IR@AIKTC-KRRC

A PROJECT REPORT

ON

"REAL INSIGHTS: A COMPLETE OPINION ANALYSIS SYSTEM"

Submitted to

UNIVERSITY OF MUMBAI

In Partial Fulfilment of the Requirement for the Award of

BACHELOR'S DEGREE IN
COMPUTER ENGINEERING

BY

Sarole Arafat Mohd Wasim Nasim	**17CO41**
Khan Haris Shafiqurrehman Roshanara	**16CO27**
Ansari Hamdan Shakir Fauzia	**17CO25**
Lakdawala Aryan Sajid Tabassum	**17CO33**

UNDER THE GUIDANCE OF
Prof. Tabrez Khan

DEPARTMENT OF COMPUTER ENGINEERING
Anjuman-I-Islam's Kalsekar Technical Campus
SCHOOL OF ENGINEERING & TECHNOLOGY
Plot No. 2 3, Sector - 16, Near Thana Naka,
Khandagaon, New Panvel - 410206

2020-2021

AFFILIATED TO

UNIVERSITY OF MUMBAI

ir.aiktclibrary.org

IR@AIKTC-KRRC

A PROJECT II REPORT
ON

"REAL INSIGHTS: A COMPLETE OPINION ANALYSIS SYSTEM"

Submitted to
UNIVERSITY OF MUMBAI

In Partial Fulfilment of the Requirement for the Award of

BACHELOR'S DEGREE IN
COMPUTER ENGINEERING

BY

Sarole Arafat Mohd Wasim Nasim	**17CO41**
Khan Haris Shafiqurrehman Roshanara	**16CO27**
Ansari Hamdan Shakir Fauzia	**17CO25**
Lakdawala Aryan Sajid Tabassum	**17CO33**

UNDER THE GUIDANCE OF
Prof. Tabrez Khan

DEPARTMENT OF COMPUTER ENGINEERING
Anjuman-I-Islam's Kalsekar Technical Campus
SCHOOL OF ENGINEERING & TECHNOLOGY
Plot No. 2 3, Sector - 16, Near Thana Naka,
Khandagaon, New Panvel - 410206

2020-2021
AFFILIATED TO

UNIVERSITY OF MUMBAI

ir.aiktclibrary.org

IR@AIKTC-KRRC

Anjuman-i-Islam's Kalsekar Technical Campus

Department of Computer Engineering

SCHOOL OF ENGINEERING & TECHNOLOGY

Plot No. 2 3, Sector - 16, Near Thana Naka,

Khandagaon, New Panvel - 410206

CERTIFICATE

This is certify that the project entitled

"Real Insights: A Complete Opinion Analysis System"

submitted by

Sarole Arafat Mohd Wasim Nasim	**17CO41**
Khan Haris Shafiqurrehman Roshanara	**16CO27**
Ansari Hamdan Shakir Fauzia	**17CO25**
Lakdawala Aryan Sajid Tabassum	**17CO33**

is a record of bonafide work carried out by them, in the partial fulfilment of the requirement for the award of Degree of Bachelor of Engineering (Computer Engineering) at ***Anjuman-I-Islam's Kalsekar Technical Campus, Navi Mumbai*** under the University of MUMBAI. This work is done during year 2020-2021, under our guidance.

Date: 30 / 04 / 2021

Prof. Tabrez Khan
Project Supervisor

Prof. Kalpana R. Bodke
Project Coordinator

Prof. Tabrez Khan
HOD, Computer Department

Dr. Abdul Razak Honnutagi
Director

External Examiner

ir.aiktclibrary.org

IR@AIKTC-KRRC

Acknowledgements

We would like to take the opportunity to express our sincere thanks to our guide **Prof. Tabrez Khan**, Assistant Professor, Department of Computer Engineering, AIKTC, School of Engineering, Panvel for his invaluable support and guidance throughout our project research work. Without his kind guidance & support this was not possible.

We are grateful to him for his timely feedback which helped us track and schedule the process effectively. His time, ideas and encouragement that he gave helped us to complete our project efficiently.

We would like to express deepest appreciation towards **DR. ABDUL RAZAK HONNUTAGI**, Director, AIKTC, Navi Mumbai, **Prof. Tabrez Khan**, Head of Department of Computer Engineering and **Prof. Kalpana R. Bodke**, Project Coordinator whose invaluable guidance supported us in completing this project.

At last we must express our sincere heartfelt gratitude to all the staff members of Computer Engineering Department who helped us directly or indirectly during this course of work.

Arafat Mohd Wasim Sarole
Haris Shafiqurrehman Khan
Hamdan Shakir Ansari
Aryan Sajid Lakdawala

ir.aiktclibrary.org

IR@AIKTC-KRRC

Project I Approval for Bachelor of Engineering

This project entitled ***"Real Insights: A Complete Opinion Analysis System"*** by ***Aryan Sajid Lakdawala, Arafat Mohd Wasim Sarole, Hamdan Shakir Ansari and Haris Shafiqurrehman Khan*** is approved for the degree of ***Bachelor of Engineering in Department of Computer Engineering.***

Examiners

1. .....
2. .....

Supervisors

1. .....
2. .....

Chairman

.....

ir.aiktclibrary.org

IR@AIKTC-KRRC

Declaration

I declare that this written submission represents my ideas in my own words and where others ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Arafat Mohd Wasim Sarole
Roll Number: 17CO41

Haris Shafiqurrehman Khan
Roll Number: 16CO27

Hamdan Shakir Ansari
Roll Number: 17CO25

Aryan Sajid Lakdawala
Roll Number: 17CO33

ir.aiktclibrary.org

IR@AIKTC-KRRC

ABSTRACT

Real Insights: A Complete Opinion Analysis System

The purpose of this project is to make the process of taking feedback from the audience in events, lectures, seminars regarding the understanding of the event. As this is the online era, where everything is online we need to develop a system which is very useful to maintain the feedback by the administrator.

With this the organization can access the feedback reports in a faster way and without any loss of data. As of now this task is usually done using pen and paper. This has many drawbacks and evaluating this handwritten form is a difficult process.

Along with Sentiment analysis we can easily automate the procedure of analysing feedback of every event of an organization.

Sentiment analysis or opinion mining is the computational study of people's opinions, sentiments, attitudes, and emotions expressed in written language. It is one of the most active research areas in natural language processing and text mining in recent years.

Sentiment classification is a way to analyze the subjective information in the text and then mine the opinion. Sentiment analysis is the procedure by which information is extracted from the opinions, appraisals and emotions of the people in regards to entities, events and their attributes. In decision making, the opinions of others have a significant effect on the customer's ease, making choices with regards to online shopping, choosing events, products, entities.

This paper aims at analyzing a solution for feedback systems by performing sentiment analysis at a fine-grained level, namely the sentence level in which polarity of the sentence can be given by three categories as positive, negative and neutral.

Keywords: Feedback, Sentiment, Text mining, ML, Fine grained, Tedious, Algorithm, NLP, Data mining, Analysis, API, Dataset, Web Module, Framework, Authentication, Sentiment, Digital Customers, Routing, User Interface, JSON, Testing, MVC

ir.aiktclibrary.org

IR@AIKTC-KRRC

Contents

Acknowledgement iii
Project I Approval for Bachelor of Engineering iv
Declaration v
Abstract vi
Table of Contents ix

1 Introduction **2**
1.1 Purpose 2
1.2 Project Scope 2
1.3 Project Goals and Objectives 3
1.3.1 Goals 3
1.3.2 Objectives 3
1.4 Organization of Report 3

2 Literature Survey **4**
2.1 Sentimental Analysis of Student Feedback using Machine Learning Technique 4
2.1.1 Advantages of Paper 4
2.1.2 Disadvantages of Paper 4
2.1.3 How to overcome the problems mentioned in Paper 5
2.2 E-shops and customer feedback: experience by Czech B2C customer 5
2.2.1 Advantages of Paper 5
2.2.2 Disadvantages of Paper 5
2.2.3 How to overcome the problems mentioned in Paper 5
2.3 Stripping customers' feedback on hotels through data mining: The case of Las Vegas Strip 6
2.3.1 Advantages of Paper 6
2.3.2 Disadvantages of Paper 6
2.3.3 How to overcome the problems mentioned in Paper 6
2.4 Technical Review 7

ir.aiktclibrary.org

IR@AIKTC-KRRC

2.4.1 Advantages of Technology 7
2.4.2 Reasons to use this Technology 7

3 Project Planning **8**
3.1 Members and Capabilities 8
3.2 Roles and Responsibilities 8
3.3 Assumptions and Constraints 8
3.3.1 Assumptions 8
3.3.2 Constraints 9
3.4 Project Management Approach 9
3.5 Ground Rules for the Project 10

4 Software Requirements Specification **11**
4.1 Overall Description 11
4.1.1 Product Perspective 11
4.1.2 Product Features 12
4.1.3 User Classes and Characteristics 12
4.1.4 Operating Environment 13
4.1.5 Design and Implementation Constraints 13
4.2 System Features 14
4.2.1 System Feature 14
4.3 External Interface Requirements 15
4.3.1 User Interfaces 15
4.3.2 Hardware Interfaces 15
4.3.3 Software Interfaces 15
4.3.4 Communications Interfaces 15
4.4 Nonfunctional Requirements 15
4.4.1 Performance Requirements 15
4.4.2 Safety Requirements 16
4.4.3 Security Requirements 16

5 System Design **17**
5.1 System Requirements Definition 17
5.1.1 Functional requirements 17
5.1.2 System requirements (non-functional requirements) 19
5.2 System Architecture Design 19
5.3 Systems Integration 20

ir.aiktclibrary.org

IR@AIKTC-KRRC

5.3.1 Sequence Diagram 20
5.3.2 Component Diagram 21
5.3.3 Deployment Diagram 22

6 Implementation **23**
6.1 Forms 23
6.1.1 Form Visibility 23
6.1.2 Timer 24
6.1.3 Template Option 24
6.1.4 Event Selection 24
6.2 Template 25
6.3 Events 26
6.4 Analysis 27
6.5 Flask API 28
6.6 Rating 28
6.7 Profile 29

7 System Testing **30**
7.1 Test Cases and Test Results 30
7.2 Sample of a Test Case 30
7.3 Software Quality Attributes 32

8 Screenshots of Project **33**
8.1 Home Page 33
8.2 Dashboard 34
8.3 Forms 35
8.4 Events 37
8.5 Templates 39
8.6 Profiles 40

9 Conclusion and Future Scope **41**
9.1 Conclusion 41
9.2 Future Scope 42

References **42**

ir.aiktclibrary.org

IR@AIKTC-KRRC

List of Figures

5.1 **DFD Level 0 for Real Insights** 17
5.2 **DFD Level 1 for Real Insights** 18
5.3 **DFD Level 2 for Real Insights** 18
5.4 **Architecture Diagram for Real Insights** 19
5.5 **Sequence Diagram for Company** 20
5.6 **Sequence Diagram for Speaker** 21
5.7 **Component Diagram** 21
5.8 **Deployment Diagram** 22

6.1 **Screenshot of the Form Builder page** 24
6.2 **Screenshot of the Templates page** 25
6.3 **Screenshot of the Events Page** 26
6.4 **Screenshot of the Form Analysis Page** 27
6.5 **Screenshot of the Event Analysis page** 28
6.6 **Screenshot of the Profile page** 29

7.1 **Screenshot of the Form Analysis page** 31

8.1 **Screenshot of the Home page** 33
8.2 **Screenshot of the Dashboard page** 34
8.3 **Screenshot of the Form Builder page** 35
8.4 **Screenshot of the Form List page** 35
8.5 **Screenshot of the Form Submissions page** 36
8.6 **Screenshot of the Form Analysis page** 36
8.7 **Screenshot of the Event Creation page** 37
8.8 **Screenshot of the Event List page** 37
8.9 **Screenshot of the Event Analysis page** 38
8.10 **Screenshot of the Templates page** 39
8.11 **Screenshot of the Company Profile page** 40
8.12 **Screenshot of the Speaker Profile page** 40

ir.aiktclibrary.org

IR@AIKTC-KRRC

List of Tables

3.1 Table of Capabilities 8
3.2 Table of Responsibilities 8

ir.aiktclibrary.org

IR@AIKTC-KRRC

Chapter 1

Introduction

1.1 Purpose

In the era of new and emerging technologies, various products are being developed to fulfill the needs of the various types of consumers. Because of such rapid growth and competition, customer satisfaction plays the key role in success of a product. For this, various surveys and feedbacks are being taken on different platforms. Unfortunately, most of these platforms fail to provide proper analysis of the data collected. This causes a lot of inconvenience to the company collecting the data as they have to either analyze the data manually or rely on other softwares or websites for the same.

1.2 Project Scope

The scope of the project is to minimize the use of tedious forms and paper based feedbacks. Using our powerful Machine Learning model, speakers can get a clear knowledge about the positive and negative responses of the audience without actually having to go through individual responses.

ir.aiktclibrary.org

IR@AIKTC-KRRC

1.3 Project Goals and Objectives

1.3.1 Goals

1.3.2 Objectives

The objective of our project is to create a complete opinion analysis system which will collect the feedback or suggestions of the consumers using our own forms and also give an accurate analysis of the data in various formats such as graphs, CSV files etc. This will minimize the effort the company has to take to accurately analyze and manage the data collected.

1.4 Organization of Report

The material presented in the report below is organized into 9 chapters.

After this introductory chapter, Chapter-2 gives us the literature survey of the project.That is, the research papers that were referenced while developing the project.

Chapter-3 informs about the complete planning of the project, the work distribution, the pre-requisites etc.

Chapter-4 specifies the software requirements of the project.

