A

PROJECT REPORT

ENLISTED
CHATBOT FOR QUERY SOLVING
UDP project

Team ID: 66148

Submitted By:

Patel Dhurv	**160450107032**
Patel Harsh	**160450107034**
Patel Shubham	**160450107041**
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in

Academic Year: 2020-21

In partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

in

Computer Engineering

Shri S'ad Vidhya Mandal Institute of Technology, Bharuch-392001

Gujarat Technological University, Ahmadabad

Guided by:

Mrs. Akansha Mishra

(Faculty Guide)

Prof. Nital Prajapati

Head of the Department

CERTIFICATE

This is to certify that project work embodied in this report entitled "**CHATBOT FOR QUERY SOLVING**" carried out by following students (of semester VIII) at ***Shri S'ad Vidhya Mandal Institute of Technology, Bharuch [045]***, in partial fulfilment of the requirement for the award of the degree "***Bachelor of Engineering in Computer Engineering***" by ***Gujarat Technological University*** is hereby approved.

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3.	Patel Shubham	160450107041
4.	Rana Smit	160450107048

Date:

Place: S.V.M.I.T, BHARUCH

Signature and Name of Examiners

Signature and name of Head of Department

Prof. Jignasa Patel
SVM Institute of Technology, Bharuch

Prof. Nital Prajapati
SVM Institute of Technology,Bharuch

EXAMINER'S CERTIFICATE OF APPROVAL

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ACKNOWLEDGEMENT

We take this occasion to thank God, almighty for blessing us with his grace and taking our endeavor to a successful culmination. We extend our sincere and heartfelt thanks to our esteemed guide, **Prof. Akansha Mishra** for providing us with the right guidance and advice at the crucial junctures and for showing us the right way.

We extend our sincere thanks to our respected Head of Department **Prof. Nital Prajapati** for allowing us to use the facilities available. We would like to thank the other faculty members also, at this occasion.

The project would not have been successfully completed without continues support, motivation extended by friends during work. Finally, thank to **Shri Sa'd Vidhya Mandal Institute of Technology** for providing us the platform to present this system.

Patel Dhruv (160450107032)
Patel Harsh (160450107034)
Patel Shubham (160450107041)
Rana Smit (160450107048)

SELF-DECLARATION

We **Patel Dhruv, Patel Harsh, Patel Shubham** and **Rana Smit** the students from Computer Engineering Branch, having enrolment numbers **160450107032, 160450107034, 160450107041** and **160450107048** respectively enrolled at **SHRI S'AD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH**, as a project group, hereby certify and declare the following:

1. We have defined our project based on inputs as undergraduate student and each of us will make significant efforts to make attempt to solve the challenges. We will attempt the project work at our college or at any location under the direct and consistent monitoring of **Prof. Akansha Mishra**. We will adopt all ethical practices to share credit amongst all the contributors based on their contributions during the project work.

2. We have not purchased the solutions developed by any 3rd party directly and the efforts are made by us under the guidance of guides.

3. The project work is not copied from any previously done projects directly. (Same project can be done in different ways but if it has been done in same manner before then it may not be accepted)

4. We do the best of our knowledge is a genuine industry engaged in the professional service/social organizations.

Place: **Bharuch**

Date:

Patel Dhruv (160450107032)

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ABSTRACT

A ChatBot system for college student will be built using Artificial Intelligence that analyses users queries, understands users' message and provides appropriate answer to queries. System will reply using an effective GUI, which implies that as if a real person is talking to user. User can query about college and system helps students to update about college activities.

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CHAPTER - 1 INTRODUCTION

1.1 Problem Summary

For an organization, it is necessary to solve their customers' queries. However, it seems difficult to handle all customer queries for 24/7. It is necessary to have someone who can answers and solve customer query completely.

1.2 Aim and Objectives of Project

Aim of project is there should be someone who can communicate with a real person behaving like a human. It can be done by implementing a ChatBot. Chatbots are meant to help & deliver immediate actions where humans cannot reach due to timing or budget. It is objective of project.

1.3 Problem Specification

In organization, customer can ask number of query. A problem arises when a customer cannot get query response time-to-time and it is hard for organization to handle these queries at a time. A ChatBot is piece of software that conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how human would behave as a conversational partner. With ChatBot, hitting potential customers is easy by offering required information for queries irrespective of the day or time. Most of ChatBots are less prone to errors; hence, the better customer experience can help to establish a better organization.

1.4 Brief Literature Review and Prior Art Search about Project

Based on Literature and Research paper, ChatBots have been around for past 50 years. Perhaps the earliest example was a program called ELIZA built in 1966, which simulated a therapist by using a script to respond to a user's typed question with simple pattern matching. Over the years, other ChatBots have incorporated more sophisticated techniques and technology to better understand user question and provide more relevant and useful responses.

1.5 Plan of Work

Plan of working for project is based on following points.

1) **Concept:** The concept behind ChatBot is the reason we are building it. A ChatBot system for college student will be built using Artificial Intelligence that analyses users query, understands users' message and provides appropriate answer to queries.

2) **Tone of voice**: The tone of voice of ChatBot is its personality. It is the way it is going to interact with humans. User can ask queries about college campus to the bot and bot will response according to user query.

3) **Conversational UX**: Figuring out the conversational UX of your ChatBot is more technical. ChatBot operates the way in the background and how this is reflected when being used. First, the keywords are set and the question related to it are stored into the file. Then the program uses this file in the terms of bags of words. This bag of words is the binary representation of each words. The tokenizer does the work of separating the words from the sentences. Now the neural network is made to identify the category of the input sentence.

1.6 Materials/Tools Required

Tools required for Project:

- PyCharms
- TensorFlow
- DialogFlow
- Django
- Anaconda Environment
- Natural Language Toolkit

CHAPTER - 2 DESIGN

2.1 Analysis

Design analysis is systematic process of developing a design including all information discovery and communications. Software analysis and design includes all activities, which help transformation of requirement specification into implementation.

Requirement specifications specify all functional and non-functional expectations from software. These requirement specifications come in shape of human readable and understandable documents, to which a computer has nothing to do.

Software analysis and design is intermediate stage, which helps human-readable requirements to be transformed into actual code.

2.2 Design Methodology

Software design methodology provides a logical and systematic means of proceeding with the design process also set of guidelines for decision-making. The design methodology provides a sequence of activities, and often uses a set of notations or diagrams.

Design Thinking can be applied to solve all kind of problems from the simplest to complex problems. Design Thinking is a mindset that is possibility driven, Option focused and iterative. This can be divided into 6 interactives as well as iterative steps shown below. Each steps of Design Thinking involve rigorous and interactive efforts from defining a particular problem to deploy the solution in the market. Every step would involve iteration to check the idea/solution with the previous one to move ahead.

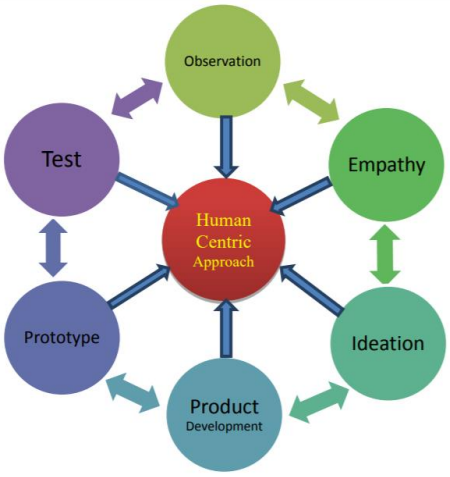

Figure - 1 Design Methodology

UML - Activity Diagram:

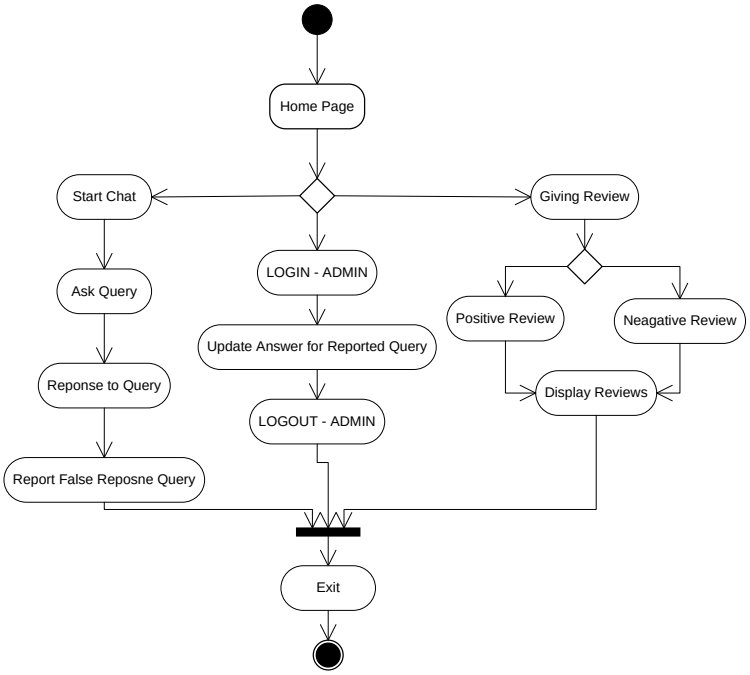

Figure - 2 UML - Activity Diagram

UML - Use-Case Diagram:

