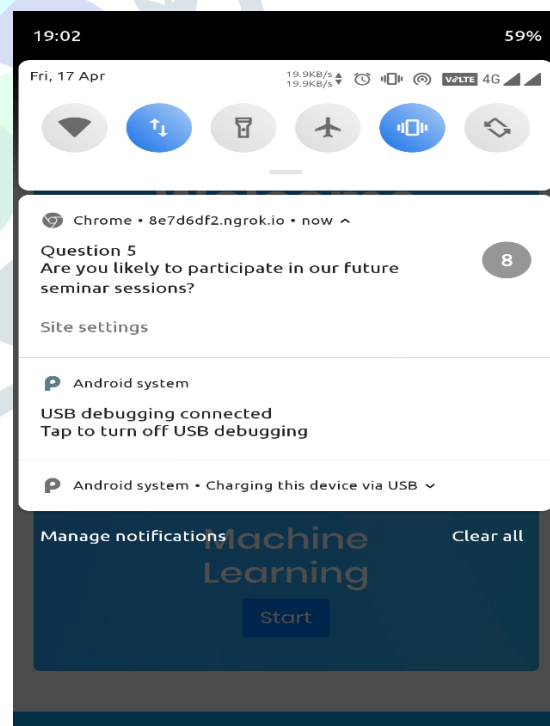
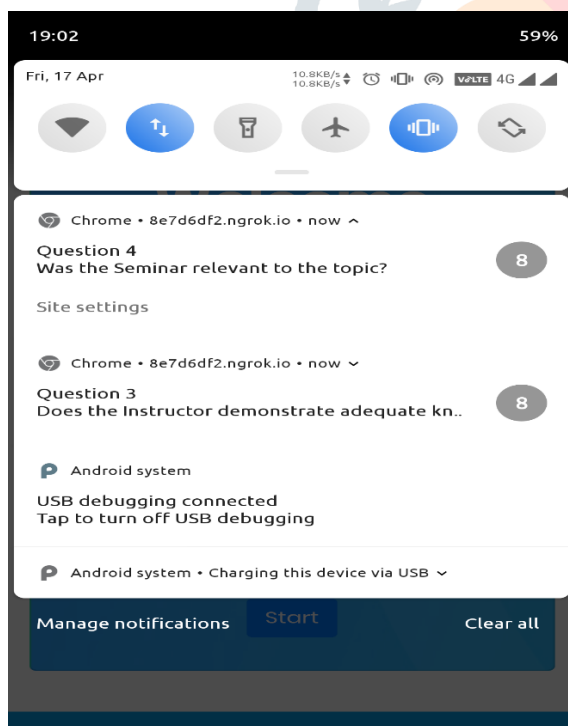
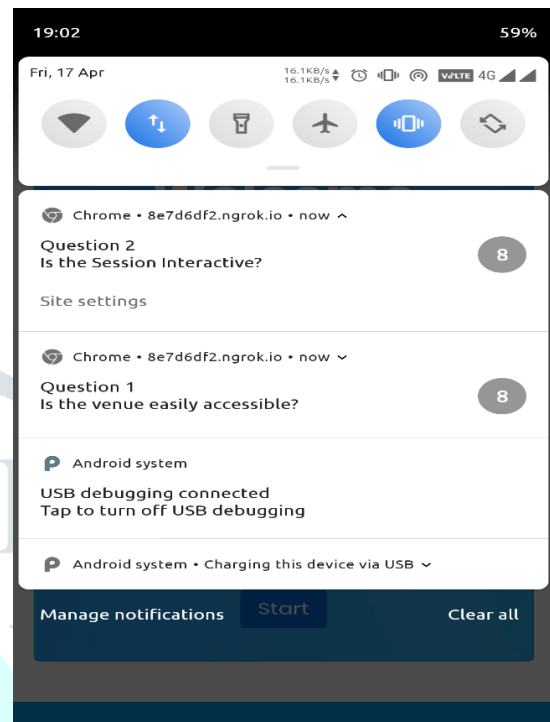
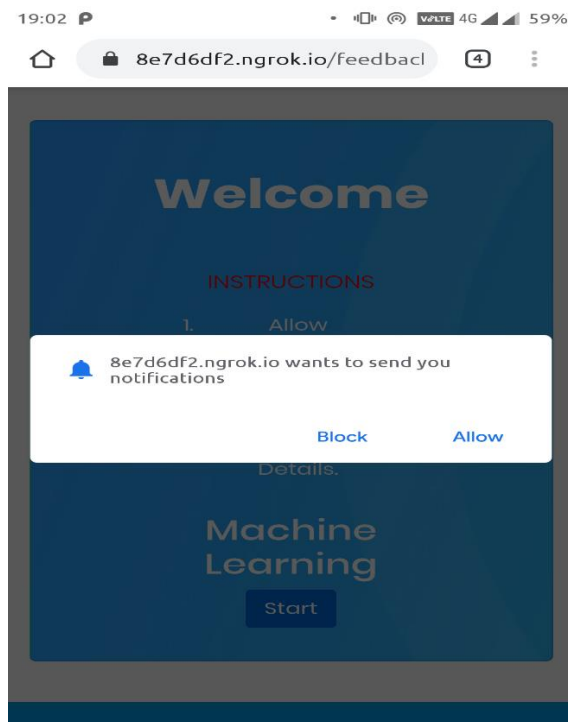
• Administrator Side