Chapter-5 discusses about the system design of the project.

Chapter-6 gives an overview of the implementation of the project.

Chapter-7 shows how the project was tested.

Chapter-8 contains the screenshots of the project.

Chapter-9 concludes the report.

ir.aiktclibrary.org

IR@AIKTC-KRRC

Chapter 2

Literature Survey

2.1 Sentimental Analysis of Student Feedback using Machine Learning Technique

(Adesh ND, 2019) : This paper discusses the methods through which Educational institutions attempt to collect feedback from students to study their sentiment towards courses and facilitates provided by the institution to improve the college environment.In present scenario, grading technique is used for feedback. This grading technique does not reveal the true sentiment of students, but the textual feedback provides a chance to the students to highlight certain aspects. In this paper, a method has been proposed for sentimental analysis of student feedback using machine learning algorithms such as Support Vector Machine, Multinomial Naïve Bayes Classifier, and Random Forest. A comparative analysis is also conducted between these machine learning techniques. The experimental results suggest that the Multinomial Naïve Bayes Classifier is more accurate than other methods.

2.1.1 Advantages of Paper

a. Multiple models to get comparatively accurate results

b. Cross match between teacher, course and facilities to get a map of understanding

2.1.2 Disadvantages of Paper

a. Complex Architecture

b. Accuracy of the algorithm deteriorates as input sentences becomes complex

c. No proper solution for a lot of edge cases

ir.aiktclibrary.org

2.1.3 How to overcome the problems mentioned in Paper

a. Incorporate better ML models for broader analysis

b. Properly categorise the type of input the user has to provide

c. Tweak the algorithm to make is more efficient

2.2 E-shops and customer feedback: experience by Czech B2C customer

(Petra Martíšková, 2017) : This paper discusses how a Czeck B2C business organisation uses customer feedback as a usable source for further development and improvement of its offer (in general for its business activities).The obtained feedback can have the character of an opinion, a suggestion, an evaluation, a comment or a complaint. This paper deals with customer feedback in B2C e-shops because e-shops have nowadays become more and more important in consumers' everyday lives. The aim is to identify how selective e-shops obtain customer feedback in a direct way (i.e. customers send his/her opinion directly to the particular e-shop). As a result, some schematic depictions are in this paper presented. These depictions can be used in business practice as inspiration for implementing methods that lead to obtaining customer feedback.

2.2.1 Advantages of Paper

a. Increases user retention

2.2.2 Disadvantages of Paper

a. Highly susceptible to fraud / wrong data

b. Very resource intensive

c. Confuses the UX

2.2.3 How to overcome the problems mentioned in Paper

a. Incorporate feedback components in the UX

b. Provide Multiple ways for user to give their feedback

c. Use grading and Textual data as input

2.3 Stripping customers' feedback on hotels through data mining: The case of Las Vegas Strip

(Sérgio Moro, 2017) : This study presents a data mining approach for modeling TripAdvisor score using 504 reviews published in 2015 for the 21 hotels located in the Strip, Las Vegas. Nineteen quantitative features characterizing the reviews, hotels and the users were prepared and used for feeding a support vector machine for modeling the score. The results achieved reveal the model demonstrated adequate predictive performance. Therefore, a sensitivity analysis was applied over the model for extracting useful knowledge translated into features' relevance for the score. The findings unveiled user features related to TripAdvisor membership experience play a key role in influencing the scores granted, clearly surpassing hotel features. Also, both seasonality and the day of the week were found to influence scores. Such knowledge may be helpful in directing efforts to answer online reviews in alignment with hotel strategies, by profiling the reviews according to the member and review date.

2.3.1 Advantages of Paper

a. Gives granular details – eg: daily, weekly and monthly data

2.3.2 Disadvantages of Paper

a. Complex data transformation process that is heavily resource intensive

b. Not compatible with all type of input data

c. Very limited scope of usability

2.3.3 How to overcome the problems mentioned in Paper

a. Centralise the data collection process

b. Improve ML model to incorporate wider range of data input

2.4 Technical Review

We have used Laravel Framework to build the functioning website and Flask for the API that will analyse the responses.

2.4.1 Advantages of Technology

a. Laravel provides high security to the web applications and it also enhances performance greatly

b. Laravel is Open Source and has a powerful community

c. Flask provides integrated support for unit testing

d. Flask also has a Built-in development server and fast debugger

2.4.2 Reasons to use this Technology

a. One of the key features of Laravel is its Blade Templating engine. This engine allows the web developers to simply use the pre-defined templates to write certain codes

b. There is one more benefit of using the Laravel framework is Migrations of databases. These migrations allow the developers to easily undo the changes made to the database

c. Due to the MVC architecture, Laravel is said to be the best framework to use for your web application development

d. Flask gives us some premier control to develop our project

e. Flask has a modular design and lightweight so that it can easy to transit into web framework with some extension

Chapter 3

Project Planning

3.1 Members and Capabilities

Table 3.1: Table of Capabilities

SR. No	Name of Member	Capabilities
1	Arfat Sarole	Web Developer
2	Aryan Lakdawala	Web Developer
3	Hamdan Ansari	Web Developer
4	Haris Khan	Data Analyst

3.2 Roles and Responsibilities

Table 3.2: Table of Responsibilities

SR. No	Name of Member	Role	Responsibilities
1	Arfat Sarole	Team Leader, Web Developer	UI/UX, Project Compatibility
2	Aryan Lakdawala	Web Developer	Design Workflow
3	Hamdan Ansari	Web Developer	Backend
4	Haris Khan	Data Analyst	Flask API

3.3 Assumptions and Constraints

3.3.1 Assumptions

1. You will get all the resources you need.
2. Your team members have all the required skills.
3. All of the equipment is in good condition.
4. There will be a backup of the data after every cycle is completed.
5. There will be a admin present 24*7 at the server.

3.3.2 Constraints

1. We need to complete the first iteration by 3 months.
2. We have to work with the available resources.
3. We need to manage the entire project within the team of developers.

3.4 Project Management Approach

We will be working in an Agile project management approach.It's a type of process where demands and solutions evolve through the collaborative effort of self-organizing and cross-functional teams and their customers.We will be using the following principles while working:

1. Customer satisfaction through early and continuous software delivery.
2. Accommodate changing requirements throughout the development process.
3. Frequent delivery of working software.
4. Collaboration between the business stakeholders and developers throughout the project.
5. Support, trust, and motivate the people involved.
6. Enable face-to-face interactions.
7. Working software is the primary measure of progress.
8. Agile processes to support a consistent development pace.
9. Attention to technical detail and design enhances agility.
10. Simplicity.
11. Self-organizing teams encourage great architectures, requirements, and designs.
12. Regular reflections on how to become more effective.

3.5 Ground Rules for the Project

1. We treat each other with respect.
2. We intend to develop personal relationships to enhance trust and open communication.
3. We value constructive dialogue. We will avoid being defensive and give feedback in a constructive manner.
4. Each side will come to the table as prepared as possible to expedite the process.
5. One person talks at a time; there are no side discussions
6. We emphasize open and honest communication - there are no hidden agendas.
7. We de-personalize discussion of issues - no attacks on people.
8. We will listen, be non-judgmental and keep an open mind on issues until it is time to decide.
9. You are encouraged to ask genuine ”questions of clarification.” Please avoid asking ”questions of attack.”
10. Please use each other’s first names, not the pronouns ”he” or ”she.”
11. Speak for yourself only.
12. Appeals and attempts to convince should be made to each other and not to the mediator.
13. If something is not working for you, speak up.
14. Try to avoid establishing hard positions, expressing yourself instead in terms of your interests, intentions, and the outcomes that you would like to create.

Chapter 4

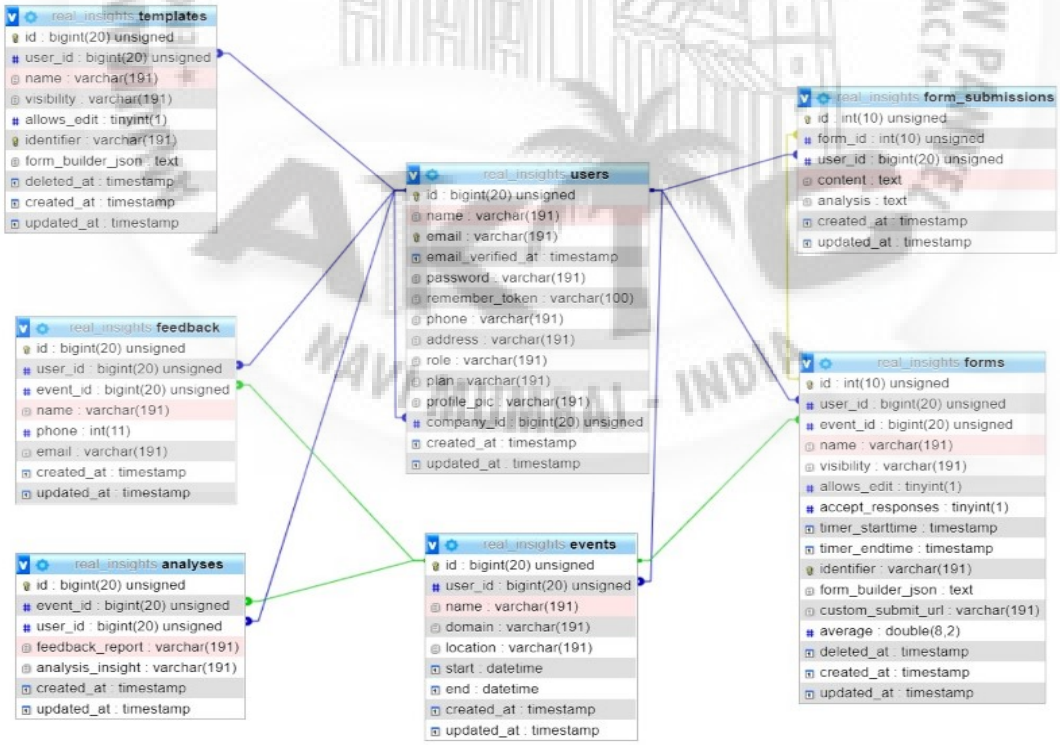
Software Requirements Specification

4.1 Overall Description

4.1.1 Product Perspective

The product is a web based system implementing a client-server model. The feedback analysis system provides a simple mechanism for users to share and receive responses.

The following diagram shows the major components of the application:



4.1.2 Product Features

The following are the main features that are included in our Feedback Analysis System:

a. Cross platform support: Offers operating support for most of the known and commercial operating systems.

b. User account: The system allows the user to create their accounts in the system and provide features of updating and viewing profiles.

c. Number of users being supported by the system: Though the number is precisely not mentioned, the system is able to support a large number of online users at a time.

d. Forms flexibility: The user has options to build forms using various templates and any available fields.

e. Analysis summary: Provides users with a dashboard to review the responses collected by the form and its analysis.

f. User plans: The users will have the option to register themselves in a paid or free plan depending on their use of the application.

4.1.3 User Classes and Characteristics

The two class of users called Company and Speakers have permissions to access different functionalities of the application, including:

a. Creating events and forms to receive the responses.

b. Making the form public for the users who are not part of the application.

c. Updating or deleting the events and forms.

The Company user has additional access to add and manage speakers under their company. Standard users will have access to view and submit form responses. It is considered that the user does have the basic knowledge of operating the internet and to have access to it.

4.1.4 Operating Environment

a. The application is developed in the Laravel framework to enable the creation of a web-based application, which can be accessed from any web browser.

b. The application will connect to the backend to store and retrieve data from a MySQL database.

4.1.5 Design and Implementation Constraints

a. The application should run in a latest JavaScript enabled web browser.

b. The application might take a few seconds to load the analysis data generated by the api.

c. This system is provisioned to be built on the Laravel framework which is highly flexible. Decision regarding which database to use is taken considering the fact that data being exchanged or stored is large, and the appropriate data management system will yield efficient performance.

4.2 System Features

4.2.1 System Feature

Description and Priority

a. The feedback analysis system maintains information about the events, responses collected from the audience, timings and locations.

b. This project has a high priority because it is necessary to maintain a summary of data when feedback is received for an event.

Stimulus/Response Sequences

a. Company creates a form for a new or existing event.

b. Rendered form is provided to the audience to fill responses for that event.

c. View submissions data and analysis.

Functional Requirements

REQ-1 USER SIGNUP - The application should allow the users to sign up with any valid email account.

REQ-2 FORM BUILDER - The application should allow the users to create a new form based on templates or completely from scratch.

REQ-3 FORM RENDER - The application should allow the users to view the rendered form and submit their responses.

REQ-4 EXPORT DATA - The application should allow the users to export the submissions data into various formats such as CSV or PDF.

4.3 External Interface Requirements

4.3.1 User Interfaces

a. Front-end software: HTML/CSS, JavaScript, Bootstrap, jQuery

b. Back-end software: Laravel, PHP

c. Database software: MySQL

4.3.2 Hardware Interfaces

a. Windows or Mac operating systems

b. Android or iOS mobile phones.

c. Devices should be enabled with the Internet.

4.3.3 Software Interfaces

a. The user's browser should be HTML5 and JavaScript compatible for all the functionalities to work.

4.3.4 Communications Interfaces

a. The application will generate feedback form to receive the responses from the standard users.

4.4 Nonfunctional Requirements

4.4.1 Performance Requirements

a. The dashboard page is displayed to the user immediately after the login. It takes 1-2 seconds to display the graphical data based on various events and forms.

b. The form creation and view part of the application is flexible and smooth so that it does not consume any time of the user.

c. The submissions data analysis using natural language processing utilizes 2-3 seconds to load the data from api.

d. The database should be normalized to prevent redundant data and improve performance.