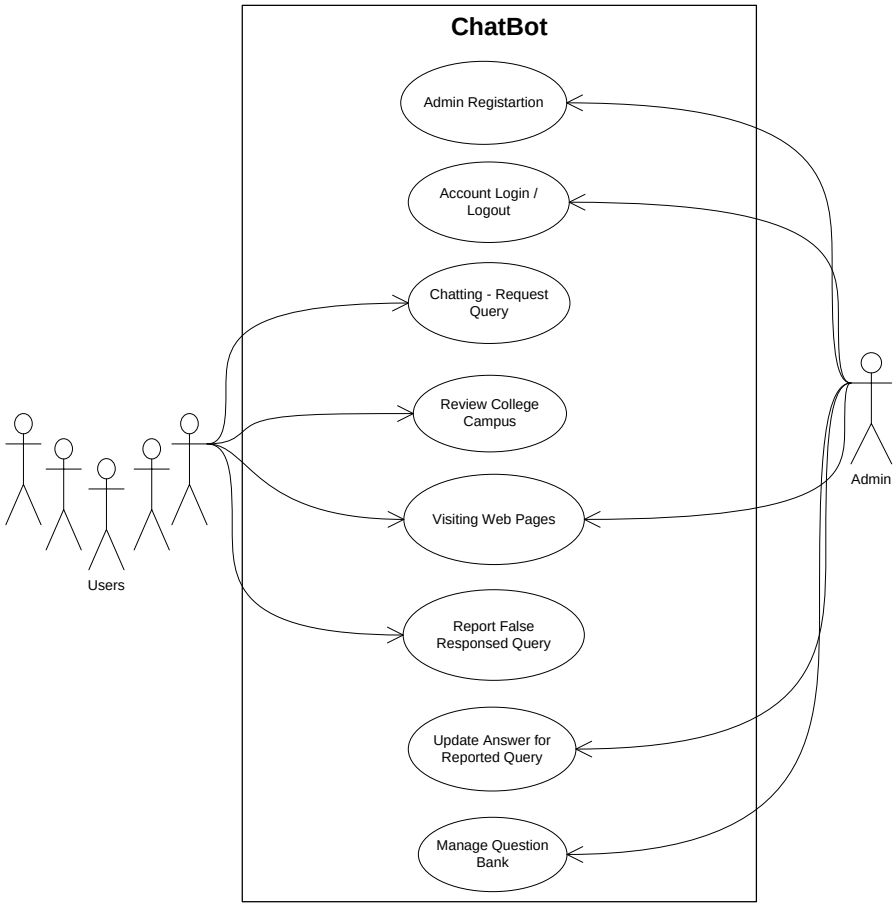

Figure - 3 UML - Use Case Diagram

UML - Class Diagram:

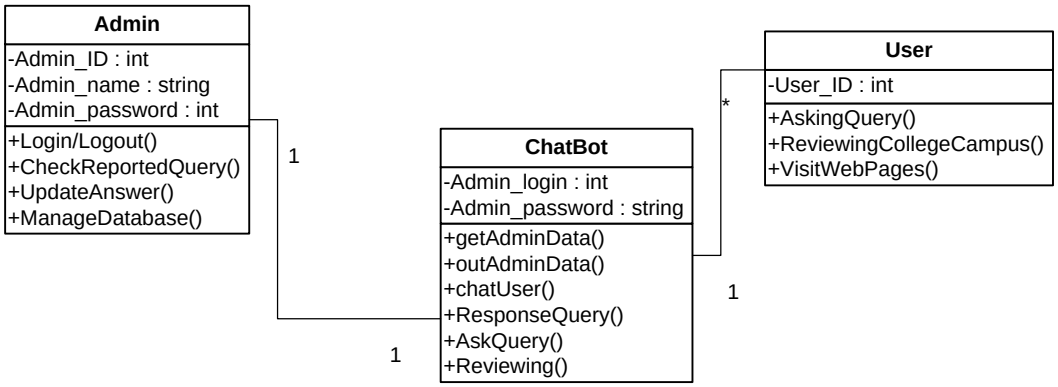

Figure - 4 UML - Class Diagram

DFD Level 0:

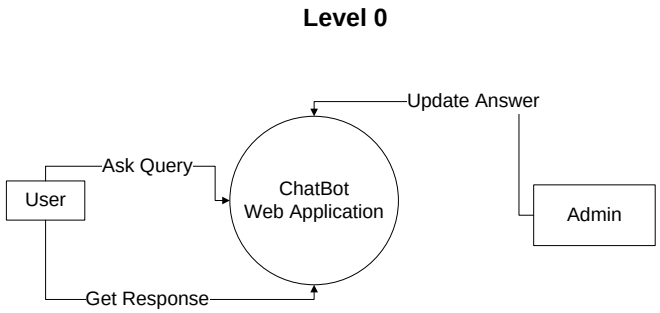

Figure - 5 DFD Level 0

DFD Level 1:

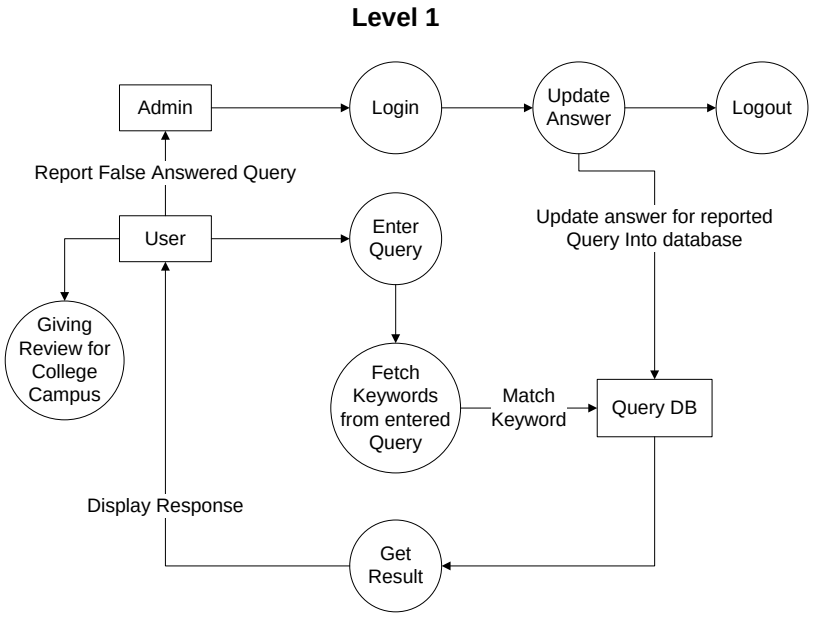

Figure - 6 DFD Level 1

2.3 Implementation Strategy

As any software project, Development of ChatBot goes through a set of standard stages: ChatBot Strategy, Design, Development, and Testing. Better, we define implementation strategy, the smoother and faster our project will go.

A Good ChatBot Implementation Strategy has following points:

1) Define Goals
2) Understand Users
3) Learn from Competitors
4) Pick a Platform
5) Capture Requirements
6) Prioritize Desires
7) Design Conversation Flow
8) Select Appropriate Technology
9) Take Analytics into Account