- o After the feedback is recorded successfully, data is stored on the cloud successfully.
- o Retrieval of the data can take place using three ways -
 - Overview and analysis of the feedback can be seen through graphs using NLP which tells about the positive(good) and negative(bad) feedback.
 - Participants can be viewed of all the sessions conducted using the filters.
 - According to the filter, invites can be sent to the participants through the email.

- Summarization of the feedback is also retrieved per session for detailed analysis of the feedback.
- Even overview of the upcoming session can be seen on the dashboard and the new session can be arranged with interactive form.

VI. RESULTS

STUDENT SIDE SCREEN



18:21 130B/s 130B/s VLTE 4G 62%

bfa25bb8.ngrok.io/feedbacl

Question 3

Does the Instructor demonstrate adequate knowledge of topic?

☐ YES

☐ NO

Close

1. Allow Notifications for this page.
2. All Questions are mandatory.
3. Provide Genuine Details.

Android

Start

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19:04 VLTE 4G 58%

Feedback Form

Name
Nilesh Suryawanshi

Mobile
9049425095

Email
n.suryawanshi1168@gmail.com

Address
Katraj

City
Pune

Area of Interest
Python

Feedback
Good Session. Keep it up.

Enter feedback here....

19:05 VLTE 4G 58%

9049425095

Email
n.suryawanshi1168@gmail.com

Address
Katraj

City
Pune

Area of Interest
Python

Feedback
Good Session. Keep it up.

Enter feedback here....