4.4.2 Safety Requirements

a. Databases should use sharding to be redundant to prevent loss of data.

b. Information transmission should be securely transmitted to server without any changes in information

c. Backups of the databases should be done monthly and be kept for a long time.

4.4.3 Security Requirements

a. Any keys used for the REST api should be stored securely. Only the REST api should be able to connect to the databases.

b. Databases should be behind a firewall.

c. For users' accounts, a proper login mechanism should be used to avoid hacking.

Chapter 5

System Design

5.1 System Requirements Definition

5.1.1 Functional requirements

1. Authentication of user whenever he/she logs into the system.
2. System shutdown in case of a cyber attack.

Data-flow Diagrams

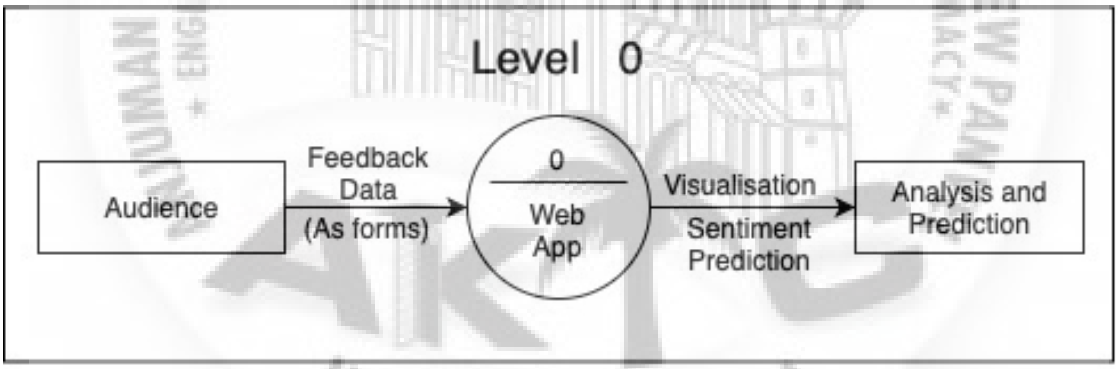


Figure 5.1: DFD Level 0 for Real Insights

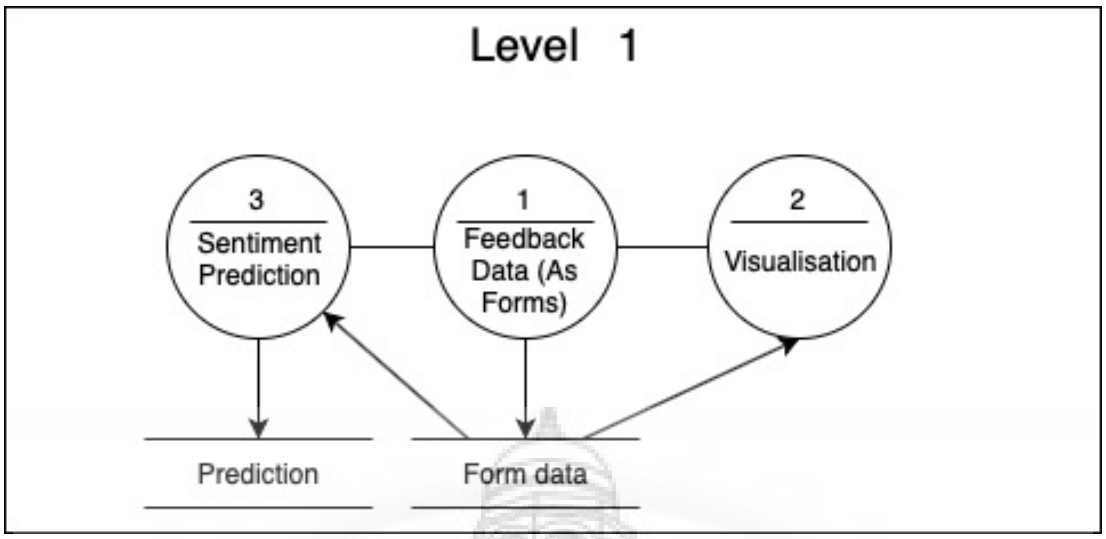


Figure 5.2: DFD Level 1 for Real Insights

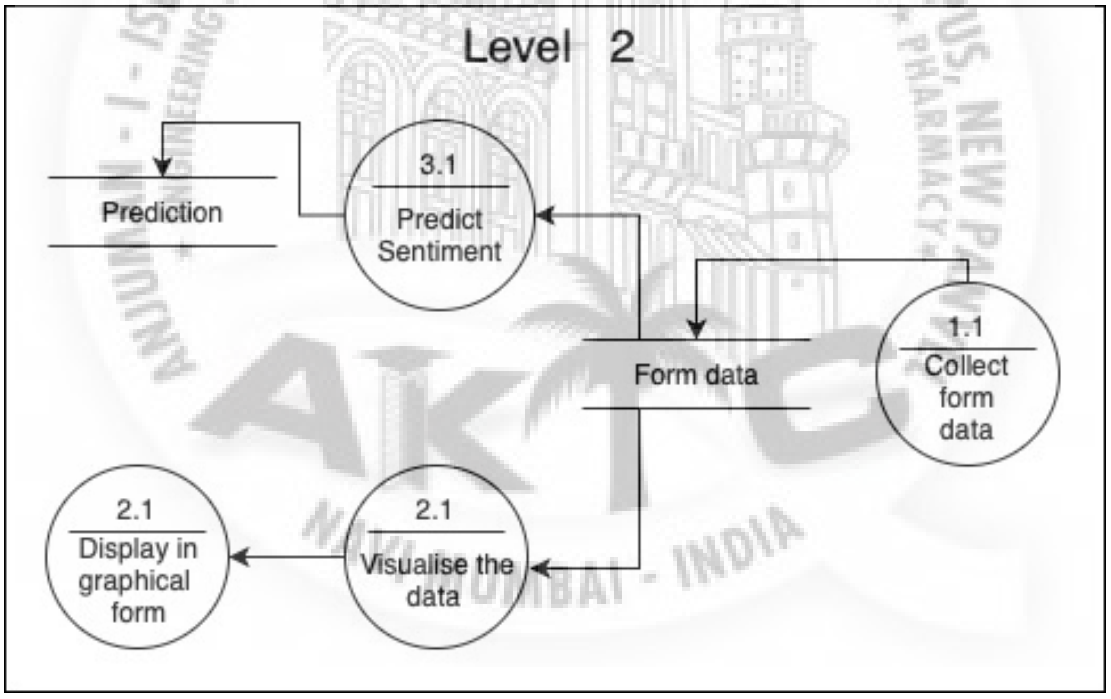


Figure 5.3: DFD Level 2 for Real Insights

5.1.2 System requirements (non-functional requirements)

1. Emails should be sent with a latency of no greater than 12 hours from such an activity.
2. The processing of each request should be done within 10 seconds.
3. The site should load in 3 seconds when the number of simultaneous users are greater than 10000.