2.4 Canvas

2.4.1 AEIOU Summary

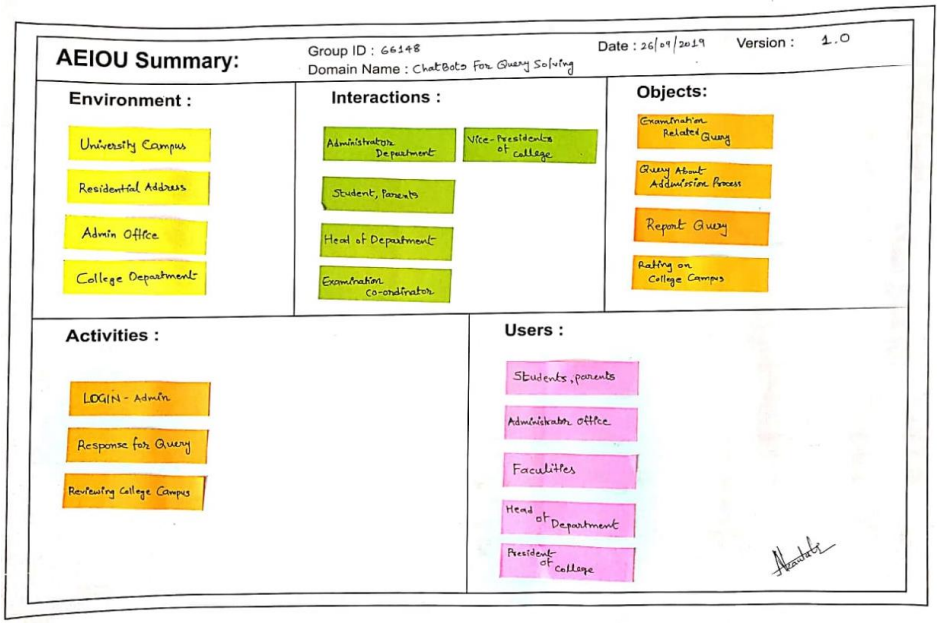

Figure - 7 AEIOU Summary Canvas

2.4.2 Empathy Summary

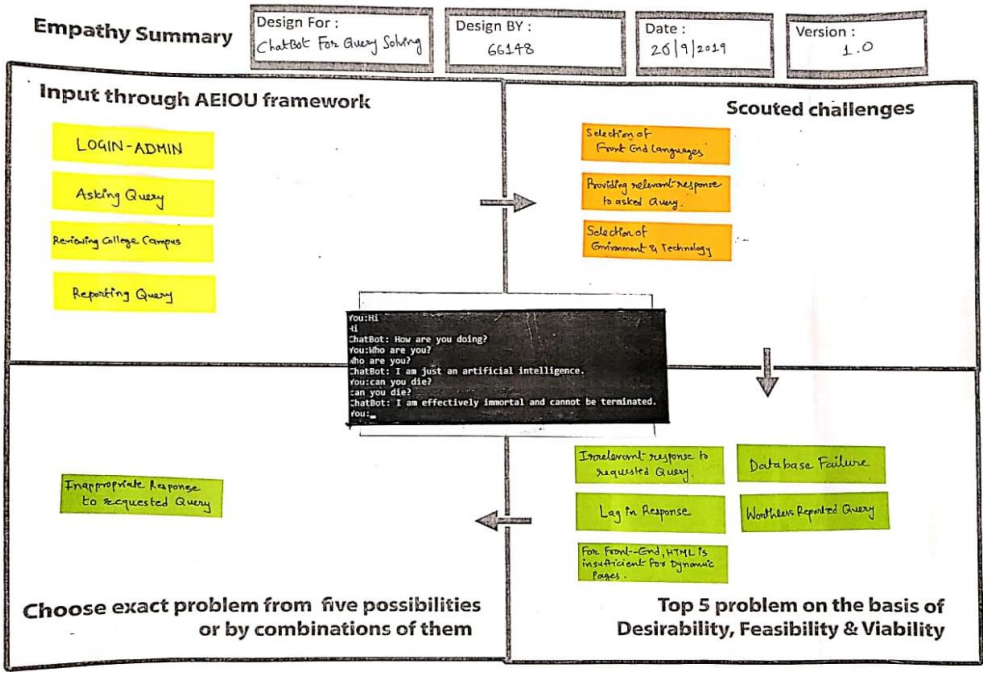

Figure - 8 Empathy Summary Canvas

2.4.3 Ideation

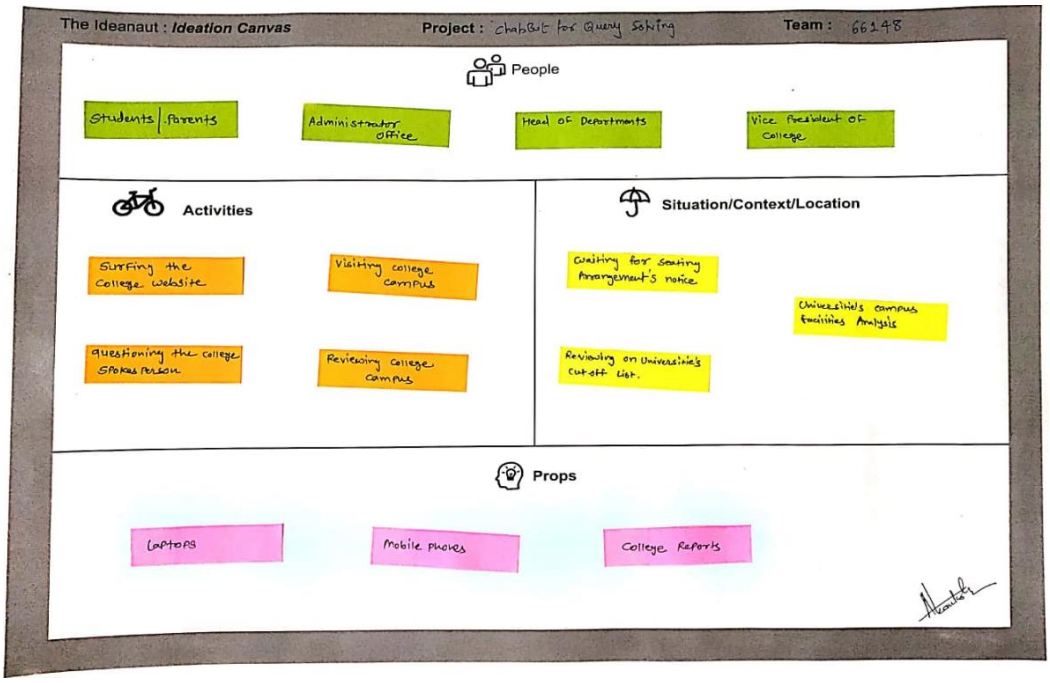

Figure - 9 Ideation Canvas

2.4.4 Product Development Canvas

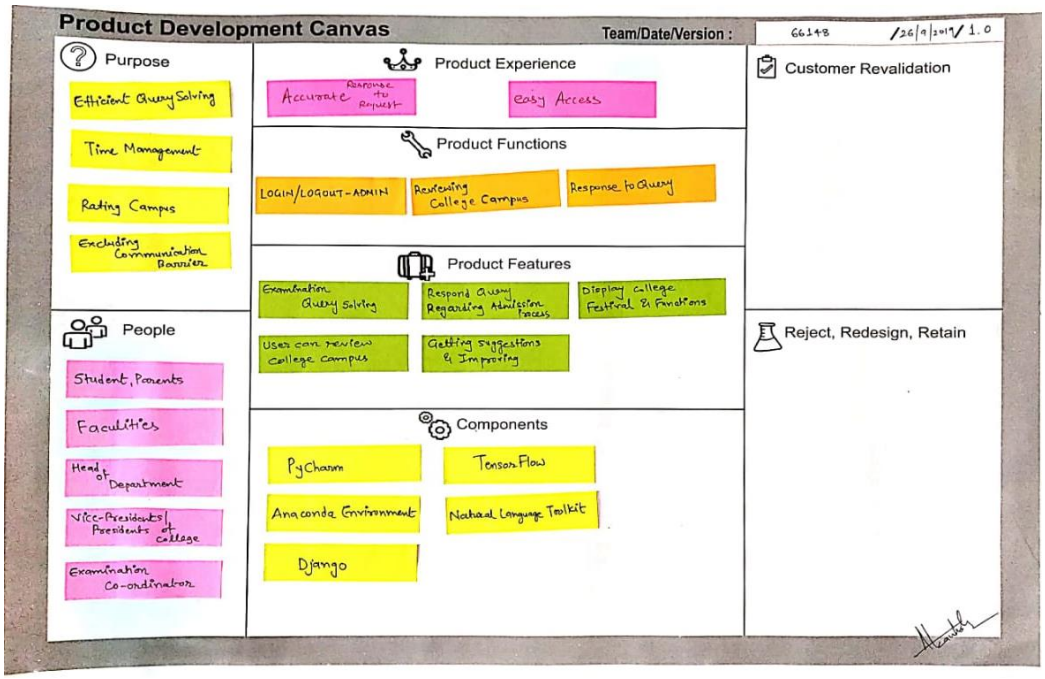

Figure - 10 Product Development Canvas

CHAPTER-3 IMPLEMENTATION

3.1 Web Application Report:

- There is plan to build project in two phase. In first phase, complete the main core of project and then build user friendly Graphical User Interface(GUI). According to plan, ChatBot Web Application had completely developed in 7th and 8th Semester. Implementation includes ChatBot with Complete college website.

- Our project team executed meetings and gatherings with internal guide to discuss the website structure, accurate ChatBot respond and all other recommendations have been made to maintain the success of the project.

- At the end of implementation stage, the project team will keep reviewing, updating, and refining the web application in order to insure the best performance and to maximize the results expected by the ChatBot project.

3.2 Web Application Work Flow:

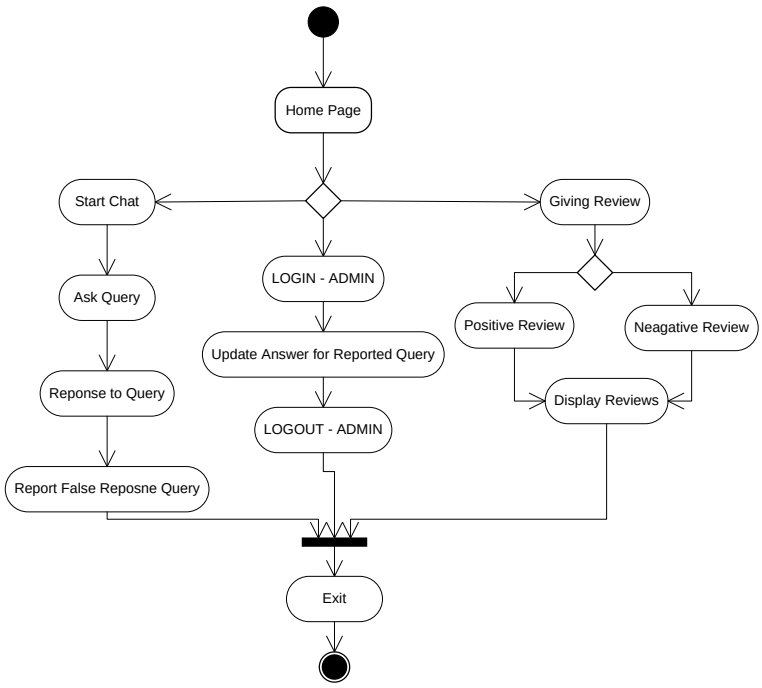

Figure – 11 ChatBot Working

3.3 Web Application Hosting:

- The website has been hosted with a high quality service provider in order to maintain high services speed and big disk storage to store college information.
- Accounts have been created for Admin and faculties.