Submit

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18:57 VLTE 4G 54%

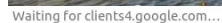
bfa25bb8.ngrok.io/getFeed

Start something that matters

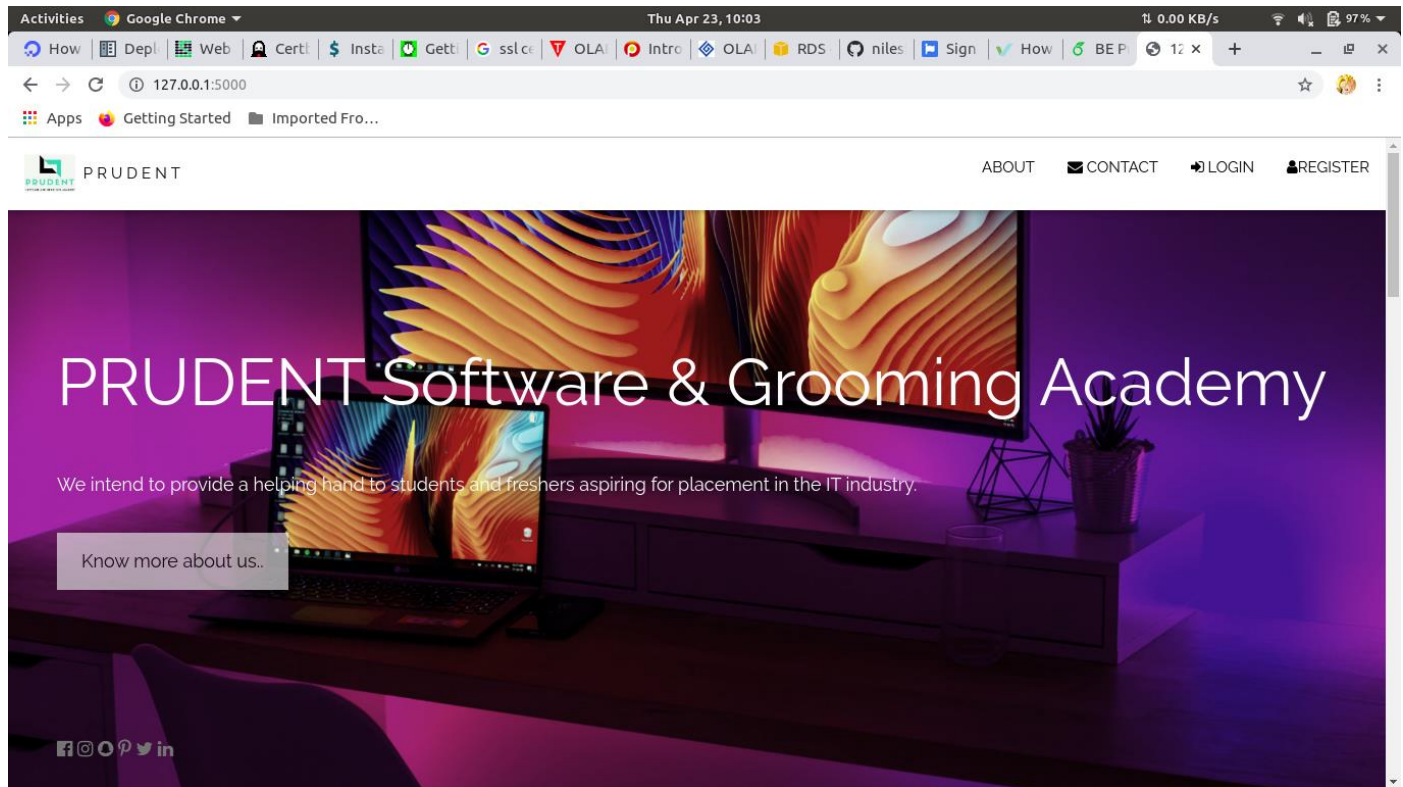
YOUR RESPONSE HAS BEEN SAVED SUCCESSFULLY. CHECK YOUR MAIL FOR PARTICIPATION CERTIFICATE..

