



# Virtual Assistant For College



Guide: Kavitha K V  
Assistant Professor  
CSE

Presented By:  
Athira S Pillai(215)  
Disha Dinesh Majithia(221)

# Problem statement

Whenever faced with uncharted territories humans have a tendency to get anxious and it is but natural- and even more so in the case of students who are about to join a new course. They are always filled with endless queries and mostly all of them are similar across people. Rather than flooding a single person with all those and to answer them over and over again, it is apt to segregate usual common queries and their solutions at a single place which is easily accessible by all.

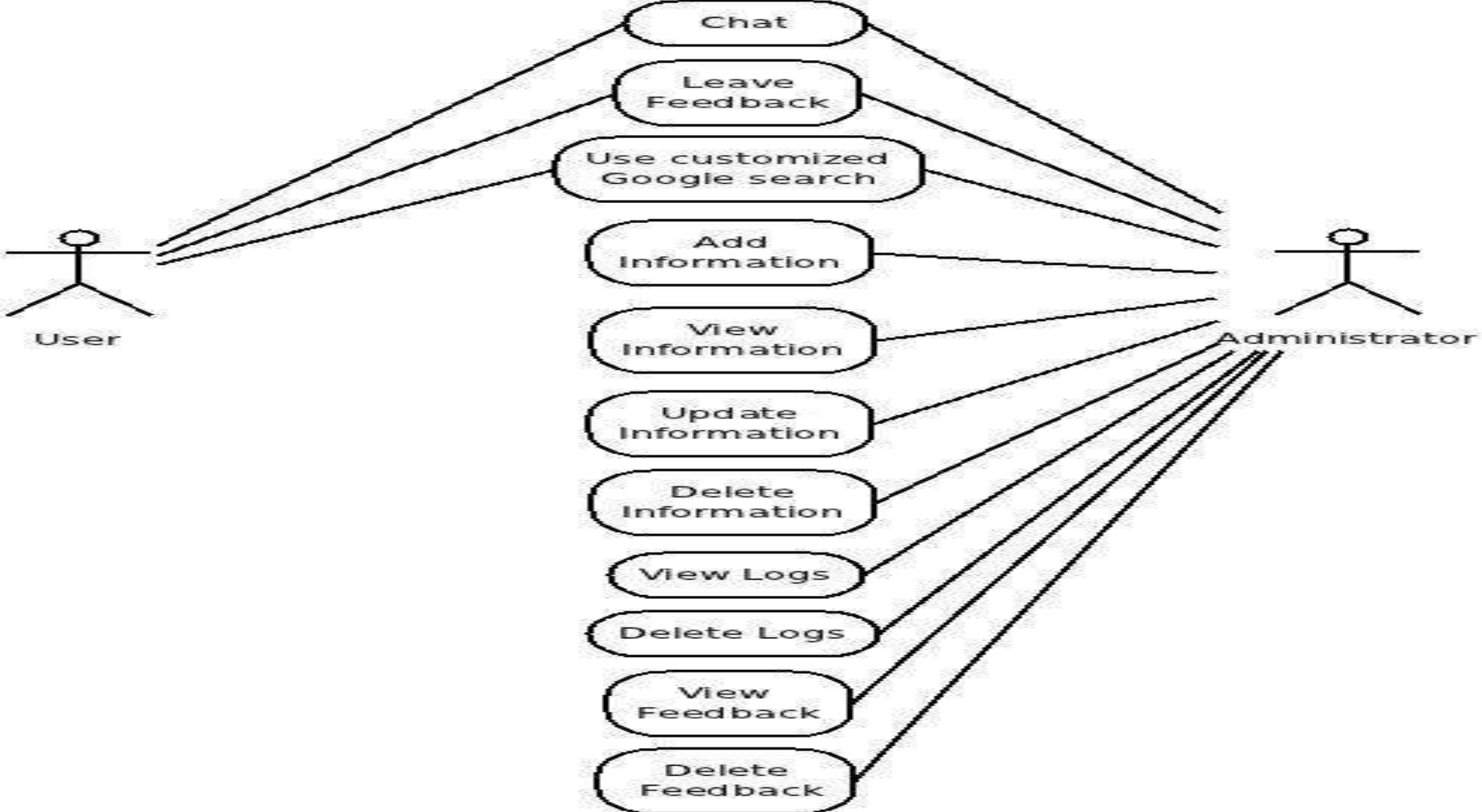
**Presently, the college has no provision for any such system and therefore our suggestion to create one to simplify the redundant nature of work and utilize manpower efficiently. The need for a virtual assistant is imminent in this scenario.**

# Introduction

- A chatbot is an instant messaging account that is able to provide services using instant messaging frameworks with the aim of providing conversational services to users in an efficient manner.
- Businesses need such systems to get rid of routine tasks and simultaneous processing of multiple requests from users.