3.4 Web Application Snapshot:

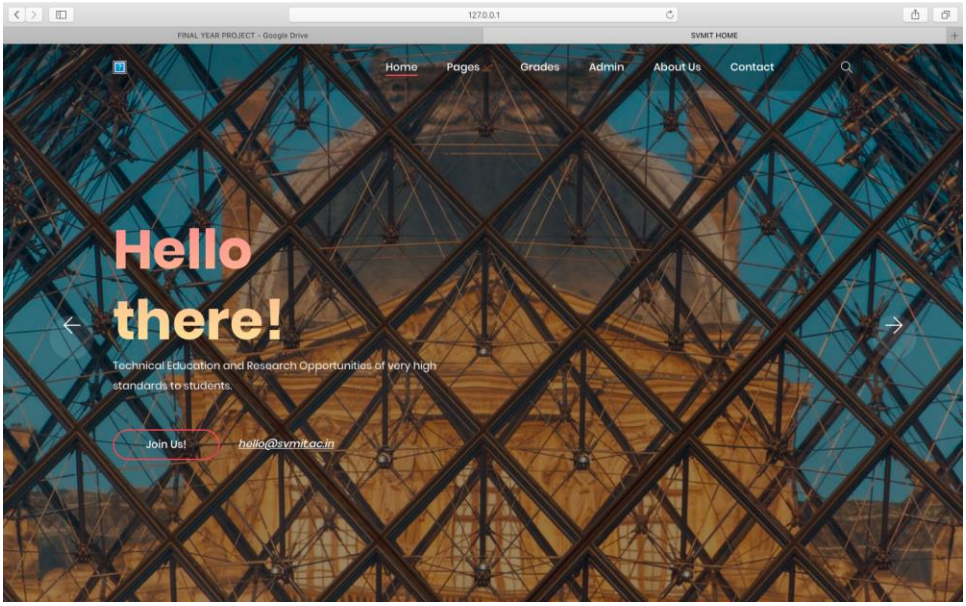

Figure - 12 Home Page

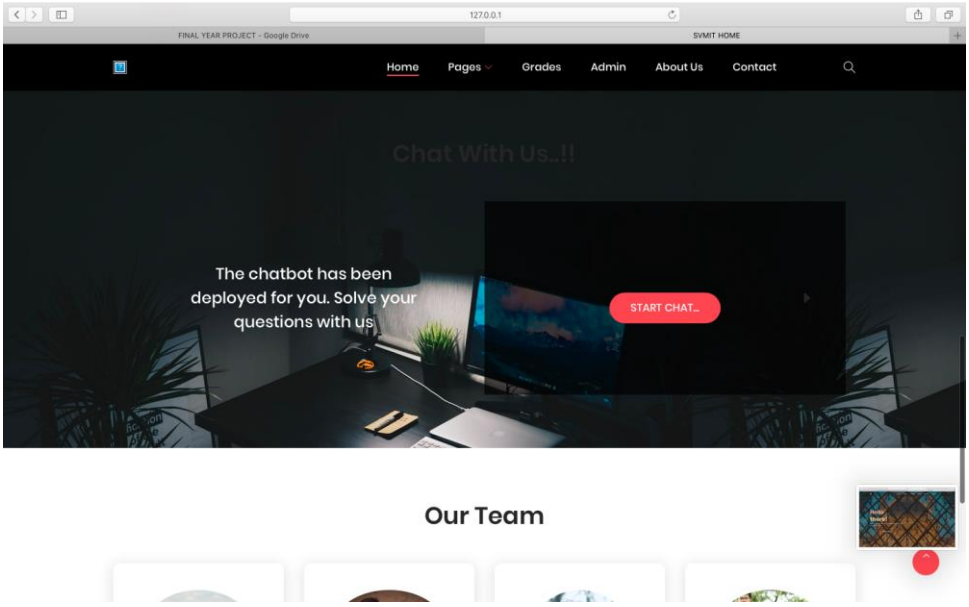

Figure - 13 Start Chat with ChatBot

- Clicking on “Start Chat” will bring you on below page for entering your name then you ready to ask your query to our bot.

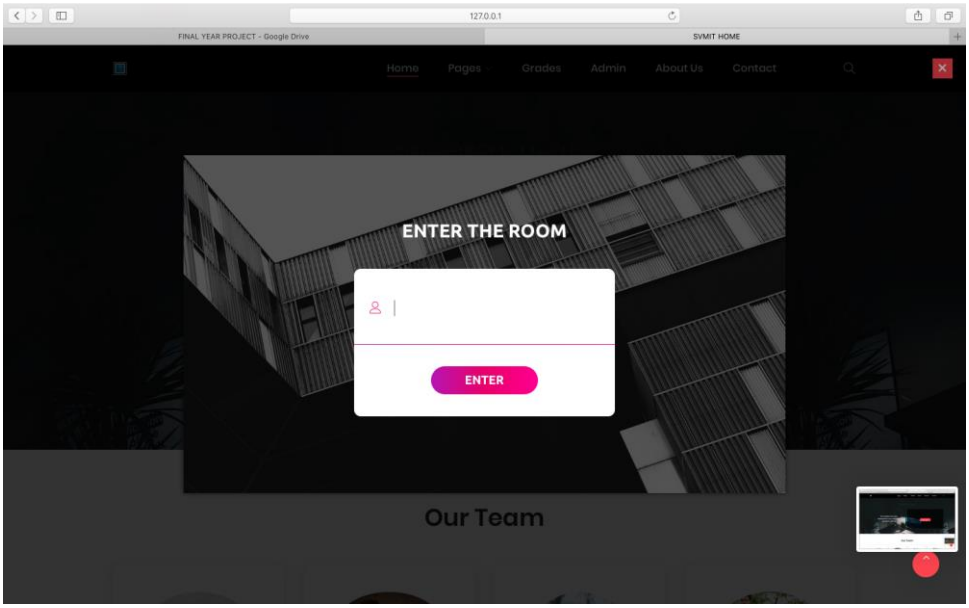

Figure - 14 Enter Name

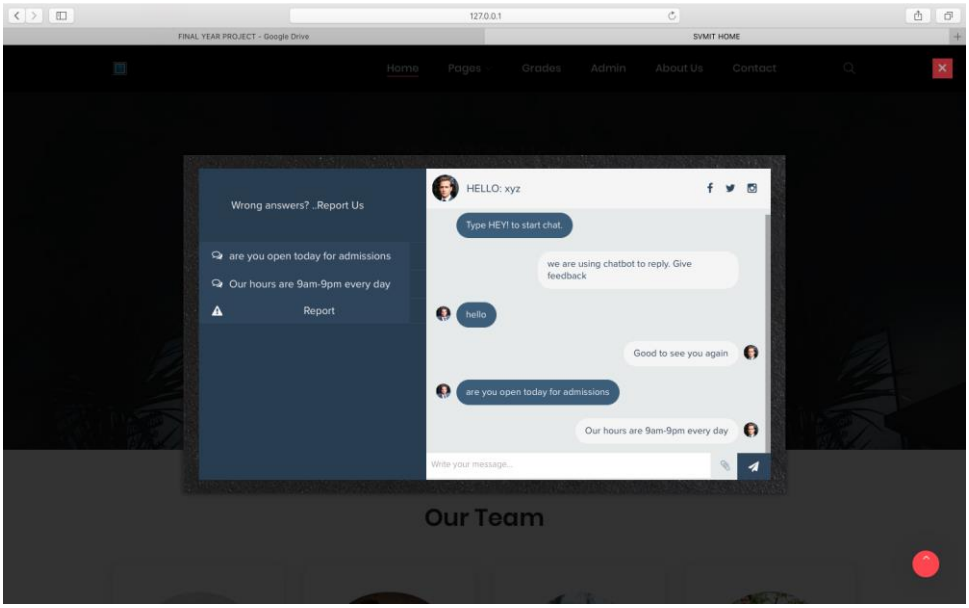

Figure - 15 Chatting with Bot

- After entering your name, you can ask any query reagarding college campus to our bot. If bot do not get you correct or if bot do not give you proper repsonse then in that case you can report that respond by clicking on “Report” button on left of window. How to Report queries? a small tutorial is available on left side of window.

How a Bot can respond to your query?

First the keywords are set and the question related to it are stored into the file. Then this file is used by the program in the terms of bags of words. This bag of words is the binary representation of each words. The tokenizer does the work of separating the words from the sentences. Now the neural network is made to identify the category of the input sentence.

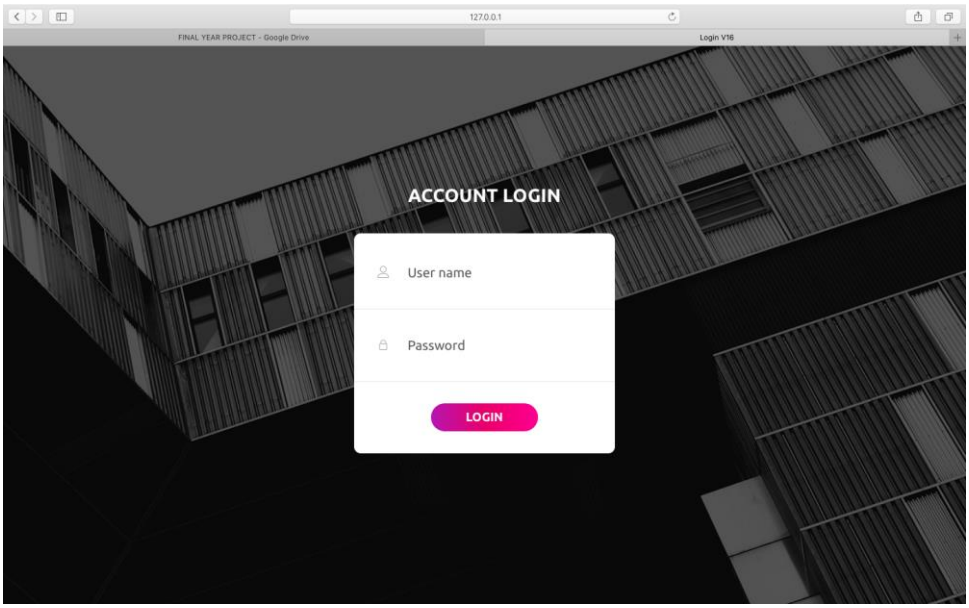

Figure - 16 Admin Login

- College has admin who handles this ChatBot queries. As user report to response of bot, that answer goes into queue of “Reported Queries".

- Now Admin will login/logout to his/her account to check reported queries. Then admin add proper answer to that reported query. Also when admin want to update new information then he/she can update here.

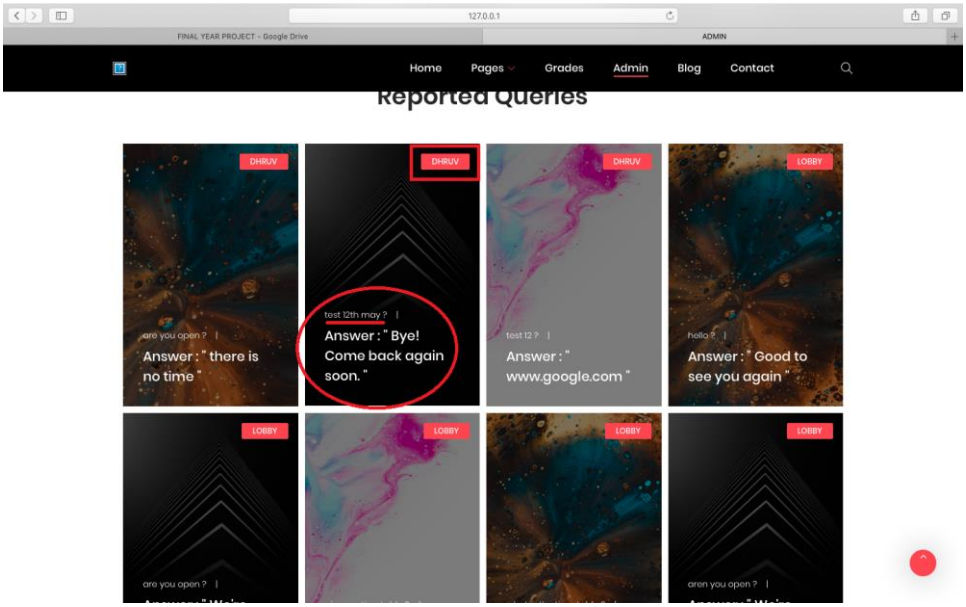

Figure - 17 Admin Panel (Reported Queries)

- Here is the snapshot of admin panel. These all block are of reported queries. For understanding, see “Red Circle” shows improper response of query and “Red underlined” is user query. Red Square box indicates a user name who reports the query.