5.2 System Architecture Design

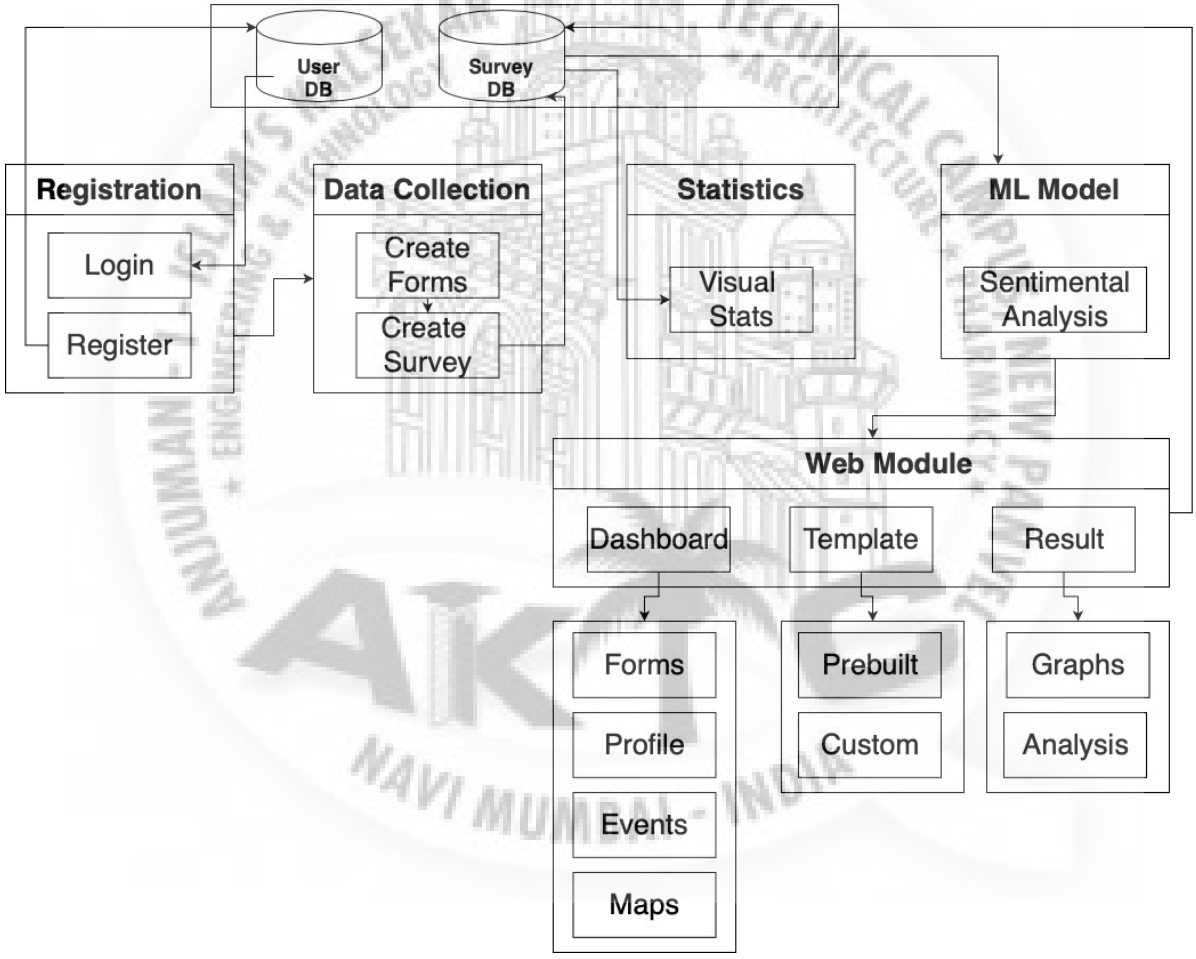


Figure 5.4: Architecture Diagram for Real Insights

5.3 Systems Integration

5.3.1 Sequence Diagram

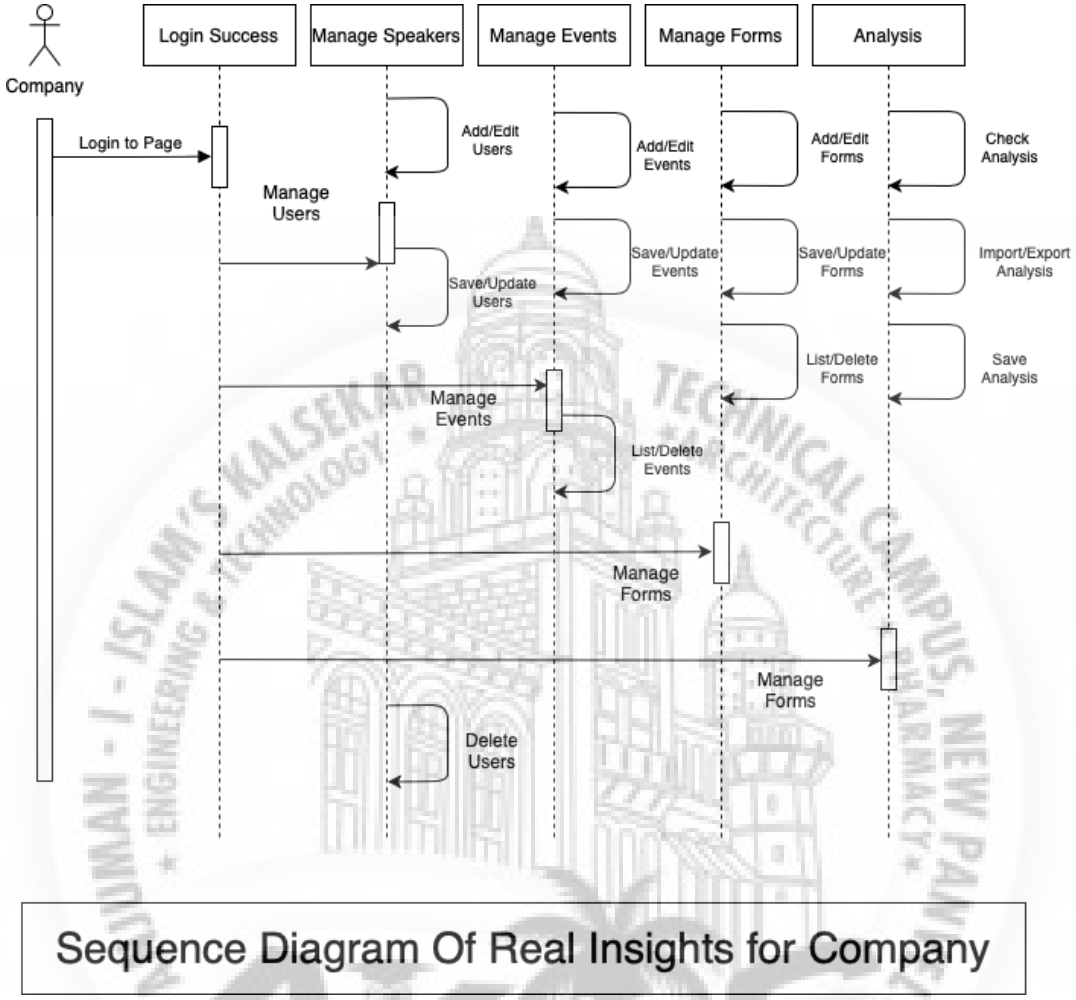


Figure 5.5: Sequence Diagram for Company

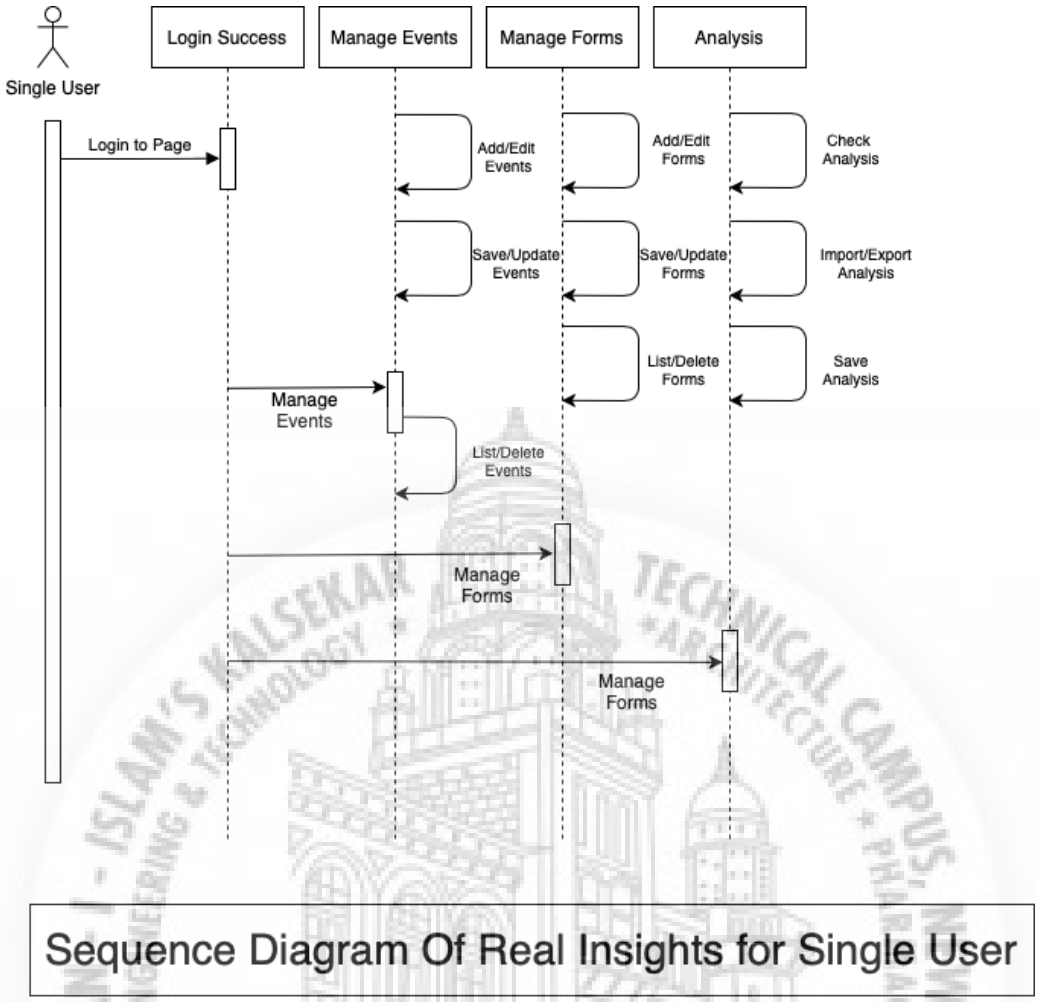


Figure 5.6: Sequence Diagram for Speaker

5.3.2 Component Diagram

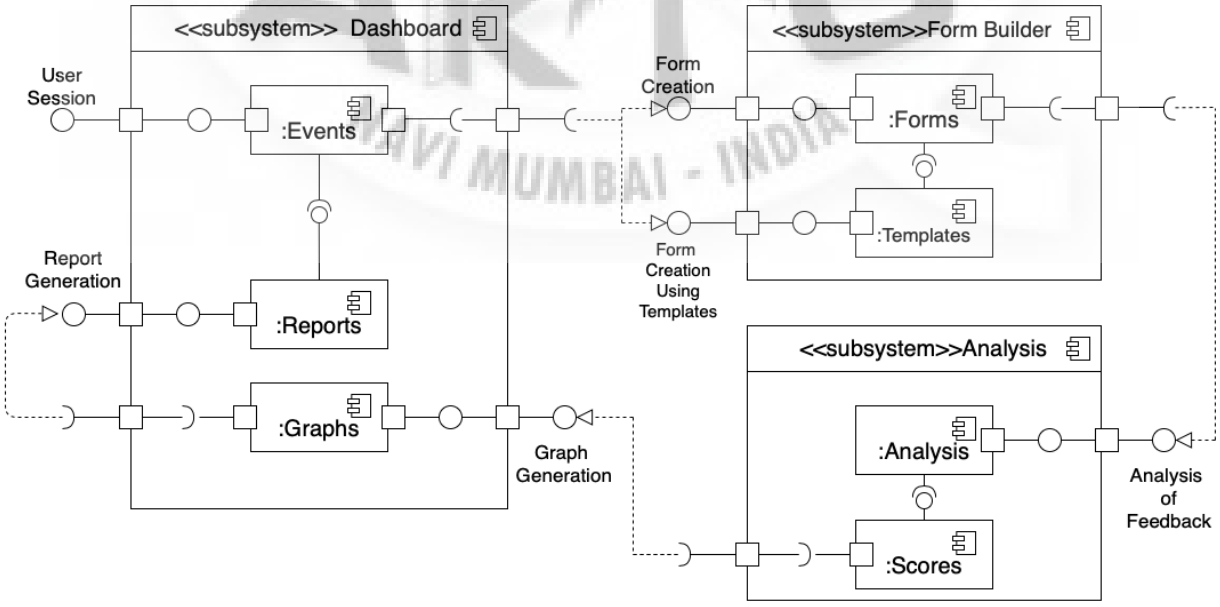


Figure 5.7: Component Diagram

5.3.3 Deployment Diagram

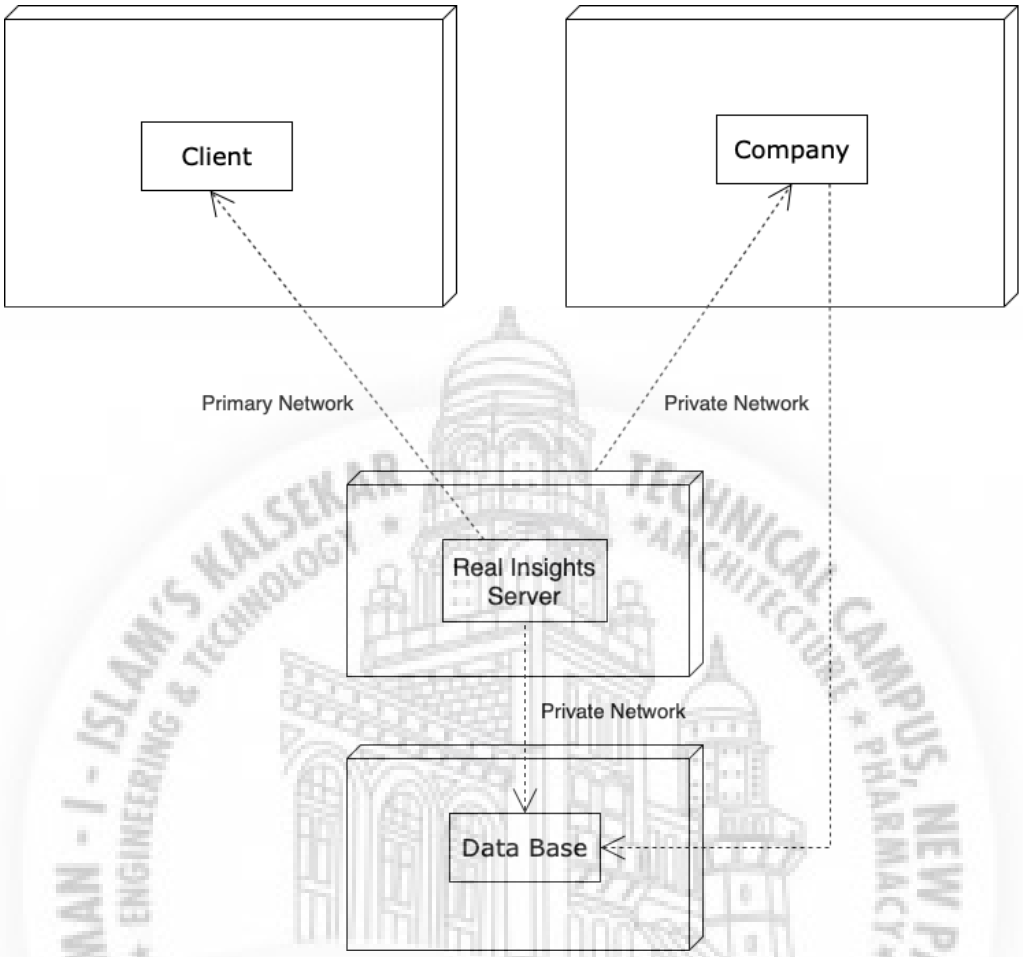


Figure 5.8: Deployment Diagram

Chapter 6

Implementation

6.1 Forms

The most important foundation of Real Insights is to offer the user an easy to use and highly functional array of features in the GUI based form wizard. Starting with a simple form builder, we used an open source library – Jquery Form Builder. This library provides a list of basic form building elements like headers, text fields, checkboxes etc, along with the ability to add more custom ones as we like through JavaScript.

To incorporate this JavaScript based library into our Laravel bases webApp, we make use of Jazmy form builder. This is a Laravel package that incorporates the JavaScript bases JQuery form builder library into a Laravel environment. Giving us the ability to create, read, update and delete a form.

This gives us a good starting off point with a clean and minimalistic UI/UX for a form builder, that comes equipped with a lot of backed in features like, validation, help text, default values, html custom classes and much more.

Aside from the core form builder we've built a lot of complementary features to add a much more dynamic range of functionalities of form builder. They are :

6.1.1 Form Visibility

We've provided two options; one is a public option through which anyone with the link to that form could fill that form, And secondly there is a private form which will only be accessed by users who are registered with Real Insights.

6.1.2 Timer

This function lets a user add either a start time, or end time or both to a form. Through this a user can set a time frame for the form to be active and get automatically deactivated one the time frame shuts off.

6.1.3 Template Option

Once a user has built a skeleton of a form but wants to reuse it again and again, this template option makes it possible.

6.1.4 Event Selection

A user can even specify a form to be placed under specific events that they can also create.

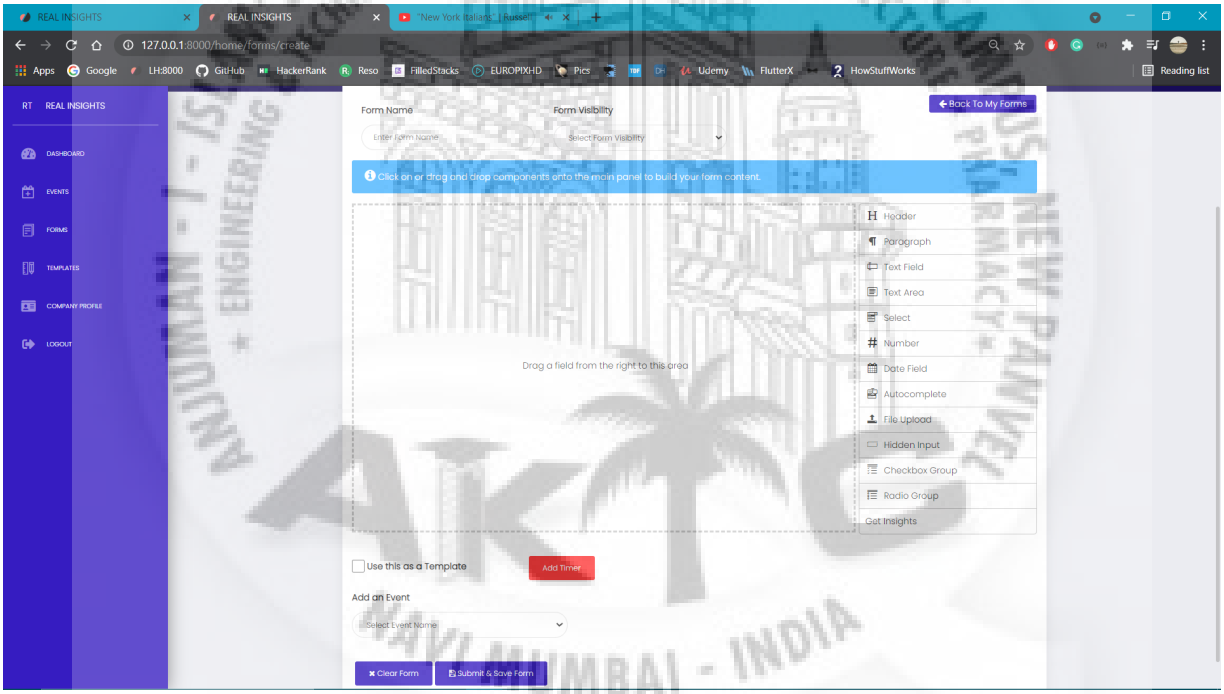


Figure 6.1: Screenshot of the Form Builder page

6.2 Template

We provide user with a range of form templates that can seamlessly plug in to a users need without having to create a form. These templates can be incorporated by anyone for their use and even give it their unique flavour.