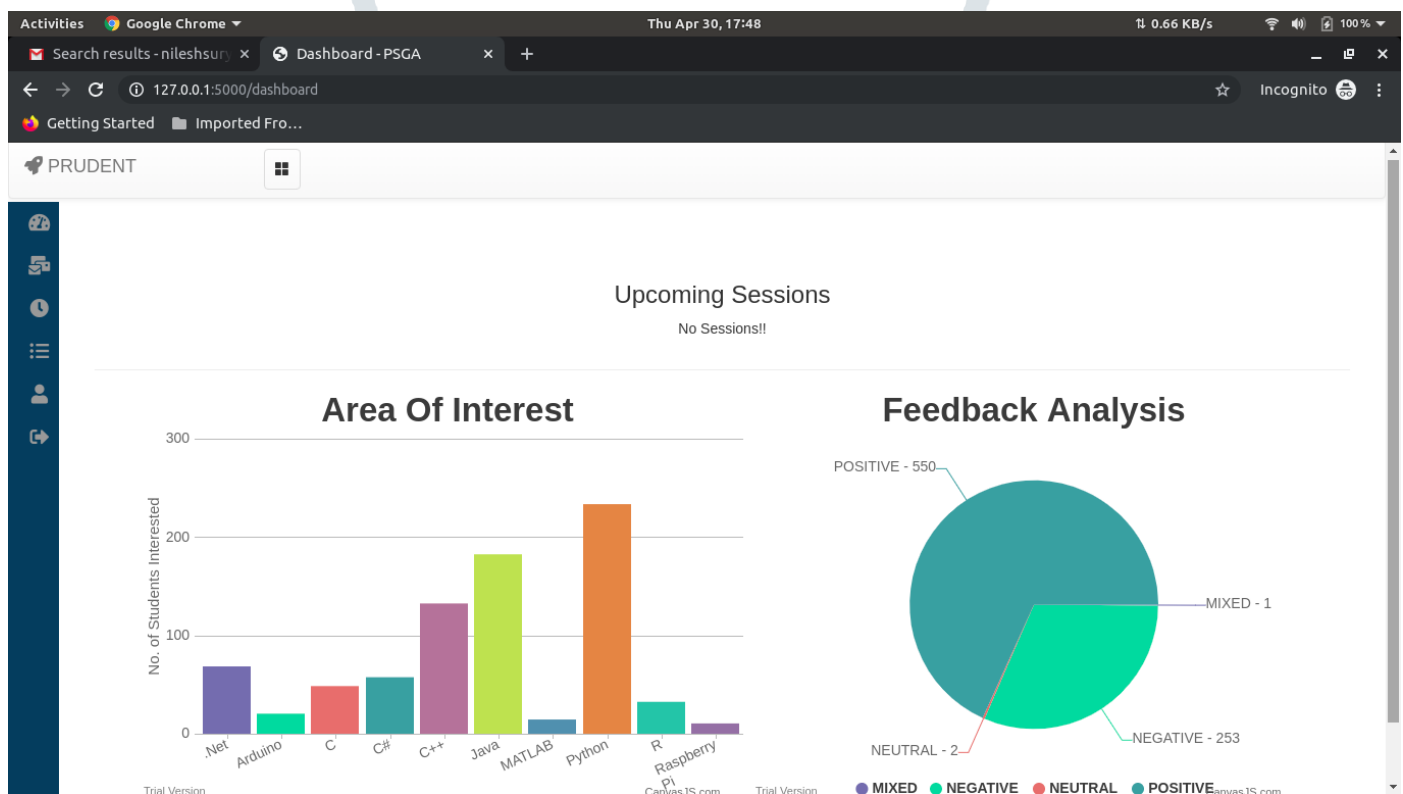
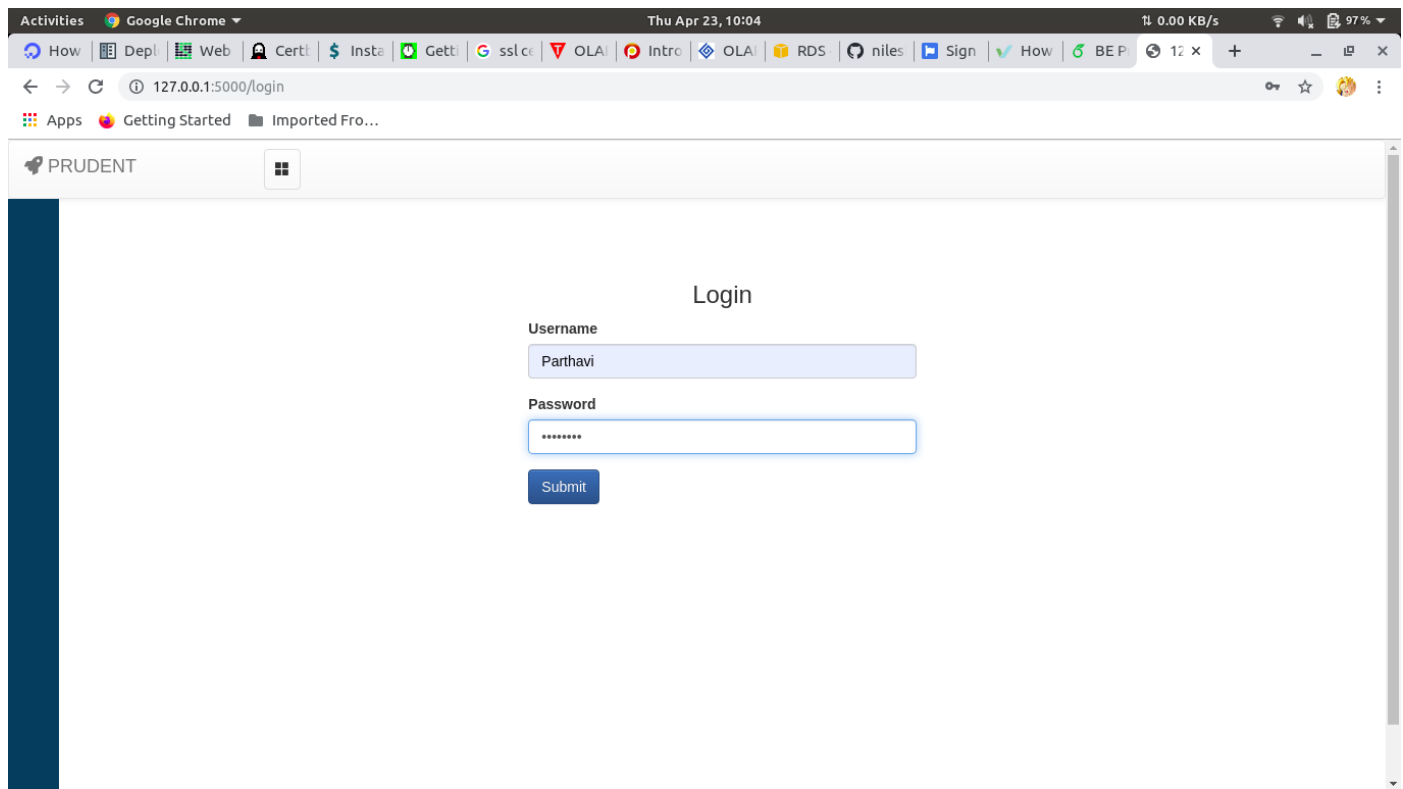
Know more about us..