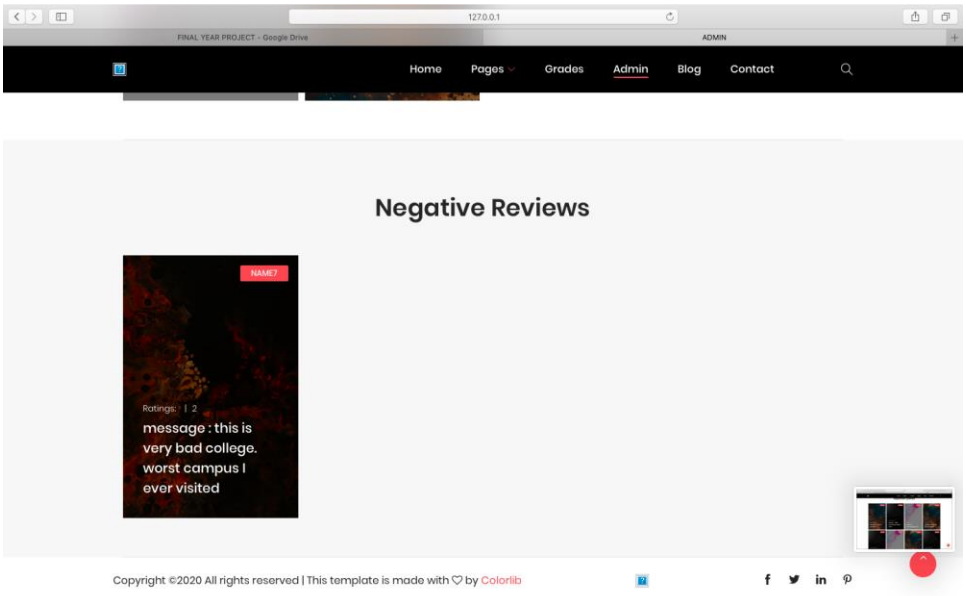

Figure - 18 Admin Panel (Negative Reviews)

- Reviews from outsiders and insiders of college will be filtered in positive and negative reviews. With help of negatives one, College Board members can focus on them and improve it.

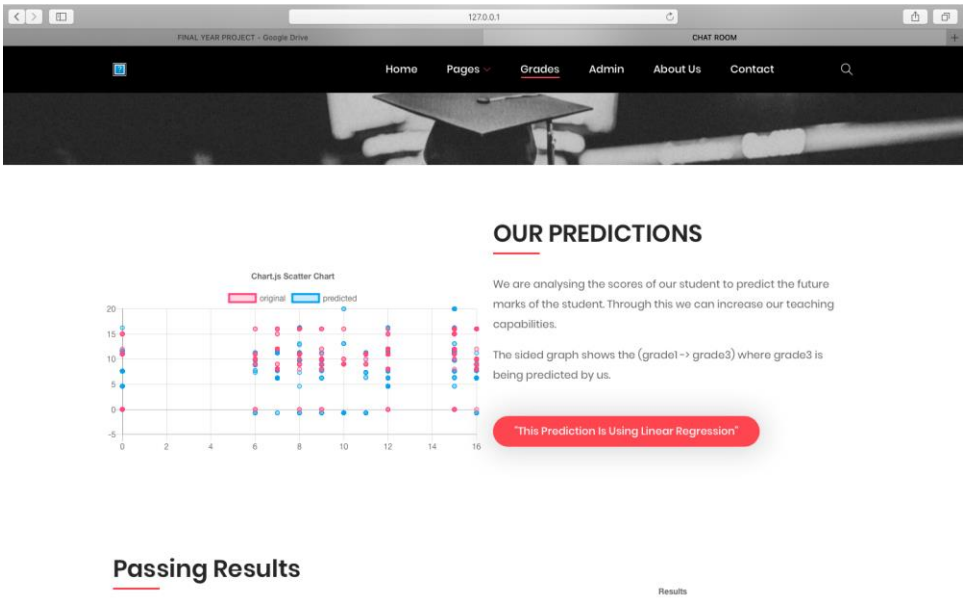

Figure - 19 Marks Predictor

- Faculty can put their actual marks and system will predict their future score using Linear Regression method. It helps faculties to enhance their teaching capabilities.

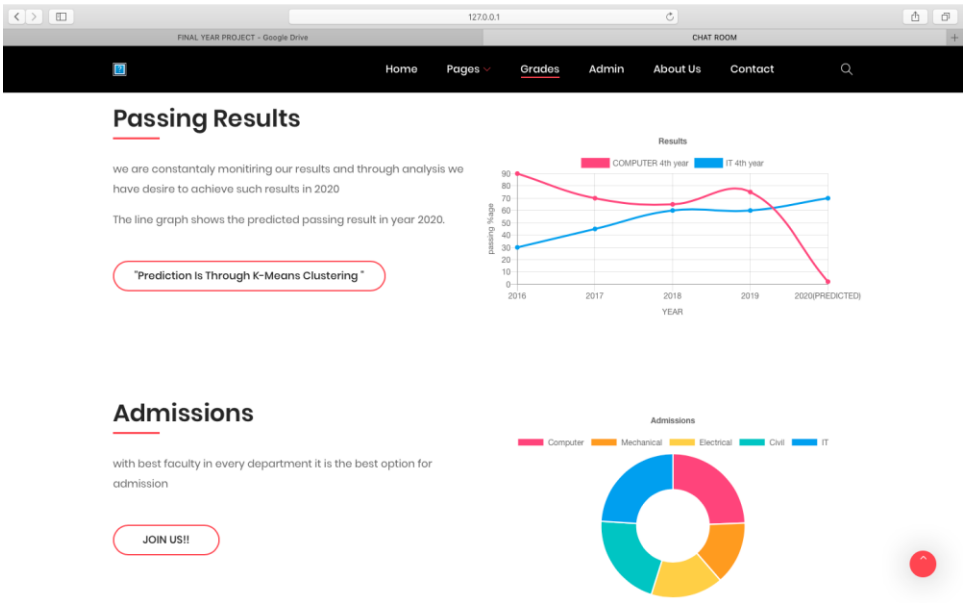

Figure - 20 Result Predictor

- Predicting marks through Linear Regression, system can predict the overall result of particular classes at end of year with help of K-means Clustering. It helps new comers and fresher to understand the teaching environment of college.

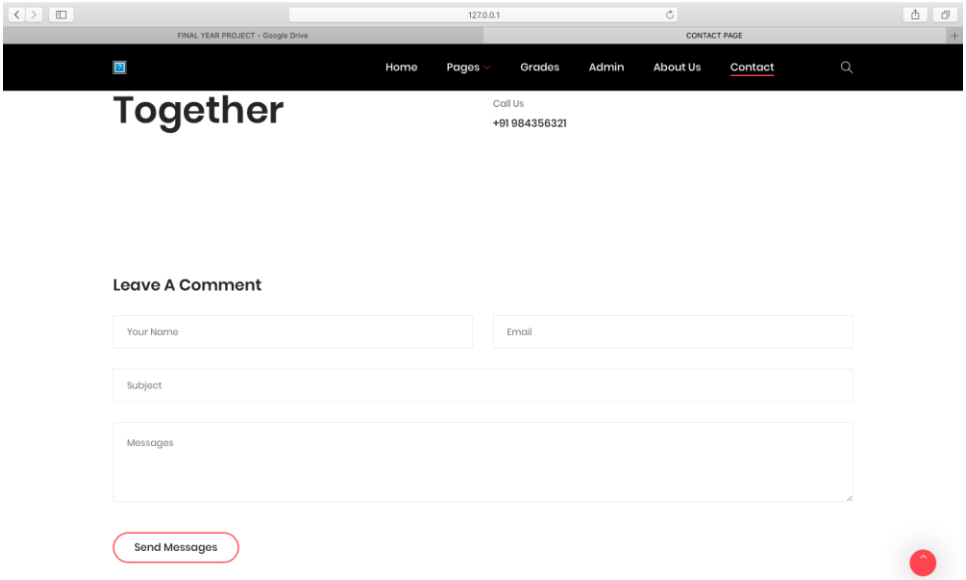

Figure - 21 Comment and Suggestion Section

- User can send their thoughts, comments or suggestion on this contact panel.