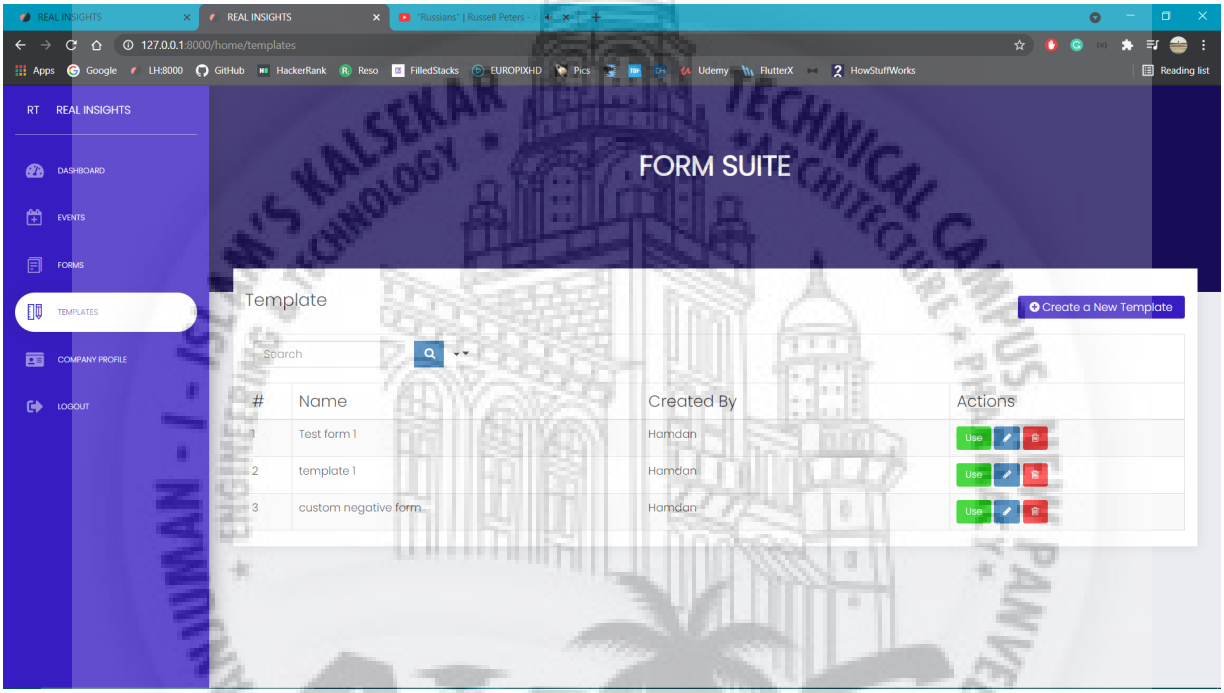


Figure 6.2: Screenshot of the Templates page

6.3 Events

Events can be understood as a general umbrella that can be used to categorise a group of forms.

Consider an example of a 3 day event where a feedback should be filled at the end of everyday. So these three forms can be registered under a specific event name so as to not only access it better, but also analyse and aggregate it in a better and more user friendly manner.

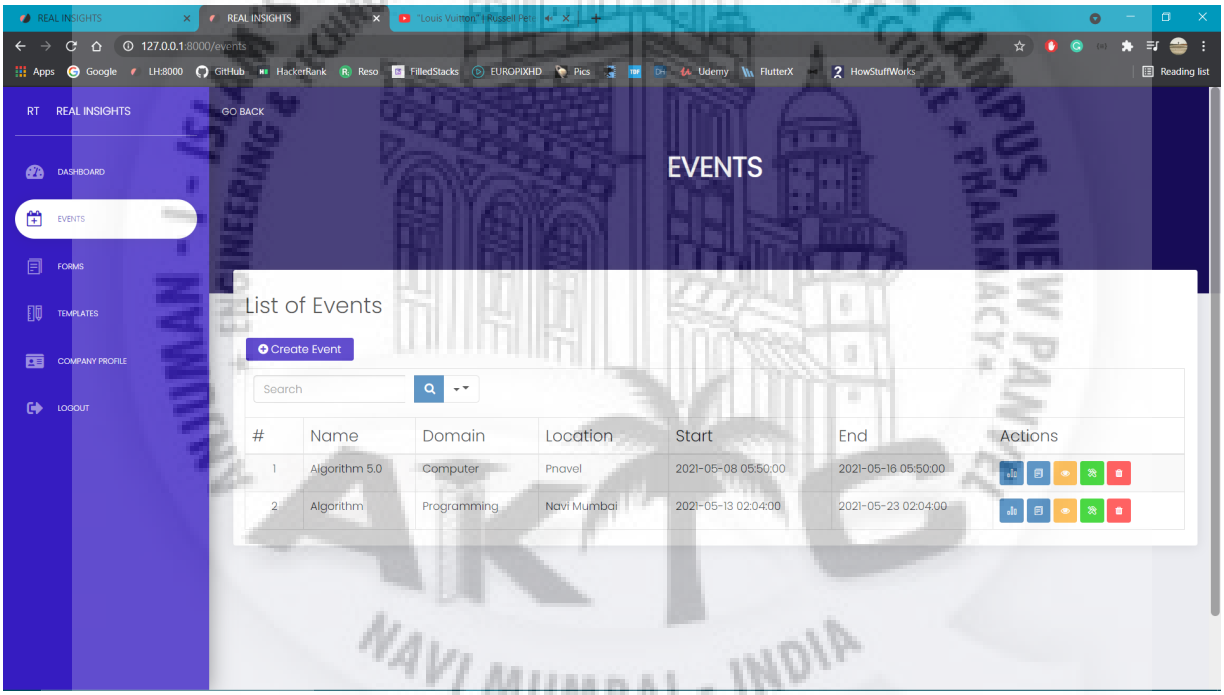


Figure 6.3: Screenshot of the Events Page

6.4 Analysis

This feature is the core module of the entire project. This is our USP, that makes use of NLTK on the collected form data.

After the form responses is turned off, now the user can use our analysis functionality.

This is where the flask api comes into play that is built to handle the feedback analysis.

The general flow goes like this, once the user has collected the form data, they can click the analyse button that will convert the form submission data into a json format in order to send a post request to the flask api for analysis purpose.

After the api performs the analysis, it returns the result along with a few more useful data point back to the Laravel controller, from where we segregate the received data to further display it to the end user.

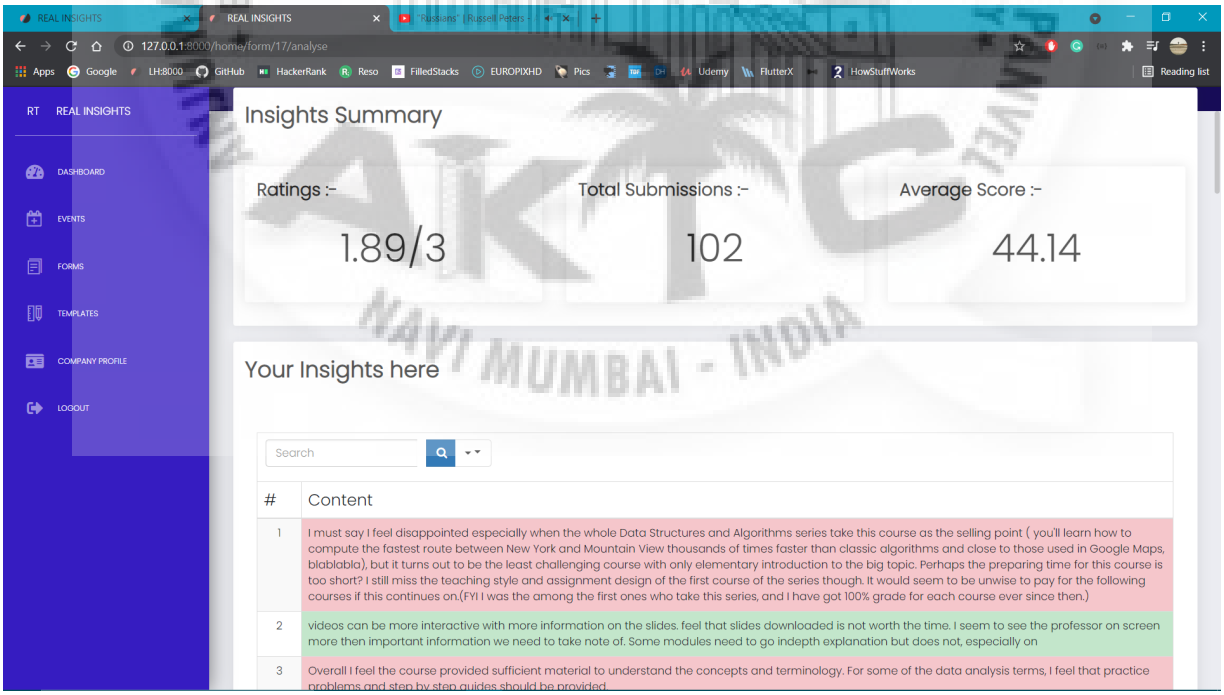


Figure 6.4: Screenshot of the Form Analysis Page

6.5 Flask API

To make the api, we made use of a python mini framework – flask and nltk library to analyse the feedback data.

The reason we built an api, separate from our web app platform is because in a future scope module we have plans to implement an api end point that can be accessed by a user who hasn't created and collected their form through our platform

6.6 Rating

Apart from providing a textual analysis of the feedback data, we also have a module for calculating the average rating for a form. This can be used to cross verify the analysis done by the flask api.

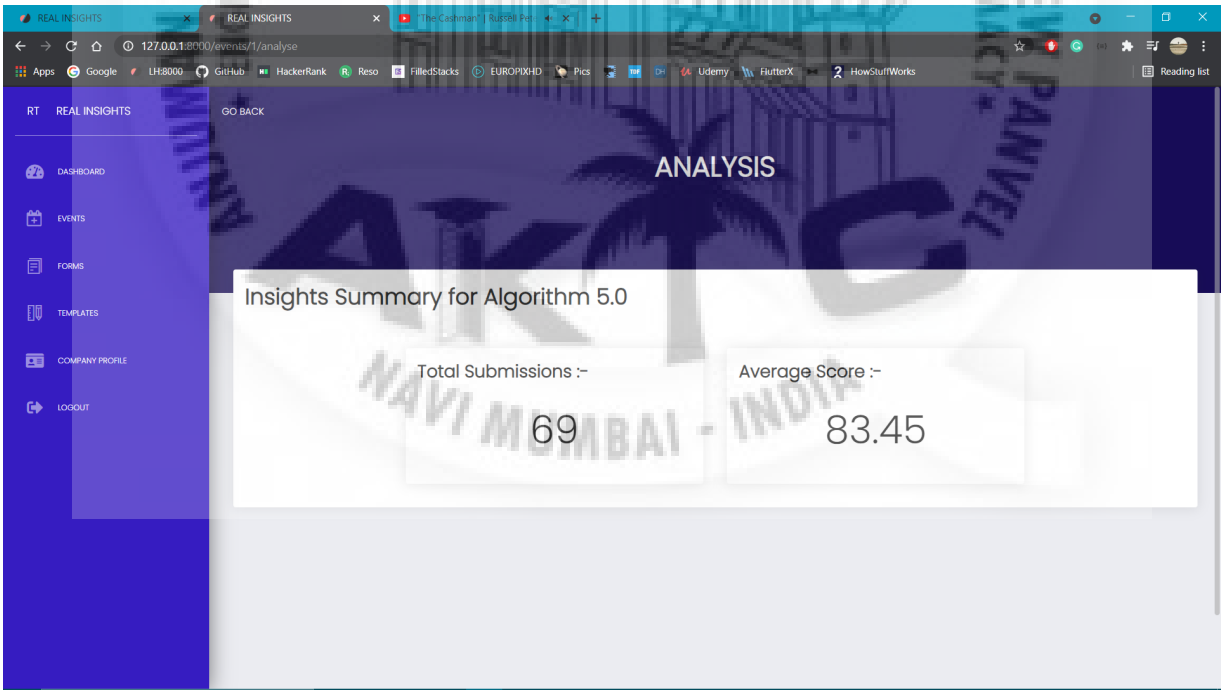


Figure 6.5: Screenshot of the Event Analysis page

6.7 Profile

All user are given a profile module through which they can perform the following functionalities :