f @ o p t in



ADMINISTRATOR SIDE SCREEN

A screenshot of the PRUDENT registration form. The browser's address bar shows the URL 127.0.0.1:5000/register. The page has a clean, white background with a dark blue vertical sidebar on the left. The title "Register" is centered at the top of the form area. Below the title, there are five input fields labeled "Username", "Email", "Mobile", "Password", and "Confirm Password". A blue "Submit" button is located at the bottom of the form. The PRUDENT logo is visible in the top left corner of the page.



Activities Google Chrome Thu Apr 23, 10:05 0.00 KB/s 98%

How Dep Web Cert Insta Gett ssl ce OLA Intro OLA RDS niles Sign How BE P 12 x + - X

127.0.0.1:5000/show

Apps Getting Started Imported Fro...

PRUDENT

Attendees

Filters

City Session

Search..

Name	Email	City	Feedback	Session
JITENDRA NITIN LIMAYE	jitendralimaye@gmail.com	Pune	Outstanding, inspirational and very informative. Worth far more than the price I paid.	Javascript Framework
NEELAY SUCHENDRA KULKARNI	neelaykulkarni@gmail.com	Pune	I was amazed at the amount of information Peter Mr Xyz was able to pack into a short day.	Javascript Framework
Omkar Abhijeet Gadgil	omi5889@gmail.com	Pune	The contnets or topics of the seminar were not covered upto the mark.	Java Spring
Pankaj Balasaheb Dighe	pankajdighe@gmail.com	Pune	The first half of the seminar went well but the second half was all vague.I couldn't understand the topics covered int the second half.	Java Spring
Parag Nitin Dharmadhikari	parag11111@gmail.com	Pune	Truly fantastic! Practical, insightful. In addition, Mr. Xyz's sense of humor makes this potentially tedious discussion quite enjoyable.	Java Spring
Tushar Vinayak	tushar.dhaygude@gmail.com	Pune	The instructor clearly appeared rushed/anxious, since there is a lot of information to cram into one	Java Spring