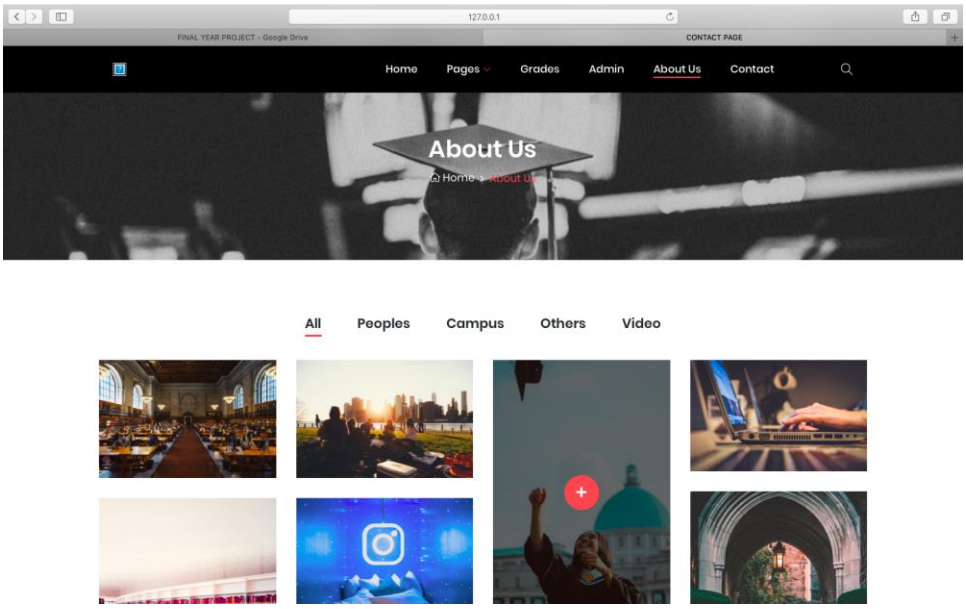

Figure - 22 Photo Gallery

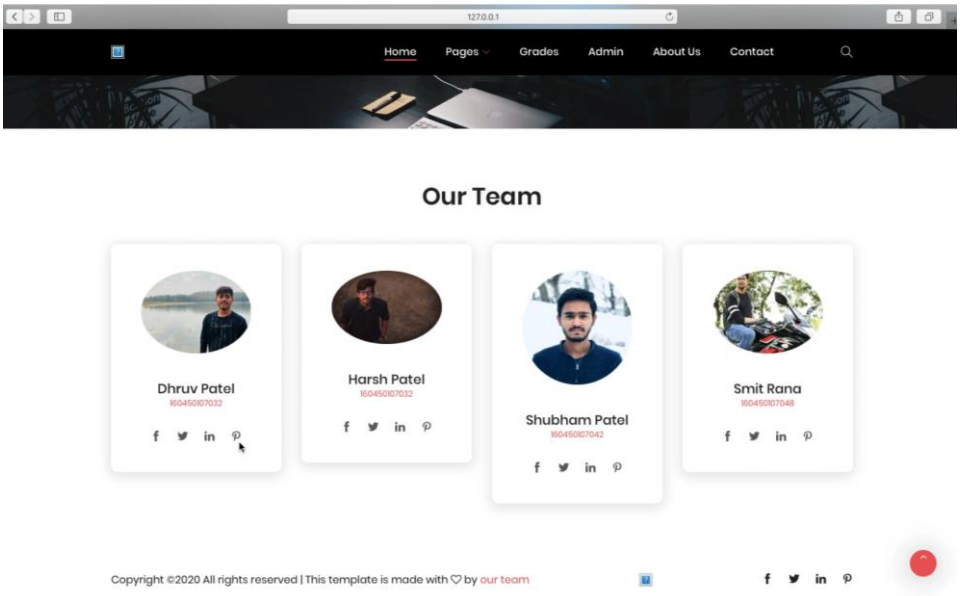

Figure - 23 Our Team

Artificial Neural Networks

Neural Networks are the way of calculating the output from the input using weighted connections, which are calculated from repeated iterations while training the data. Each step through the training data compensate the weights resulting in the output with accuracy.

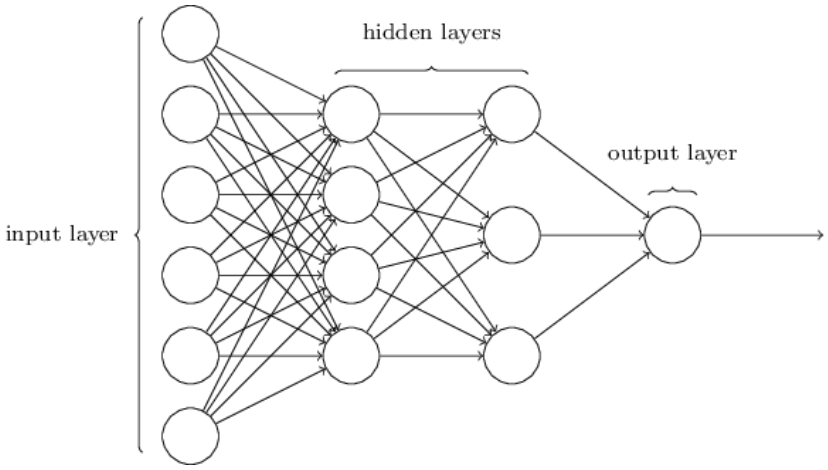

Figure - 24 Artificial Neural Network

- Each sentence in Neural Network is broken down into different words and each word then is used as input for the neural networks.
- The weighted connections are calculated by different iterations through the training data thousands of times. Each time weights are improving to making it accurate.
- There are multiple variations in these neural networks, algorithms as well as patterns matching code. Complexity may also increase in some of variations.

CHAPTER - 4 SUMMARY OF RESULT

4.1 Advantages

1) **Reduced costs:** Chatbots eliminate the need for labor during online interaction with customers. This is obviously good advantage for companies that receive multiple queries at once.

2) **24/7 Availability:** Unlike humans, once we install a chatbot, it can handle queries at any time of day. Thus, the customer does not have to wait for a company to help him.

3) **Learning and updating:** AI-based chatbots are able to learn from interactions and update independently. This is one of the main advantages. But When you hire fresher or new employee, you have to train them time by time.

4) **Management of multiple clients:** Humans can serve a limited number of customers at the same time. This restriction does not exist for chatbots, and they can manage all the necessary users' queries simultaneously. This is one of the main advantages of using chatbot, as no customer will left unattended and you are solving different problems at the same time.

4.2 Disadvantages

1) **Complex interface:** It is often considered that chatbots are complicated and need a lot of time to understand what you want in user. Sometimes, it can also annoy the user about their slowness, or their difficulty in filtering responses.

2) **They do not get you right:** Fixed chatbots can be stuck easily. If a query does not relate to something you have previously taught it, you will not understand it. This can lead to a frustrated user and the loss of the sale.

3) **Time-consuming:** Chatbots are installed with the aim of speeding up responses and improving user interaction. However, due to the limited available data and the time needed for self-updating, this process can take more time with additional cost. Therefore, there are times when instead of serving several users at once, chatbots may become confused and not serve the user well.

4) **Installation cost:** Chatbots are useful programs that help you save a lot of labor by ensuring availability at all times and serving several customers at once. However, unlike humans, each chatbot needs to be programmed differently for each business, which increases the initial installation cost. Considering the last-minute modifications and

changes that can always occur, this is a risky investment, as updating the program will generate additional costs.

5) **Null decision making:** Chatbots can attack the nerves of more than one because they are not able to make decisions.
   - This can lead to problems. For example: Microsoft launched a chatbot for Twitter. In less than 24 hours, the content it received from users turned it into a racist and misogynistic (anti-feminist) account.
   - It is very important that your chatbot be well optimized, so that it does not end up being a disaster like this.

6) **Bad memory:** The chatbots are not able to memorize a conversation already had, which forces the user to write the same thing repeatedly. This can be complicated for user and annoying for the effort required. Therefore, it is important to be careful when designing chatbots and make sure that the program is able to understand users' queries and respond accordingly.

4.3 Features

- Solve any query regarding College Campus for 24/7.
- Report query which had improper response.
- Give Review to Campus (Filtering).
- Access to Campus Picture Gallery and History.
- Predict students' future marks by actual ones.
- Predicting marks will predict result of particular whole class.

CONCLUSION:

There are many benefits related to having a chatbot. Time will be able to save with the help of these bots that work 24/7 for its owner without having a break. In addition, with new advancements coming every year like AI, NLP and Machine Learning , which makes the bot more intelligent to a point where it does not need to be told by an employee what to do, is not too far away. Hence, it is safe to say that the future of chatbots is bright and shinning.

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Peter Corey , Ooltewah , TN (US)
Buruk Aregawi , Englewood , NJ (US)

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Dan Cummins, Ottawa (CA)
Alexandre Grenier, Ottawa (CA)
Eric Moller, Ottawa (CA)

[APPENDIX A]

Post Project Review (PPR)

PPR-1

1. What Progress you have made in the Project?

Continuing with the same project title, we had to add few modules for building strong core of project.

2. What challenge you have faced?

We had introduced sentiment analysis which is like Users' review can be classified into positive, negative or neutral sentences and can be reported to the admin. It was time-consuming and complicated. But we did it.

3. What support you need?

We need support from our Internal Guide and other specific technology experts, who can guide us and provide useful suggestions for making project more reliable to users.

4. Which literature you have referred?

We had referred existing applications, websites, research paper and some articles related to project. Research Paper: Chatbots Are They Really Useful? By: Bayan Abu Shawar Al Ain University of Science and Technology Eric Atwell University of Leeds

PPR-2

1. What Progress you have made in the Project?

After adding sentiment analysis successfully, we moved to another module, that was admin panel.

2. What challenge you have faced?

Users reported question are stored in specific database. Admin can login into his/her account and process those reported questions. It was not a challenging task for us.

3. What support you need?

We need guidance from our guide about this admin panel. How user can interact with admin if he/she do not get proper response.

4. Which literature you have referred?

We had referred existing applications, websites and some articles related to project. Developing a Chatbot using Machine Learning By: K. Jwala G.N.V.G Sirisha G.V. Padma Raju Link:https://www.ijrte.org/wp-content/uploads/papers/v8i1S3/A10170681S319.pdf

PPR-3

1. What Progress you have made in the Project?

After implementing and testing all modules of ChatBot, a major thing comes in picture, it is look and fill of your project, a GUI. we made a progress in GUI designing for our Bot. Several GUI development software were searched and studied.

2. What challenge you have faced?

Developing is user friendly GUI is big concerned in now days. A proper user friendly interface can attract huge amount of users.

3. What support you need?

We need guidance from our mentor about GUI. Because a GUI can make the interaction between a computer and human possible in easiest possible way. So, GUI is a crucial element of the communication of humans with modern world.