a. Name

b. Email Address

c. Phone

d. Profile Picture

e. Reset Password

f. Add / Edit / Remove / Read – Speakers

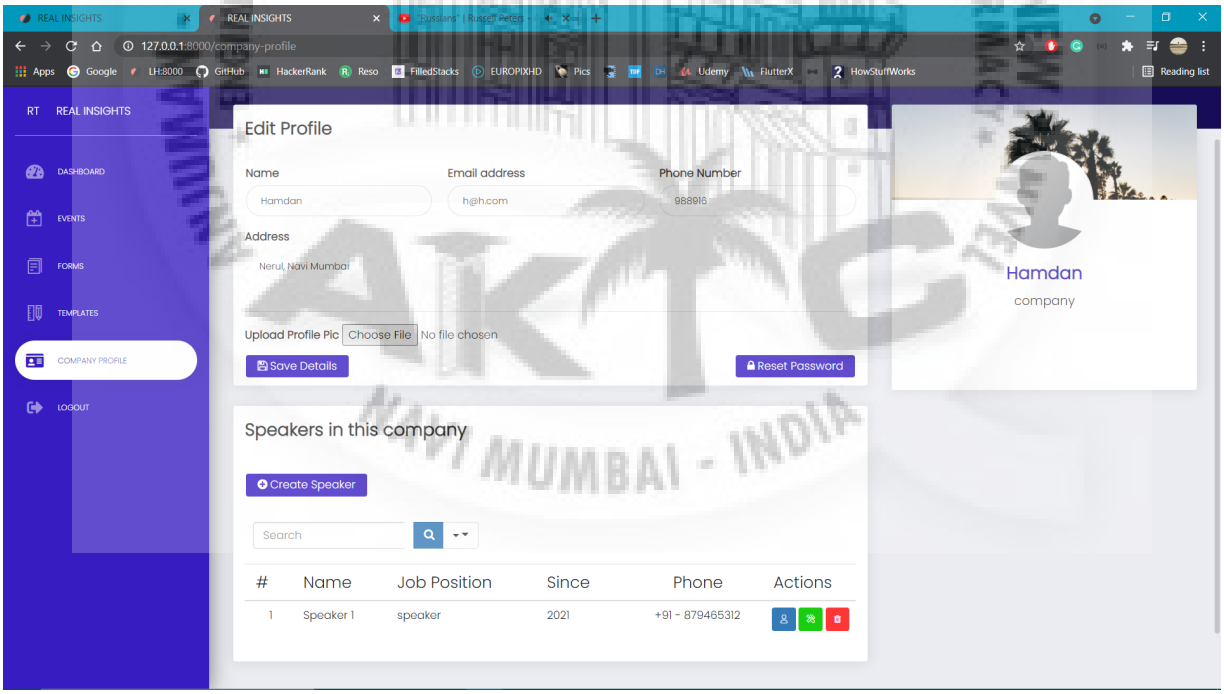


Figure 6.6: Screenshot of the Profile page

Chapter 7

System Testing

We tested a series of data sets with our analysis API with pre-determined results to calculate the accuracy of it.

7.1 Test Cases and Test Results

Test ID	Comment Type	Test Condition	Obtained Result	Expected Result
T01	Positive	All positive comments	95.18%	97%
T02	Negative	All negative comments	44.14%	35%
T03	Mixed	Random positive and negative comments	77.86%	75%

7.2 Sample of a Test Case

Title: Feedback Analysis - Analyse the responses of any form.

Description: A user should be able to obtain the analysis of the responses collected.

Precondition: The user should be registered and the responses collected should be of a form which was created on our platform.

Assumption: A supported browser is being used.

Test Steps:

1. Find the form whose responses are to be analysed
2. Open the responses of the form.
3. Click on 'Analyse' button

Expected Result: A page displaying the analysis of the responses.

Actual Result:

A page displaying the analysis of the responses. The analysis includes the overall rating obtained, the total number of submissions received, the average score obtained through the comments and the comments marked in green and red for positive and negative respectively.

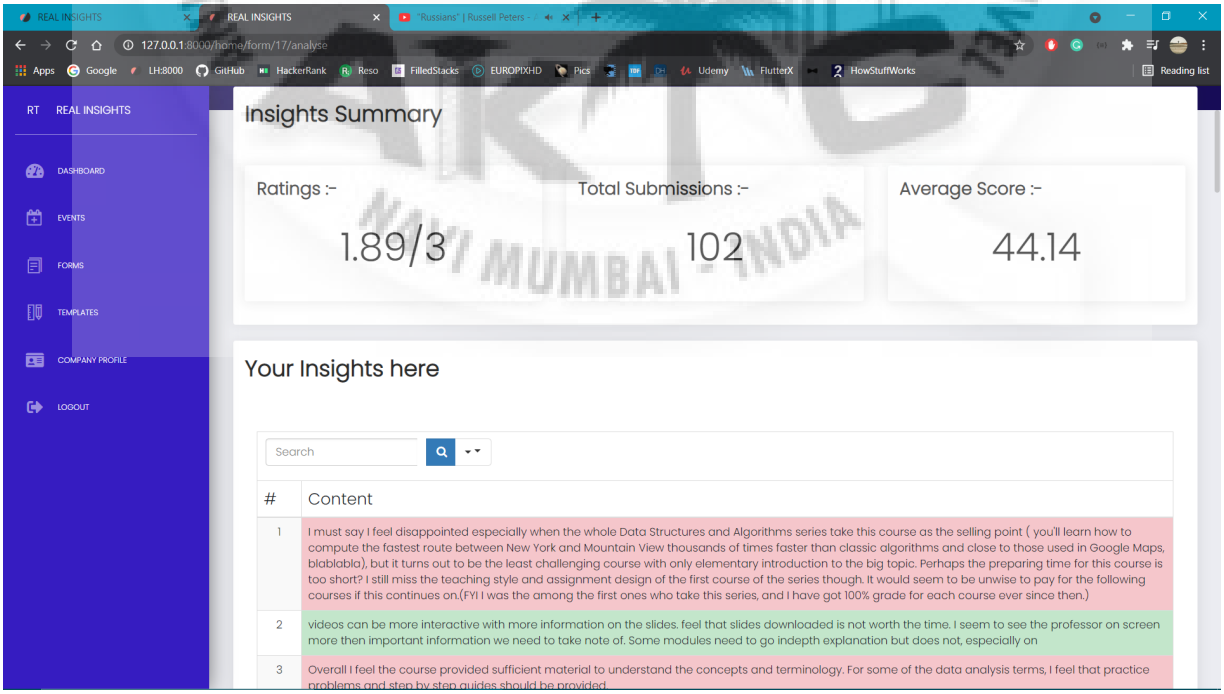


Figure 7.1: Screenshot of the Form Analysis page

7.3 Software Quality Attributes

The feedback analysis system provides the right tools for information sharing and problem solving. It must be made sure that the system is reliable in its operations and for securing the sensitive details.

If the internet service gets disrupted while sending information to the server, the information can be send again for verification.

As the system is easy to handle and navigates in the most expected way with no delays. In that case the system program reacts accordingly and transverses quickly between its states.

Information transmission is securely transmitted to server without any changes in information