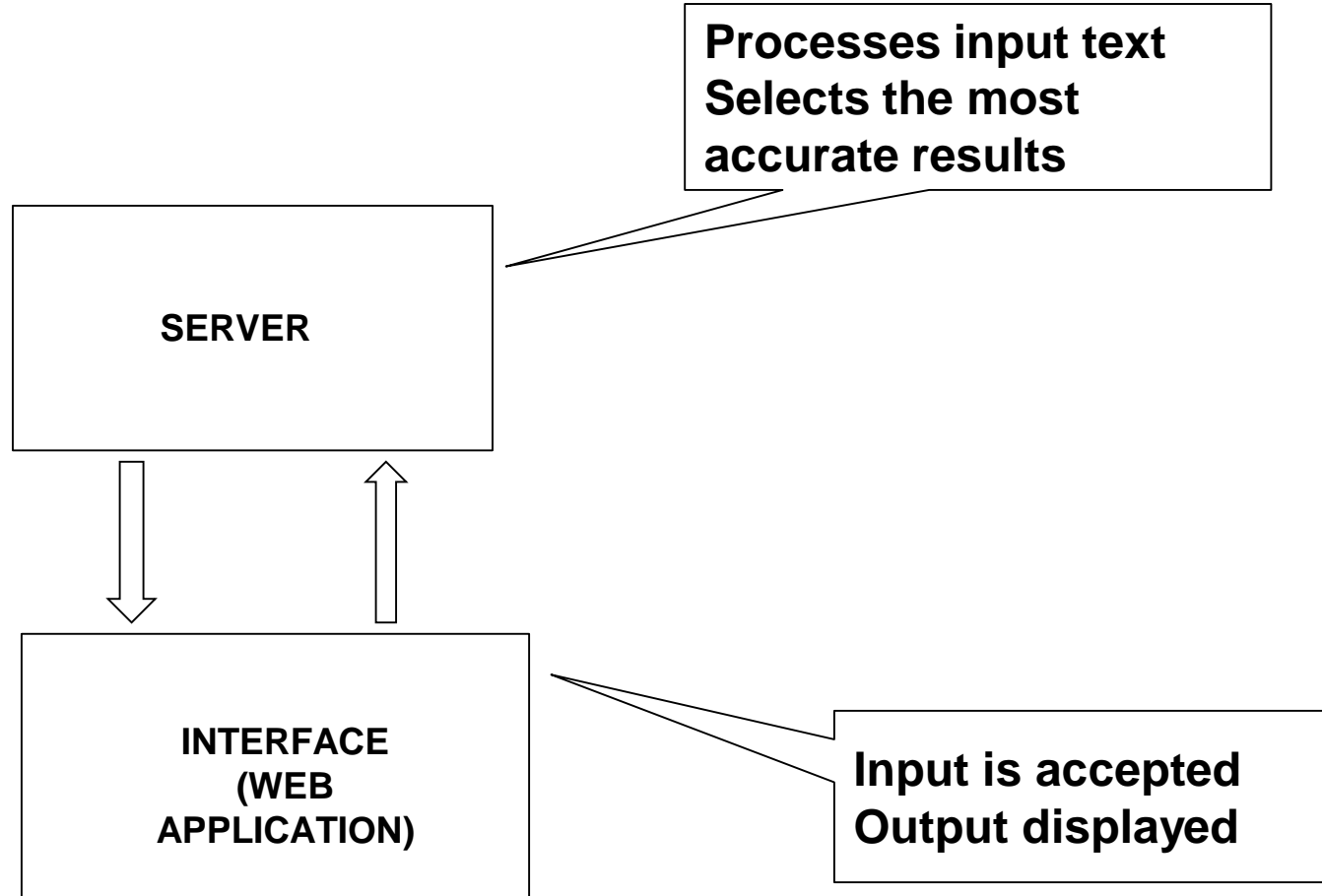


DESIGN



## Actor Documentation

- User: Someone who uses the system to engage in a conversation
- Administrator: The administrator of the system. Allows administrator to carry administrative tasks