4. Which literature you have referred?

We had referred existing applications, websites and some articles related to project. Intelligent Chatbot using Deep Learning by: Anjana Tiha the University of Memphis

Link:https://www.researchgate.net/publication/328582617_Intelligent_Chatbot_using_Deep_Learning

PPR-4

1. What Progress you have made in the Project?

We make several changes in GUI part of project based on user's review. We took more time for designing of GUI. Because GUI Design is important, it can make or break your customer base and end up in successful project completion.

2. What challenge you have faced?

We built this web application for college/university students. So, we did all things that a student wants for solving their queries. Other than we added necessary modules and features that will help student to get all information about college.

3. What support you need?

We need support from our mentor for promoting our web application.

4. Which literature you have referred?

Chat-Bot for College Management System Using A.I

Prof.K.Bala

Mukesh Kumar

Sayali Hulawale

Sahil Pandita

Link:https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&cad=rja&uact=8&ved=2ahUKEwi2h4f4qP7nAhWyIbcAHXQxCEIQFjAGegQIChAB&url=https%3A%2F%2Fwww.irjet.net%2Farchives%2FV4%2Fi11%2FIRJET-V4I11367.pdf&usg=AOvVaw1y-M_JPgNXedg23oEFhs0Y

[APPENDIX B]

BMC Canvas and Report

INTRODUCTION

The business model canvas is a great tool to help you understand a business model in a straightforward, structured way. Using this canvas will lead to insights about the customers you serve, what value propositions are offered through what channels, and how your company makes money. You can also use the business model canvas to understand your own business model or that of a competitor! Alexander Osterwalder, of Strategyzer, created the Business Model Canvas.

How to use the canvas?

The business model canvas is a shared language for maintaining, describing, visualizing, assessing and changing business models.

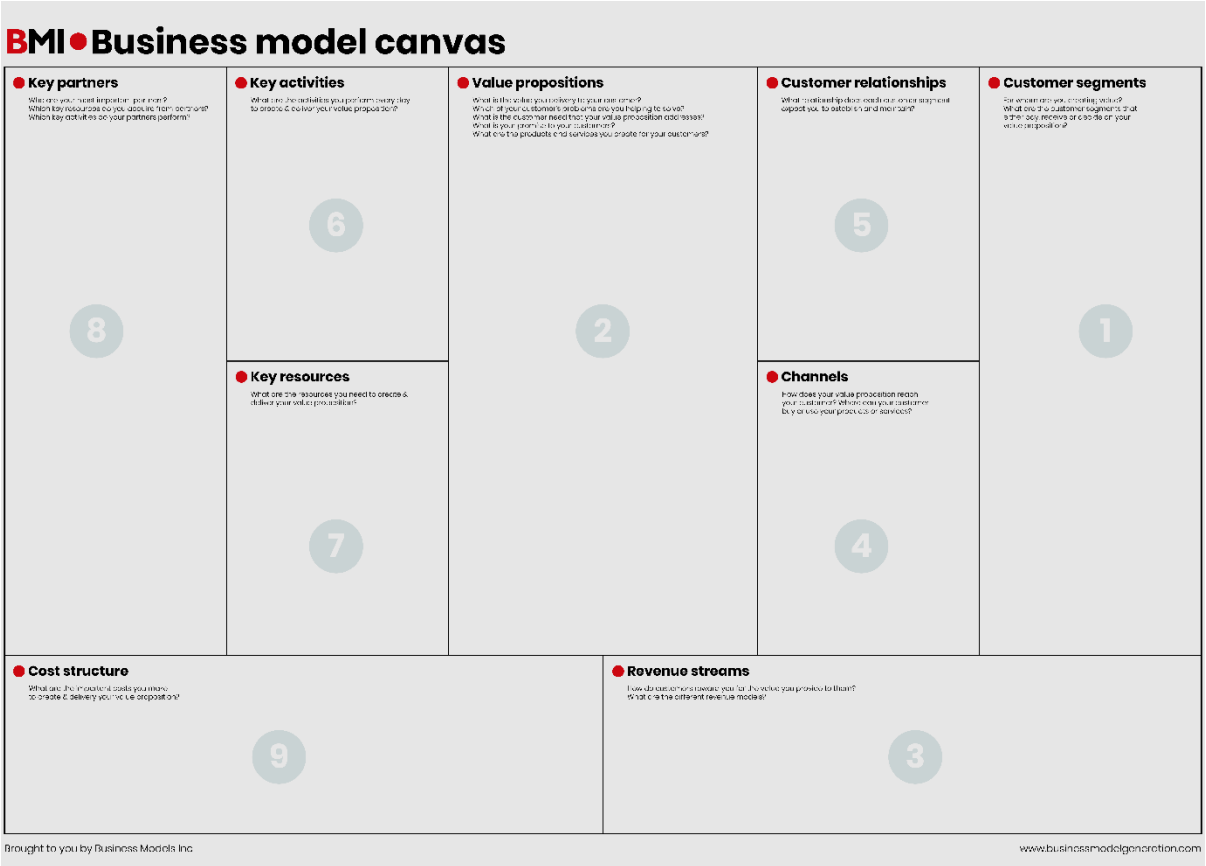

Figure - 25 Sample for Business Model Canvas

1. Customer segments

List the top three segments. Look for the segments that provide the most revenue.

2. Value proposition
What are your products and services? What is the job you get done for customer?

3. Revenue streams
List your top three revenue streams. If you do things for free, add them here too.

4. Channels
How do you communicate with your customer? How do you deliver the value proposition?

5. Customer relationships
How does this show up and how do you maintain the relationship?

6. Key activities
What do you do every day to run your business model?

7. Key resources
The people, knowledge, means, and money you need to run business.

8. Key partners
List the partners that you cannot do business without (not suppliers).

9. Cost structure
List top costs by looking at activities and resources.

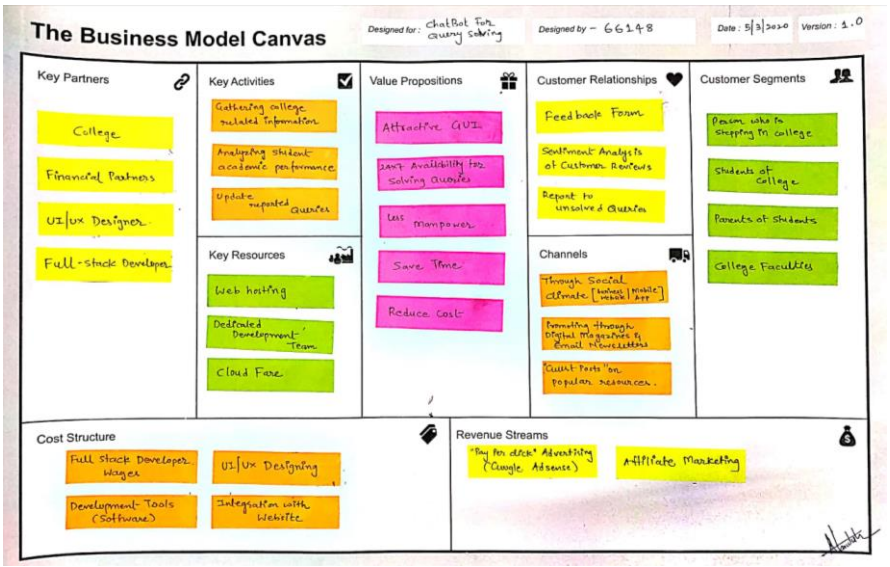

Figure - 1 BMC for Proposed System - Chatbot for Query Solving

CONTENT

2.1 Key Partners

This section answers the question, "Who are becoming our business partners?"

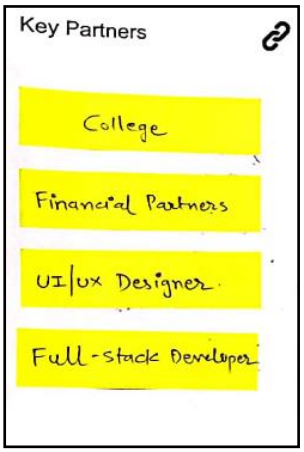

Figure - 27 Key Partners

A business rarely stands alone. It needs partners.

In this section of BMC, we describe business partners that contribute to our model. Identify existing key partners and key activities they will perform. Also, consider what kind of partnerships can improve your business in the future.

For our Chatbot project:
List all organizations or individual contributors who can help you make the web-application successful.

2.2 Key Activities

This section answers the question, "What are important activities does the company need to carry out to support business on big scale?"

Key activities are the most important for a business, it should do to make its model work. Since key activities are related to the revenue streams, it should be easy to list the key activities and tie them together with the value they create.

Figure - 28 Key Activities

For our Chatbot project:
What should you do to make your web application work as expected? This might include gathering college related information, analyzing student academic performance etc. At the same time, we should focus update to reported queries. That is why updating answers should be a valuable part of key activities.

2.3 Value Proposition

This section answers the question, "Which customer problem will be going to solve by us? What values do we deliver to the customer?"

If people use your product/service, this means that it solves their problem, and, as a result, it offers a certain value to them. This core business value should be described in your value proposition.

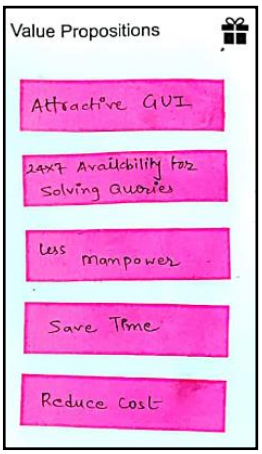

Figure - 29 Value Propositions

Explore every aspect of what your business offers. Find answers to the following questions:

- What do customers expect from you? (Understand customers' expectations.)
- What things do you offer that actually make a customer to pick us over a competitor? (Understand what is unique about your value propositions.)
- Could there be more interesting products we can offer our customers? (Think about how can we improve existing products or develop new products to reach more customers.)

For our Chatbot project:

Include the benefits of using your solution in this section.

2.4 Key Resources

This section answers the question, "Which resources are necessary to support our business as whole?"