Activities Google Chrome Thu Apr 23, 10:05 0.00 KB/s 98%

How Dep Web Cert Insta Gett ssl ce OLA Intro OLA RDS niles Sign How BE P 12 x + - X

127.0.0.1:5000/show

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Parag Nitin Dharmadhikari	parag11111@gmail.com	Pune	Truly fantastic! Practical, insightful. In addition, Mr. Xyz's sense of humor makes this potentially tedious discussion quite enjoyable.	Java Spring
Tushar Vinayak Dhaygude	tushar.dhaygude@gmail.com	Pune	The instructor clearly appeared rushed/anxious, since there is a lot of information to cram into one day.	Java Spring
VAISHAKHI PRAVINDATT KULKARNI	vaishakhikulkarni@yahoo.co.in	Pune	This is a great course for the beginner and expert alike - a lot of great tips and helpful information on the topic.	Javascript Framework
Abhijeet Ashok Deshmukh	jeetdeshmukh1989@gmail.com	Ahemadnagar	Wonderful experience; very valuable guidance. Practical guidance/examples were helpful. Material presented was very pertinent to current times.	Java Spring
Abhijit Appasaheb Humbe	abhi.humbe@gmail.com	Pune	Thank you very much for the session last week. I found it very useful.	Javascript Framework
ABHISHEK SURENDRA BAFANA	abhishekbafna007@gmail.com	Pune	Seminar was not to the point and not matched my expectation.	Javascript Framework
Agrawal Kanika Arunkumar	kanika.a.agarwal@gmail.com	Hong Kong	This have been an absolutely amazing & enlightening workshop. Highly recommend the workshop to everyone who is open minded to different views and to giving it a go.	Hands on with Python
AJIT VIJAY DAWARE	ajeet_daware@yahoo.co.in	Parbhani	The managent of speakers and other stuff was not to the point.	Javascript Framework

1 2 3 4 5 6 7 8 9 Older

Activities Google Chrome Thu Apr 23, 10:01 0.10 KB/s 96%

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PRUDENT

Schedule Session

Name of Session

Domain of Session

Date and Time to be Conducted

April 2020

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Activities Google Chrome Thu Apr 23, 10:00 3.53 KB/s 95%

How Dep Web Cert Insta Gett ssl ce OLA Intro OLA RDS niles Sign How BE P 12 x + - X