# Modules

- Network Connectivity Module
  - Manages network connectivity
  - Helps bot to connect over network and work
- Database Connectivity Module
  - Handles database connection
  - Handles Querying
  - Helps in keyword match
  - Helps in pattern match



## Learning module

- Learning module shall be implemented using tensorflow and Tflern
- Tflern is a high level API
- Tensorflow is an open source software library by Google

# SERVER

- INPUT : Text input provided through the interface
- OUTPUT :The most accurate results provided by the chatbot
- PROCESSING
  - Bi-Gram word similarity measurement
  - Compare input to database
  - Perform keyword match

# Algorithm

Semantic similarity between two sentences is carried out as below,

- Each sentence is divided into a list of tokens
- The divided sentence can implement bigram set
- After getting the divided sentence, it is counted
- The values are used in an equation
- Choose the pattern with the highest sentence similarity measure

$$\frac{\varsigma(s_1 \in s_2) \cup \varsigma(s_2 \in s_1)}{\varsigma(s_1) \cup \varsigma(s_2)} \quad (8)$$

The symbol of  $\varsigma$  is count of the sentence or string that is symbolized as  $s$ . The used method to compute the semantic similarity between two sentences could be written as bellow,

- Each sentence is divided into a list of tokens
- The divided sentence can implement bigram set [11]
- After getting the divided sentence, it is counted and applied the equation (8)

For example this method can be written as bellow,

$s_1 = \text{"burung"}$

$s_2 = \text{"burrungg"}$

so  $s_1$  and  $s_2$  can be divided into bigram set as

$s_1 = \{\text{"bu"}, \text{"ur"}, \text{"ru"}, \text{"un"}, \text{"ng"}\} \approx 5$

$s_2 = \{\text{"bu"}, \text{"ur"}, \text{"rr"}, \text{"ru"}, \text{"un"}, \text{"ng"}, \text{"gg"}\} \approx 7$

$s_1 \in s_2 = \{\text{"bu"}, \text{"ur"}, \text{"ru"}, \text{"un"}, \text{"ng"}\} \approx 5$

$s_2 \in s_1 = \{\text{"bu"}, \text{"ur"}, \text{"ru"}, \text{"un"}, \text{"ng"}\} \approx 5$

Thus the similarity score for these sentences is obtained as follow,

$$\frac{5 \cup 5}{5 \cup 7} \approx \frac{10}{12} \approx 0,833333$$

## Keyword matching algorithm

- The keyword matching algorithm will attempt to identify keywords in a sentence. In the case that one or more keywords are found in the user's input text then an answer will be retrieved.

## Combination of two algorithms

- In order to achieve the best possible outcome we decided to combine the two algorithms.
- The keyword matching algorithm will search the keywords
- The string similarity algorithm will search all pre-stored questions with or without keywords.

# FORM FOR DATA COLLECTION

Secure | [https://docs.google.com/forms/d/1tVGKcvucO7qQthx3o8GV5axGBhhaIdKI6aMrahbuuQo/viewform?edit\\_requested=true](https://docs.google.com/forms/d/1tVGKcvucO7qQthx3o8GV5axGBhhaIdKI6aMrahbuuQo/viewform?edit_requested=true)

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## COLLEGE FAQs (For SCT)

What queries did you have in your mind while taking admission. Please take a minute to fill this out for us.

**\*Required**

**What would you like to know about the college? \***

Please give response to this in a question format

Your answer

**Please frame a proper response for the question you submitted above.**

Please give the response as a proper sentence

Your answer

**SUBMIT**

Never submit passwords through Google Forms.