This part of the canvas describes the resources necessary to create value for the customer. Brainstorm the most important assets we have (e.g., tools we use to create or deliver the value for the customer) and add them to our canvas. Since key resources are often a component we invest money in, having them listed makes it easy for us to define our costs later in the canvas (in the Cost structure section).

Figure - 30 Key Resources

For our Chatbot project:

This section should provide insights on what changes in our infrastructure/personnel required to deliver the best service possible. For example, we might need a proper internet connection in a data center to maintain chatbot, or maybe it is possible to improve the quality of our solution by having an in-house development team.

2.5 Customer Relationship

This section answers the question, "How do we build and maintain relation with our customers? How does the customer interact with our business through the sales and product lifecycle?"

Besides analysing how you reach your customers, it is also important to understand what kind of relationship you have with them. Your relationship with your customers have a major influence on the rest of your business model — the better your relationships with existing clients are, the less time you'll spend on finding new clients.

For our Chatbot project:
When it comes to building a successful long-term relationship with your users, you need to think about creating an effective mechanism of communication with them. Feedback form with a guaranteed reply from your team will help you build good impressions with your users and solve many existing problems. Sentiment Analysis of customer review can help users to view review in proper manner.

Figure - 31 Customer Relationship

2.6 Customer Segment

This section answers the question, "Who are our target audiences?"

Customers are the heart of any business model. To build an effective business model, a business must recognize which customers it serves. Here are a few practical recommendations that will help you segment your customers:

- List your existing customers and evaluate which customers are most valuable for your business.
- Create a picture of your ideal customer. Find what attributes define a perfect customer. Write down customers you would like to have in the future.
- Create personas. Personas are humanized portraits of your customers. Personas will help you make the customer come alive in the business model.
- Use web analytics tools (such as Google Analytics) to gain a deep insight into customers' behavior.

Figure - 32 Customer Segment

For our Chatbot project:
Think of all the people/organizations that might be interested in your website and focus on them. Since we are developing a Chatbot for solving queries regarding college. Perhaps we should consider students, their parents and faculties as our target audience.

2.7 Channel

This section answers the question, "How are you delivering your value proposition to customers?"

A business can deliver its value proposition to its targeted customers through different channels. To identify your channels, you need to explore every aspect of how your business interacts with clients. For example, if you use paid advertising or email campaigns to acquire new customers, they become your communication channels.

For our Chatbot project:
Figure out how people get to know about your web-application or how you are reaching them now. Track the conversion from your traffic sources and list the most valuable sources in this section like through social climates (business websites, mobile application) or through Guest Posts on popular sources.

2.8 Cost Structure

This section answers the question, "What are the most important costs in the business? What resources are most expensive?"

Business is not only about making money; it is also about spending money. A good business model also consider costs required to run the business. Identify your costs by:

- Analysing what key resources are the most expensive for your business.
- Thinking of which kind of investments can improve your business.

For our Chatbot project:
When it comes to web development, cost structure usually includes expenses on hosting, product research and development, UI designing, and advertising.

2.9 Revenue Streams

This section answers the question, "How does the business earn revenue? What are customers currently paying for and how much they are paying?"

Revenue streams make it clear how your business model is capturing value.

For our Chatbot project:
Google will pay you for clicks or impressions on the Google ads you will display on your site. For more details on the revenue, you can generate with AdSense. Earning an income through affiliate marketing requires Research into products, web traffic patterns, and follower interests.

BMC – CONCLUSION :

The business model canvas provides a "language" for communicating the nature of a business. A new analysis tool in your toolbox. It is way to experiment on paper with how a business can be organized. BMC will be helpful to people to embark entrepreneurship. One can make a good product from their project. Increase manufacturing unit in India and enhance the economy of India.

[APPENDIX C]
Patent Drafting Exercise (PDE)

College : SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH
Department : Computer Engineering
Discipline : BE
Semester : Semester 8
Project Name : Chatbots For Query
Team ID : 84680

Form 1 – APPLICATION FOR GRANT OF PATENT

Applicants:

Sr.No	Name	Nationality	Address	Mobile No.	Email Id
1	Rana Smit Hareshkumar	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	7600726257	smit98rana@gmail.com
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3	Patel Shubham Ramkrishna	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	9998986895	shubhamppt98@gmail.com

4	Patel Harsh	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	6351661609	prushipatel054@gmail.com

Inventors:

Sr.No	**Name**	**Nationality**	**Address**	**Mobile No.**	**Email Id**
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2	Patel Dhruvkumar Paraskumar	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	9426467777	dhruvpatel719@yahoo.in
3	Patel Shubham Ramkrishna	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	9998986895	shubhamppt98@gmail.com

4	Patel Harsh	Indian	Computer Engineering, SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH, Gujarat Technological University.	6351661609	prushipatel054@gmail.com

I/We, the applicant(s) hereby declare(s) that:

Following are the attachments with the applications:

Form 2 - PROVISIONAL/COMPLETE SPECIFICATION

1. Title of the project/invention:

Chatbots for Query

2. Preamble to the description:

Provisional

3. Description

a) Field of Project / Invention / Application:

A Software Field, Chatbots can be classified into usage categories that include conversational commerce (e-commerce via chat), education, entertainment, finance, health, news, and productivity.

b) Prior Art / Background of the Project / Invention:

We built a Chatbot for college. It could be quite valuable for both the colleges and the students. College campus life can be very frenzied at any time of the year, but more so at the starting of the college year and especially for the new students. There are several ways that the college campus can employ the chatbot for websites of college to assist the students and staff with all of their educational and administrative responsibilities. c) Summary of the Project / Invention:

The Chatbot for college campus secures a higher number of registrations and helps with admission. Engage potential students online with the chatbot. Answer their questions 24/7, help with dilemmas, information about the campus, facilities, scholarships and enrollment. Integrate the chatbot with your CRM and send student leads directly into your recruitment process.

d) Objects of Project / Invention:

1) 24 x 7 Availability
2) Less Manpower (while you sleep, chatbot can handle many queries at a time)
3) Save Time
4) Reduce Cost
5) Customer Support
6) Feedback/Review

e) Drawings:

f) Description of Project / Invention: (full detail of project):

In organization, customer can ask number of query. A problem arises when a customer cannot get query response time-to-time and it is hard for organization to handle these queries at a time. A ChatBot is piece of software that conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how human would behave as a conversational partner. With ChatBot, hitting potential customers is easy by offering required information for queries irrespective of the day or time. Most of ChatBots are less prone to errors; hence, the better customer experience can help to establish a better organization.

ChatBot System will have developed for college students for solving their query. A Bot within system will answer with appropriate response to requested query. A query regarding admission process for college, results, examination dates, college function and festivals, about college campus, cafeteria etc. can user ask to bot. If you cannot receive any appropriate response from bot, he/she can report to that question. It will notify to admin. Later on Admin will update the answer to reported query. Users' review can be classified into positive, negative or neutral sentences and can be reported to the admin, which is called as sentiment analysis. We can predict students' future grades by analyzing their previous performances and display them through certain graphs.

g) Examples:

h) Claims (Not required for Provisional Application) / Unique Features of Project

1) Sentiment Analysis of Customer Reviews
2) Direct Report to unsolved queries

4. Claims

5. Date and signature

6. Abstract of the project / invention:

A ChatBot system for college student will be built using Artificial Intelligence that analyses users query, understands users message and provides appropriate answer to queries. System

will reply using an effective GUI, which implies that as if a real person is talking to user. User can query about college and system helps students to update about college activities.

Form 3 – STATEMENT AND UNDERTAKING UNDER SECTION 8

Name of the applicant(s) : Rana Smit Hareshkumar, Patel Dhruvkumar Paraskumar,

Patel Shubham Ramkrishna, Patel Harsh Hereby declare:

Name, Address and Nationality of the joint applicant :

(i) that I/We have not made any application for the same/substantially the same victim invention outside India.

(ii) that the rights in the application(s) has/have been assigned to

Name of the Country	Application Number	Status of Application	Date of the Application	Date of the Grant	Date of Publication
N/A	N/A	N/A	N/A	N/A	N/A

(iii)That I/We undertake that upto the date of grant of the patent by the Controller, I/We would keep him informed in writing the details regarding corresponding applications for patents filed outside India within three months from the date of filing of such application.

Dated this 6 day of March 2020

To be signed by the applicant or his authorised registered patent agent:

Signature.....

Name of the Natural Person who has signed: Rana Smit Hareshkumar, Patel Dhruvkumar Paraskumar,

Patel Shubham Ramkrishna, Patel Harsh

To,

The Controller of Patents,

The Patent Office,

At Mumbai

[APPENDIX D]

Plagiarism Checking Report

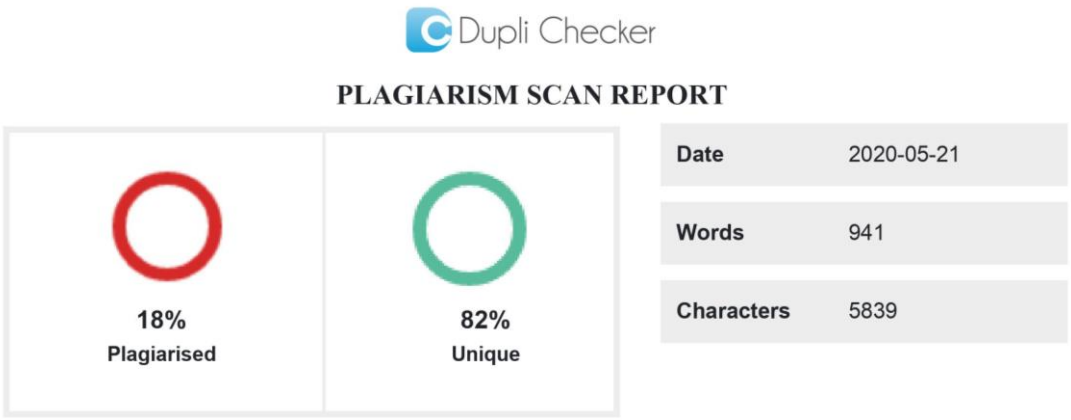

Figure – 33 Plagiarism Scan Report