Chapter 8

Screenshots of Project

8.1 Home Page

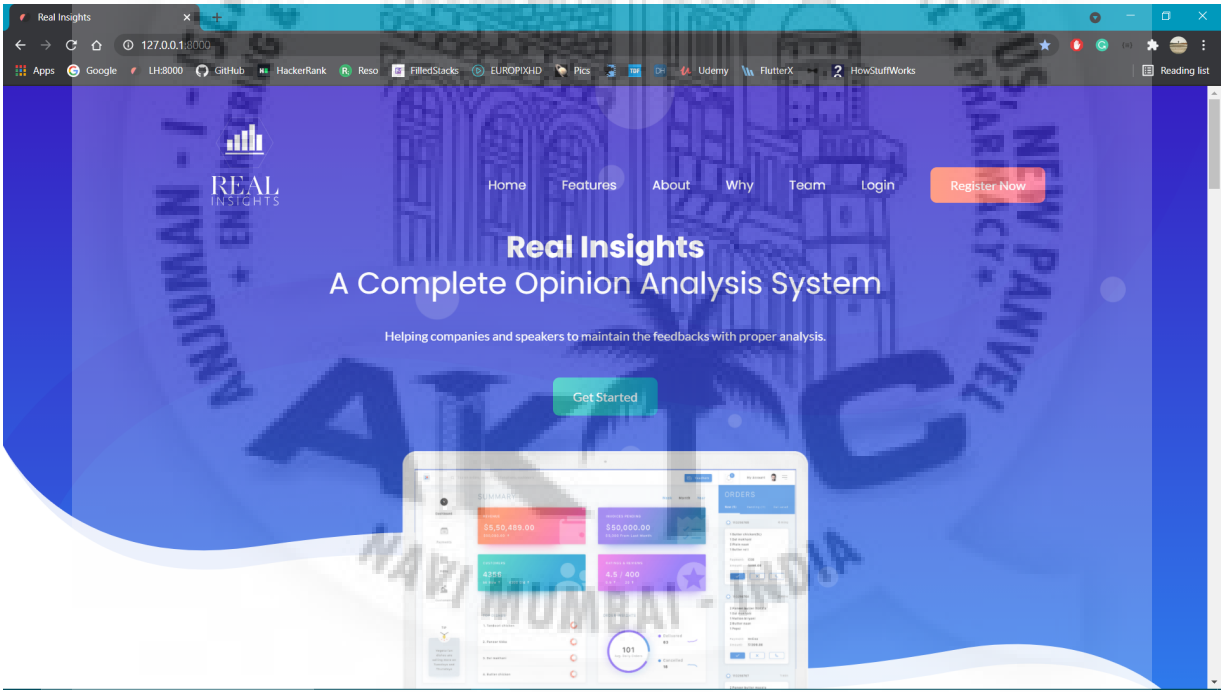


Figure 8.1: Screenshot of the Home page

8.2 Dashboard

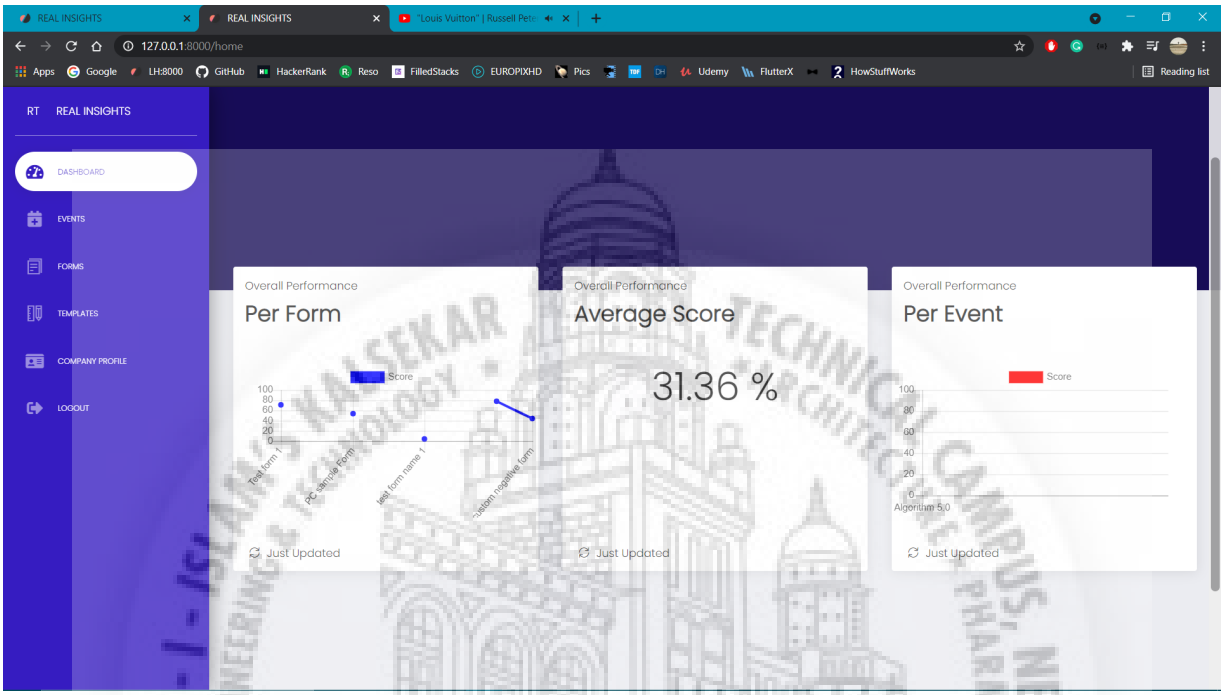


Figure 8.2: Screenshot of the Dashboard page

8.3 Forms

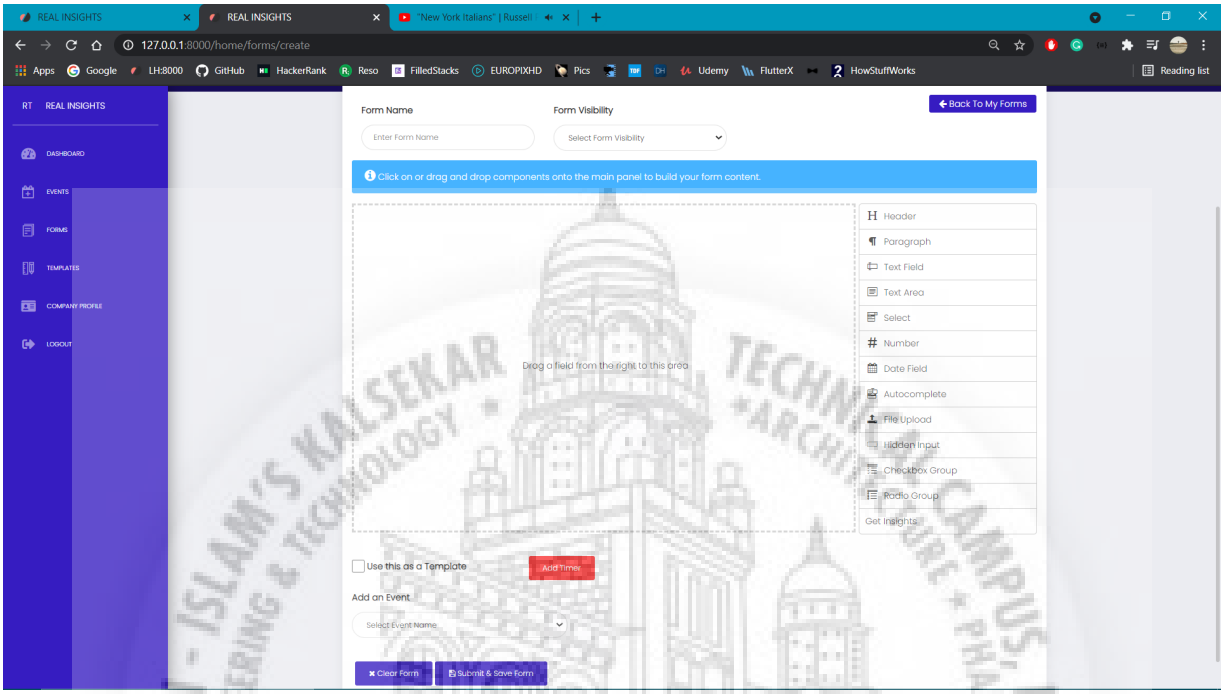


Figure 8.3: Screenshot of the Form Builder page

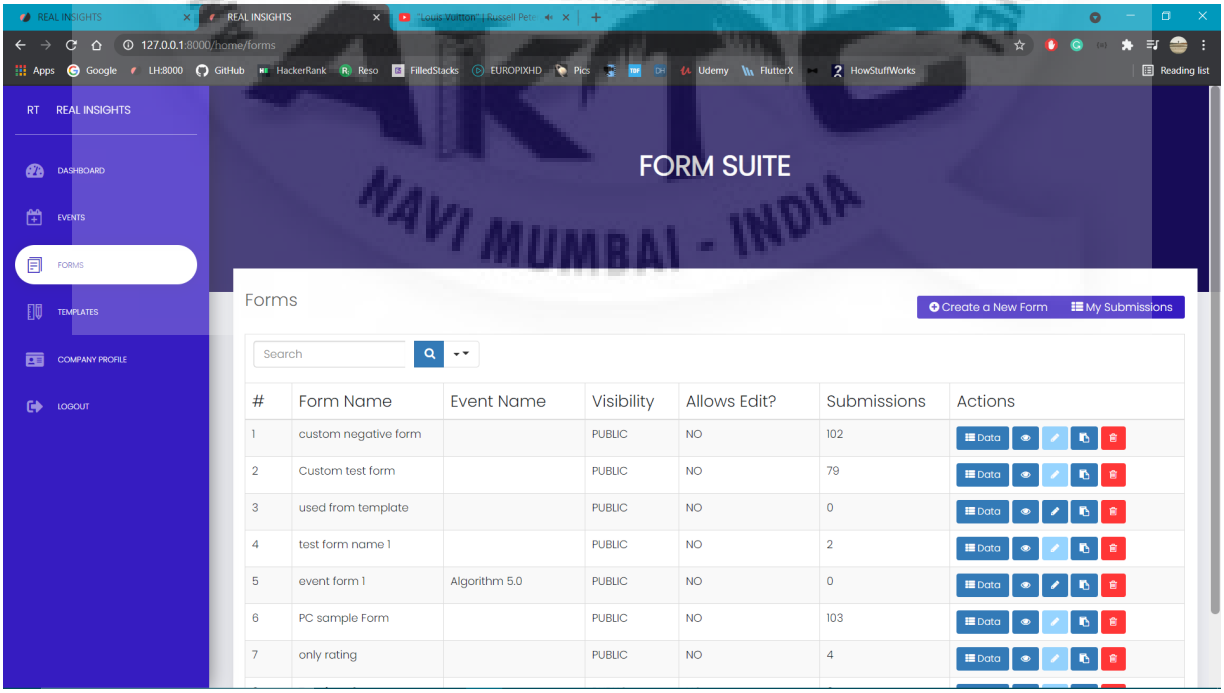


Figure 8.4: Screenshot of the Form List page

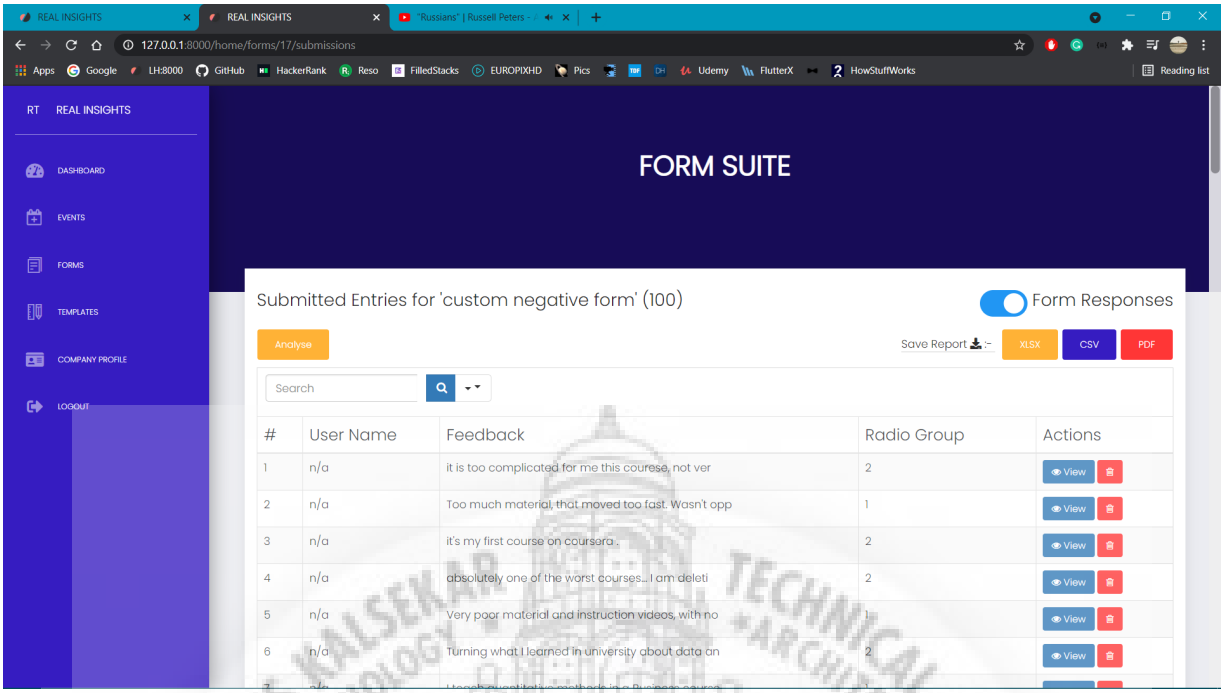


Figure 8.5: Screenshot of the Form Submissions page

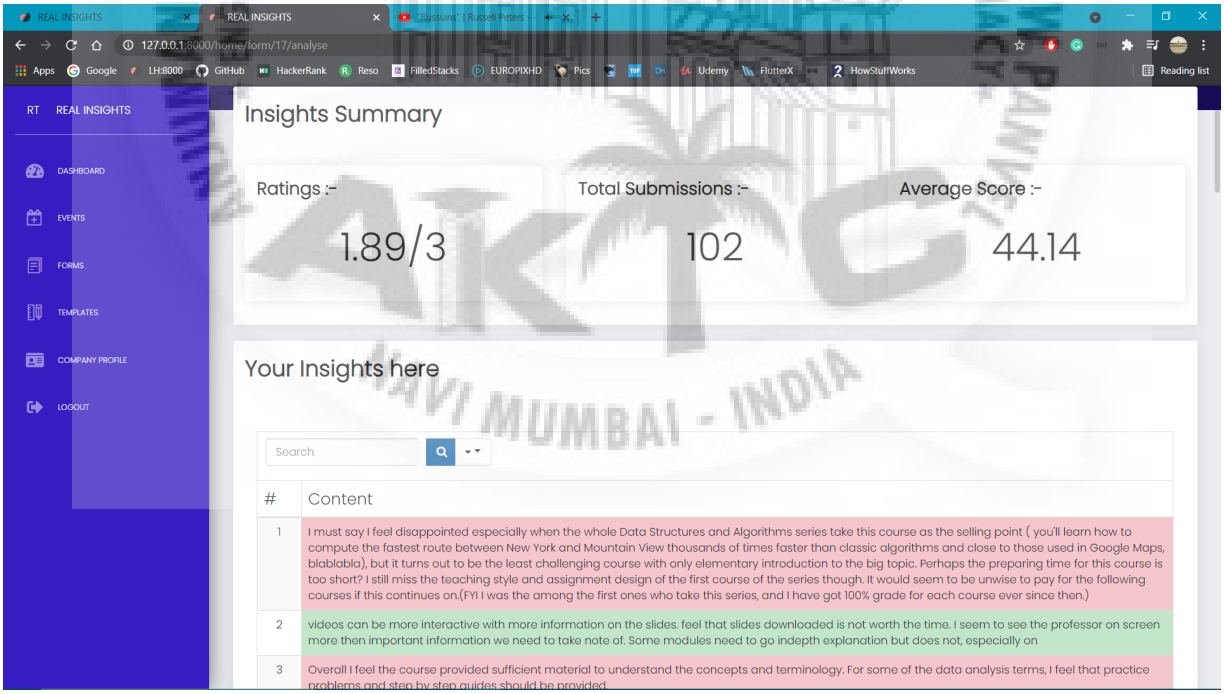


Figure 8.6: Screenshot of the Form Analysis page

8.4 Events

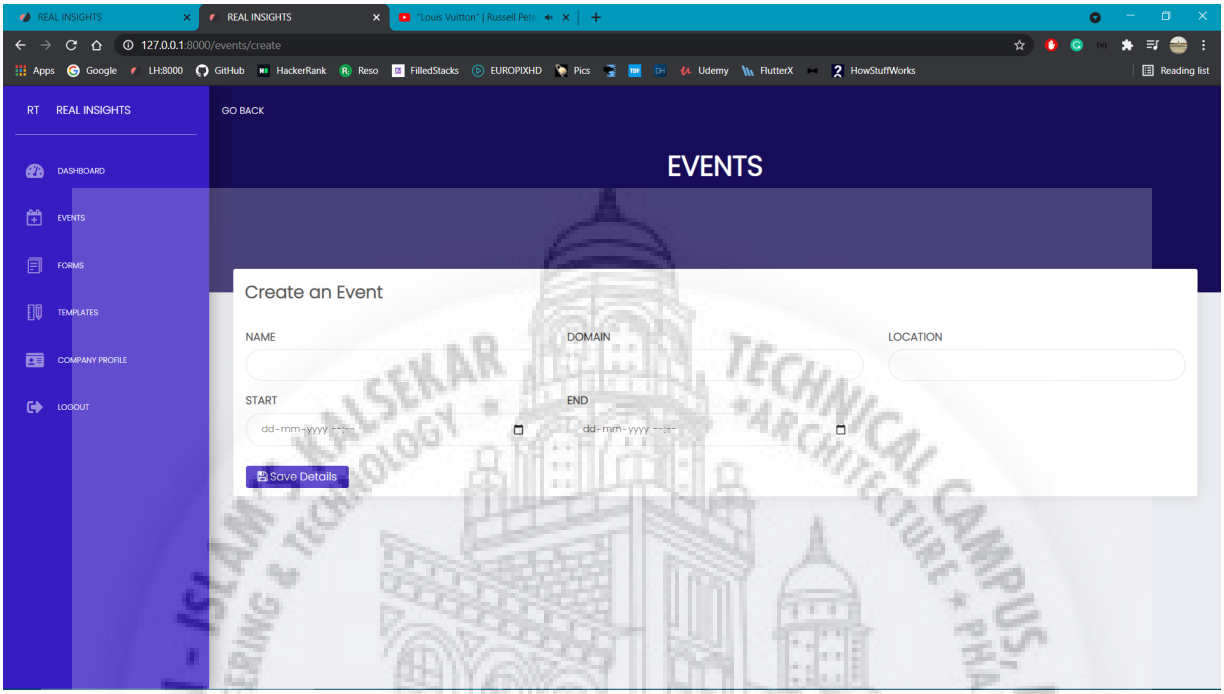


Figure 8.7: Screenshot of the Event Creation page

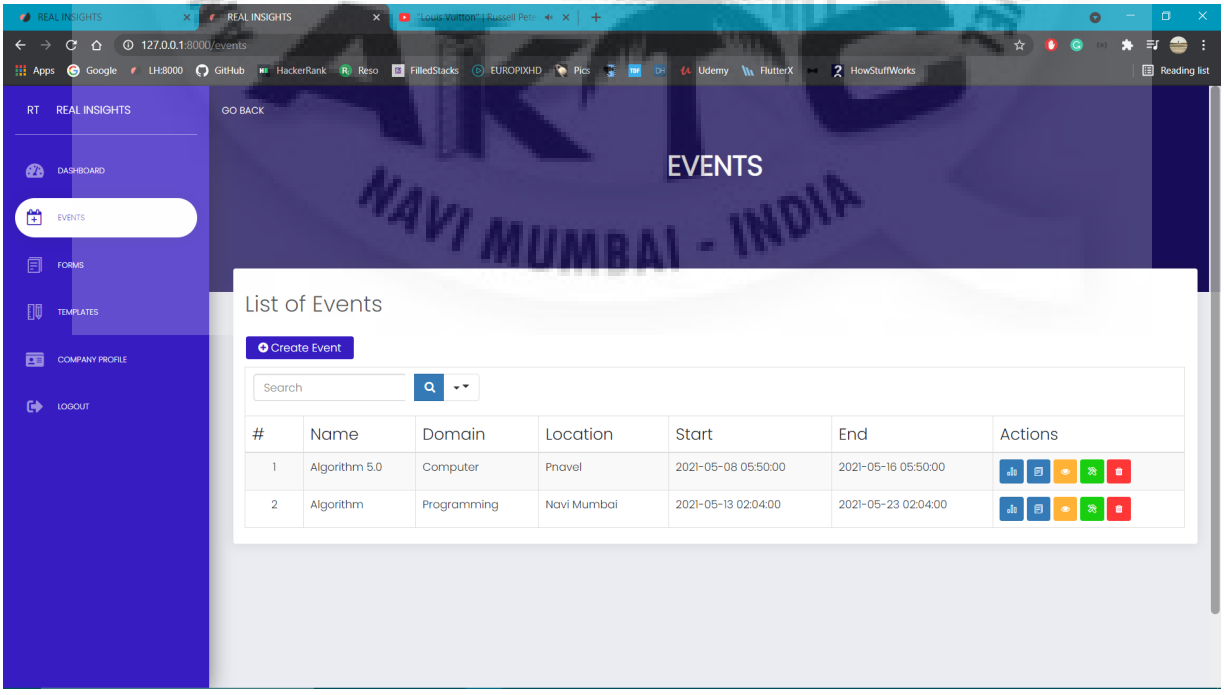


Figure 8.8: Screenshot of the Event List page

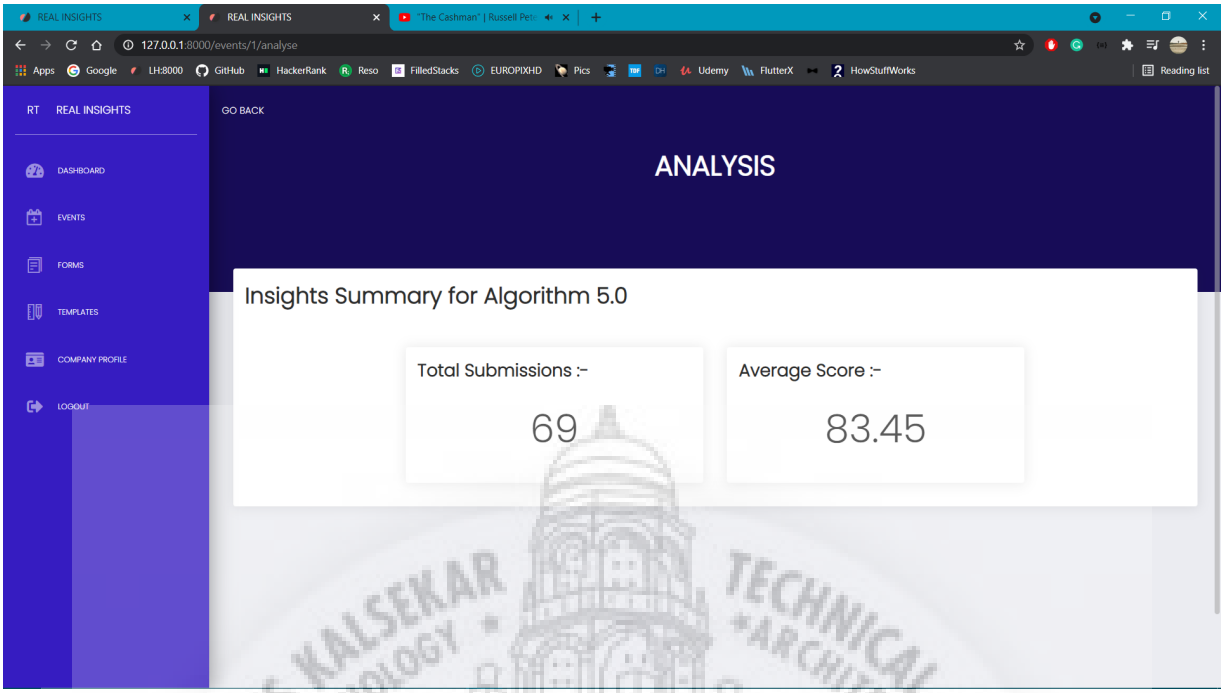


Figure 8.9: Screenshot of the Event Analysis page

8.5 Templates

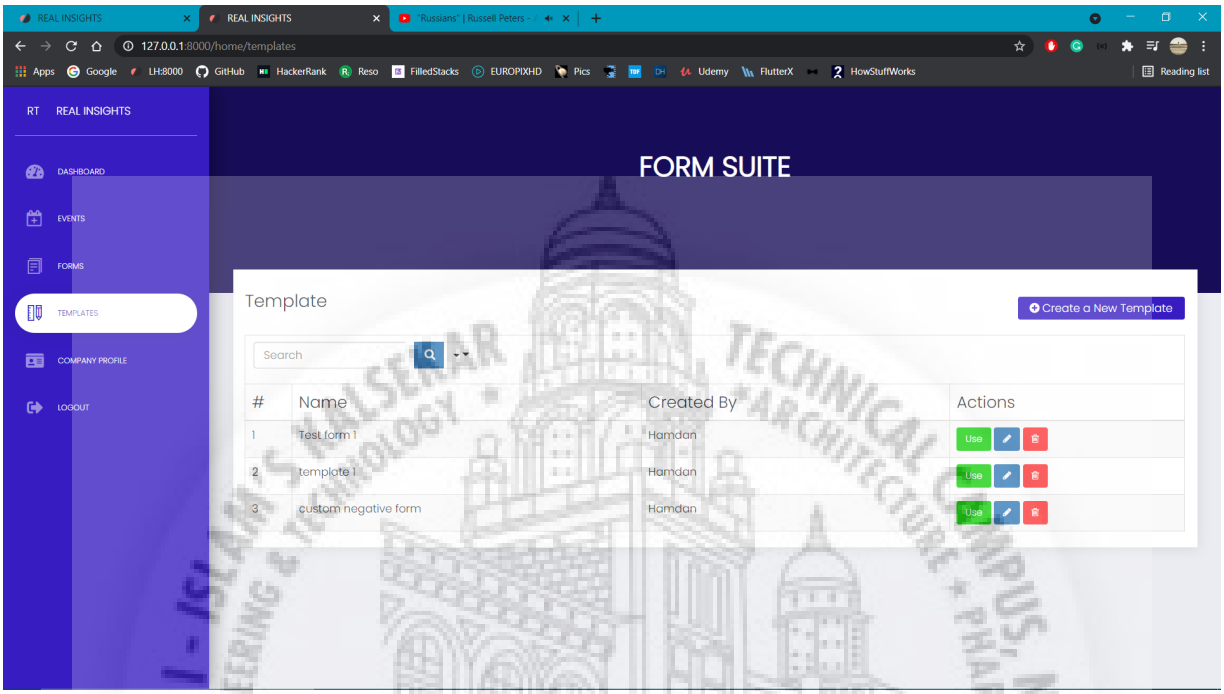


Figure 8.10: Screenshot of the Templates page

8.6 Profiles

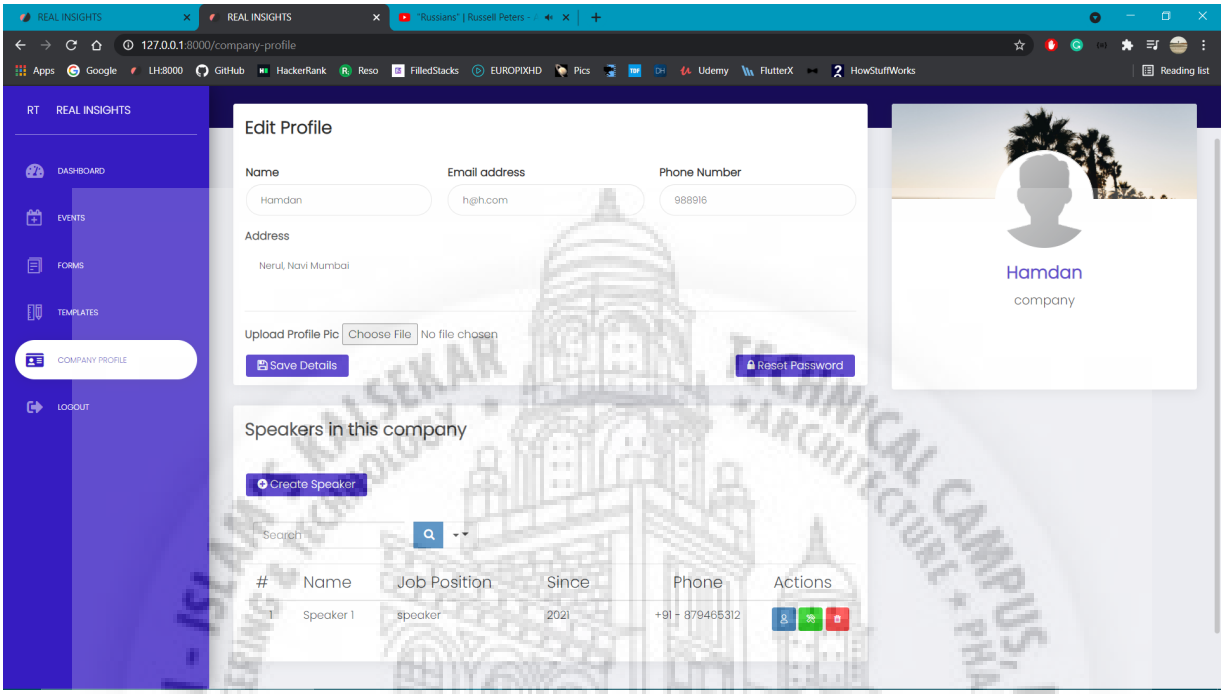


Figure 8.11: Screenshot of the Company Profile page

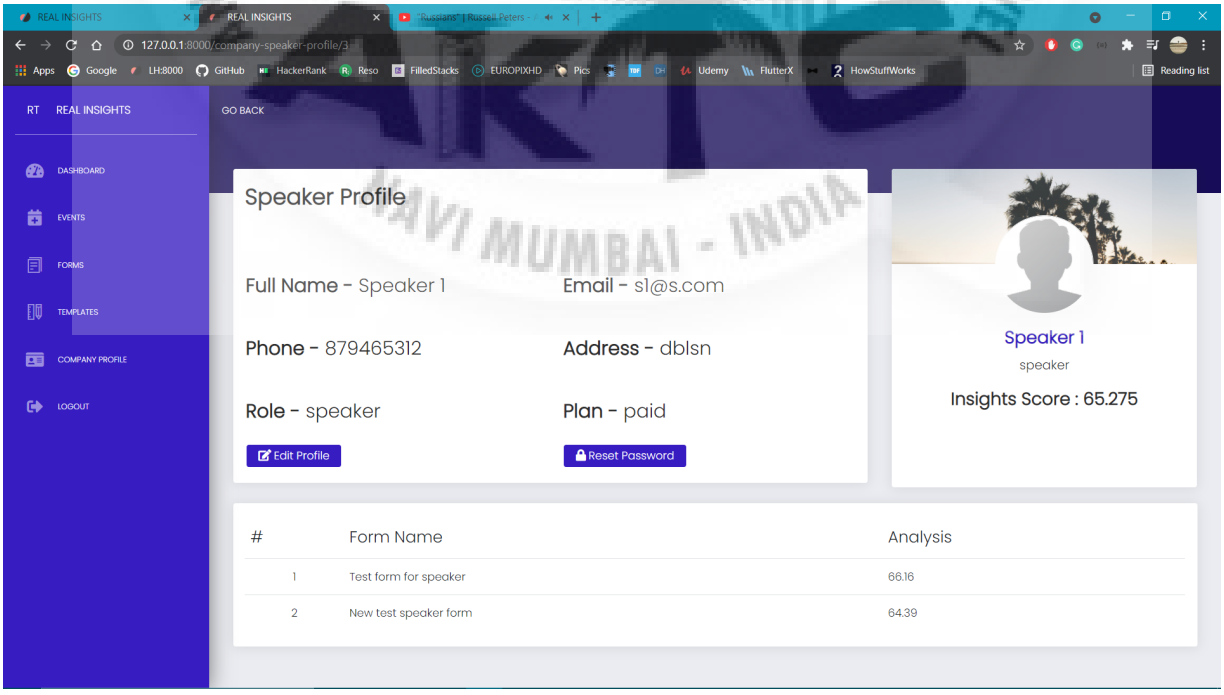


Figure 8.12: Screenshot of the Speaker Profile page

Chapter 9

Conclusion and Future Scope

9.1 Conclusion

A significant part of the demand for goods and activities is feedback. After the evolution of the internet, there has been a rise in client satisfaction.

As we all understand, one bad review is sufficient to shatter the product of a business, which is why feedback plays an important role in all kinds of markets. In terms of customer loyalty and the value of the customer in terms of the organization's income, the growth of different online outlets has led to different advances.

To ensure that they are able to meet the differences between them and the product, a business needs to listen to its customers. Companies have to retain experts to ensure that their reputation is preserved in a meaningful way in the sector.

9.2 Future Scope

We aspire to keep working on our project to make it a marketable product. Some of the additions that we feel are needed for it to happen are:

- Implement Payment Gateway
- Location wise alerts for new events
- Introductory walkthrough for new clients

References

[1] Petra Martíšková : Customer feedback in B2C e-shops. (2017) http://academia.edu/

[2] Sérgio Moro : Stripping customers' feedback on hotels through data mining: the case of Las Vegas Strip. (July 2017) http://sciencedirect.com/

[3] Adesh N D : Sentimental Analysis of Student Feedback using Machine Learning Techniques. (August 2019) Research Gate

[4] Özgür Genç : The basics of NLP and real time sentiment analysis with open source tools. (April 2019) http://towardsdatascience.com/