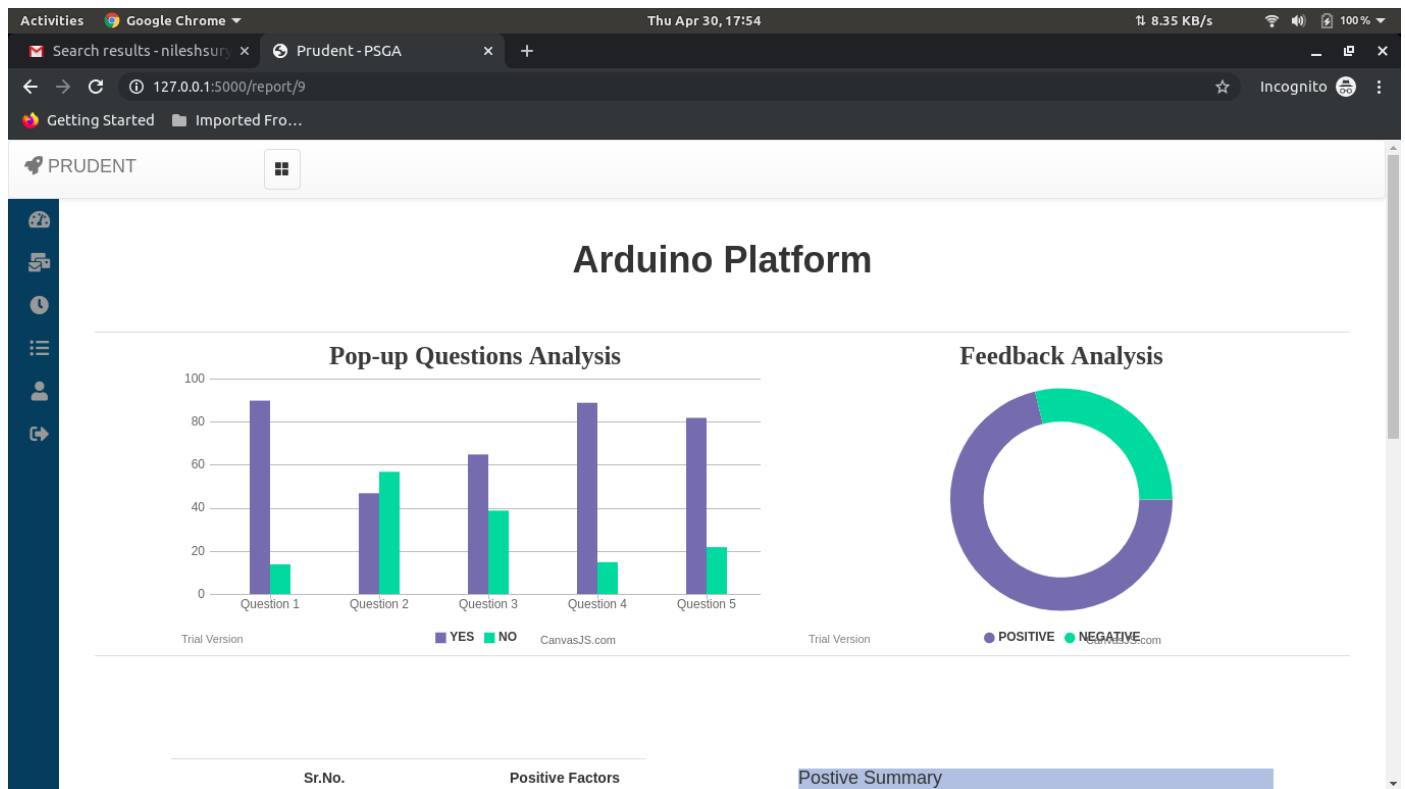
127.0.0.1:5000/sessions

Apps Getting Started Imported Fro...

PRUDENT

Sessions

ID	Name	Domain	Scheduled On	
1	Hands on with Python	IOT	2020-04-02 19:30:00	
2	Java Spring	Java	2020-04-22 14:00:00	
3	Javascript Framework	Angular JS	2020-04-22 17:00:00	



Sr.No.	Positive Factors	Postive Summary
1.	programming	<p>The professor does an excellent job presenting the information! Very good! Basic, ideal for beginners! Good concept to understand what is happening. It was a good course. It was great, and its teacher was greater. Very enthusiastic teacher and very clear instructions. Very good series of courses that guides step by step in learning to use arduino-platform. awesome sir! This is a good introduction course.</p>
2.	basics	
3.	clear	
4.	teacher	
5.	structure	
Sr.No.	Negative Factors	Negative Summary
1.	advanced	<p>If you expect to learn about functions, pivot tables, macros and the many other exciting features of excel, this is NOT the course for you. I dislike this course because I have to complete so many assignments in one week.</p>
2.	lectures	
3.	information	
4.	concepts	
5.	content	

VII. PROS AND CONS

Pros:

- Easy retrieval of data.
- Virtual access to the data.
- Increased Security
- High speed
- Unlimited storage capacity

Cons:

- Dependent on internet connection
- Customer Support
- Privacy issues

VIII. CONCLUSION

It can be concluded that the system is giving well organized results and information, which is very handy for the administrator. The administrator can then observe these results and make decisions accordingly.

Using cloud services have also given us the freedom of data storage and large amounts of server runtime. Although the cost of using cloud services is mentionable, it is quite negotiable with the results of the system.

IX. FUTURE SCOPE

- System can be provided with the voice input to accept the data.
- Suggesting location for next session.

X. ACKNOWLEDGMENT

It gives us colossal gratification to present the paper on 'Cloud-Based Contacts Management System with Easy Data Collection and Relevant Retrieval Techniques'. We are taking this opportunity to thank our guide, Prof. Pradnya Mehta, for her guidance in completing this paper. We are pleased by her affectionate support. Her beneficial suggestions were helpful.

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