# DATASET



## COLLEGE FAQs (Responses)



File Edit View Insert Format Data Tools Form Add-ons Help [All changes saved in Drive](#)



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	A	B	C	D	E	F	G	H
1	Timestamp	What would you like to know about the college?	Please frame a proper response for the question you submitted above.					
2	11/27/2018 20:21:55	Where is the college located?	The college is at Pappanamcode, near to Central Works KSRTC.					
3	11/27/2018 20:22:29	What is the full name of the college?	Sree Chitra THIRUNNAL College of Engineering					
4	11/27/2018 20:24:25	How many departments does the college have?	The college has 6 departments - Computer Science, Electronics and communication, Mechanical Engineering (Automobile, Production) and Biotechnology.					
5	11/27/2018 20:30:37	How far is the college from the nearest railway station?	It is 4 kms from the nearest railway station which is Thiruvananthapuram Central.					
6	11/27/2018 20:37:26	Does the college provide Civil Engineering?	No, the college does not have Civil Engineering department currently.					
7	11/27/2018 20:38:46	Who is the principal of the college?	Prof.Dr.K.Prabhakaran Nair is the current Principal.					
8	11/27/2018 20:47:36	Who is the Academic Dean of the college?	Dr. Jayasudha J. S is the Academic Dean.					
9	11/27/2018 20:48:18	Does the college have lab facilities?	Yes, the college does provide the required lab facilities.					
10	11/27/2018 20:49:25	Does the college have any clubs?	Yes, the college has a Literature and Debate Club, Film Club, Cycling Club, Photography Club.					
11	11/27/2018 20:52:09	Does the college provide transport services?	Yes, the college has 2 bus which picks up students from different parts of Trivandrum.					
12	11/27/2018 20:52:43	How many students are there in each class?	There are 50-60 students in each class.					
13	11/27/2018 20:53:28	Are the students allowed to participate in extra-curricular activities?	Yes, students are allowed to participate in various Cultural and Sports activities.					
14	11/27/2018 21:02:19	Does the college have playground?	No the college does not have a huge playground					
15	11/27/2018 21:12:16	Does the college provide hygienic facilities?	Yes, there are several maintenance workers who work hard to maintain the college hygiene.					
16	11/27/2018 21:14:22	Are students allowed to work on projects or internships?	Yes, students are allowed to pursue and also connected with professionals for their help.					
17	11/27/2018 21:41:41	Does the college have a canteen service?	Yes, the college has a canteen service from where students can have their breakfast and lunch.					
18	11/27/2018 21:42:22	What is a mini canteen?	A service provided for students and faculty members to have tea and snacks during lunch break or even after class.					
19	11/27/2018 21:43:39	Is the college working on Saturday?	To cover up portions, classes are scheduled for certain Saturdays otherwise only the faculty has to attend college on weekends.					
20	11/27/2018 21:44:15	Does the college provide the course Aerospace Engineering?	No, currently the college does not provide the course.					



Form Responses 1



Explore

# Action Plan

Tasks	Start Date	End Date	Status
Problem statement identification and formation		19/7/2018	Completed
Requirement analysis and study on present scenario	3/8/2018	14/9/2018	Completed
Study of desired algorithm	20/9/2018	28/9/2018	Completed
Learn Python programming and use of libraries	1/10/2018		On going
Collection of data	1/10/2018	30/11/2018	On going
Build database and the user interface	30/11/2018	30/1/2019	Incomplete
Build network modules	1/2/2019	20/2/2019	Incomplete
Unit test the bot	25/2/2019	1/3/2019	Incomplete
Integration testing	2/3/2019	10/3/2019	Incomplete
Deploy over network		25/3/2019	Incomplete



# Conclusion

- Chatbots are capable of accessing a broad array of information which can be made use of in the education domain to provide students with the necessary information.
- Help students to fetch information like availability of services, college environment, updates regarding activities happening inside the campus and other academic information
- Our chatbot has a general processing structure to adapt to the variable environment.
- Makes use of sentence similarity algorithm

# References

1. B A Shavar and E. Atwell, "Chatbots. Are they really useful?" LDV Forum, vol,. 22,pp 29-49 2007
2. Chatbot for University Related FAQs by Bhavika R Ranoliya, Nidhi Raghuwanshi and Sanjay Singh from Manipal University of Technology
3. Chatbots and Conversational Agents: A Bibliometric Analysis by H.N.Io, C.B.Lee



THANKYOU

