

# Developed human Computer agent architecture and database for career counselling

Surbhi Saroha

PhD Scholar at Shobhit Institute of Engineering & Technology Deemed-to-be University, Lecturer Meerut College Meerut

Prof. (Dr.) Mamta Bansal

Professor Shobhit Institute of Engineering & Technology Deemed-to-be University

Prof. (Dr.) Anil K Ahlawat

Professor & Dean (Academics) KIET, Ghaziabad

**Abstract** - In this paper we will discuss about the chatbot architecture and database made for career counselling. There are more than 500 data sets for chatbot. Chatbots are very useful for business, they work 24x7. They are cost effective too. The first Chatbot was Eliza but it was not as smart as Siri and Alexa.

Chatbot works when the user enter specific input the bot processes it and sends a matched response for it. With time the response becomes more accurate and flawless.

The probability that the answer is relevant depends on the X and Y values given in response coding block. X denotes

the question and Y is the relevant answer to it. In case the question does not match the answer will be taken by default. The chatbot is created in Artificial Intelligence Markup Language (AIML) with the help of pandorabots website. The chatbot solves problems of computer related career counselling.

**Index Terms** - career counselling, Siri, Alexa, matched response, AIML, pandorabots

## INTRODUCTION

Chatbot is a real time chat between the computer and a user. Chatbot are basically of two types:

- Rule Based
- Self-learning

Rule based approach trains it and sets certain rules to train it. On the other hand are the self-learning bots as the name suggest they can learn on their own.

Benefits of Chatbots are:

- Better customer experience.
- Simple purchase process.
- Fewer resources required.
- Works 24x7.
- Personalized services.
- One time investment

AI chatbot can be made with Python using AIML package. AIML is a kind of XML that has matching patterns with the determined responses. Firstly AIML file is created then Python is used to make it live.

## PROBLEM STATEMENT

### 1. Scope

The Chatbot only deals with questions related to career counselling in computer science.

### 2. Language

The language used will be English only.

### 3. Datasets

There will be more than 500 set of questions based on computer science.

## AIML

Copyrights @Kalahari Journals

It stands for Artificial Intelligence Markup Language. It was developed by Alicebot free software community and Dr Richard S Wallace. It is based on the ALICE (Artificial Linguistic Internet Computer Entity).

### AIML Tags

The basic tags are as follows:

1. <aiml>

It is used in starting and ending of AIML document.

2. <category>

It is used to define knowledge base.

3. <pattern>

It is the match input by the user.

4. <template>

It is the response to user's input.

Eg:

```
<aiml version="1.0.1" encoding="UTF-8" ?>
```

```
<category>
```

```
<pattern>Hello bot</pattern>
```

```
<template>
```

```
Hello user
```

```
</template>
```

```
</category>
```

```
<category>
```

```
<pattern>Hello</pattern>
```

```
<template>
```

```
Hello! How are you?
```

```
</template>
```

```
</category>
```

```
</aiml>
```

## User Interface Design

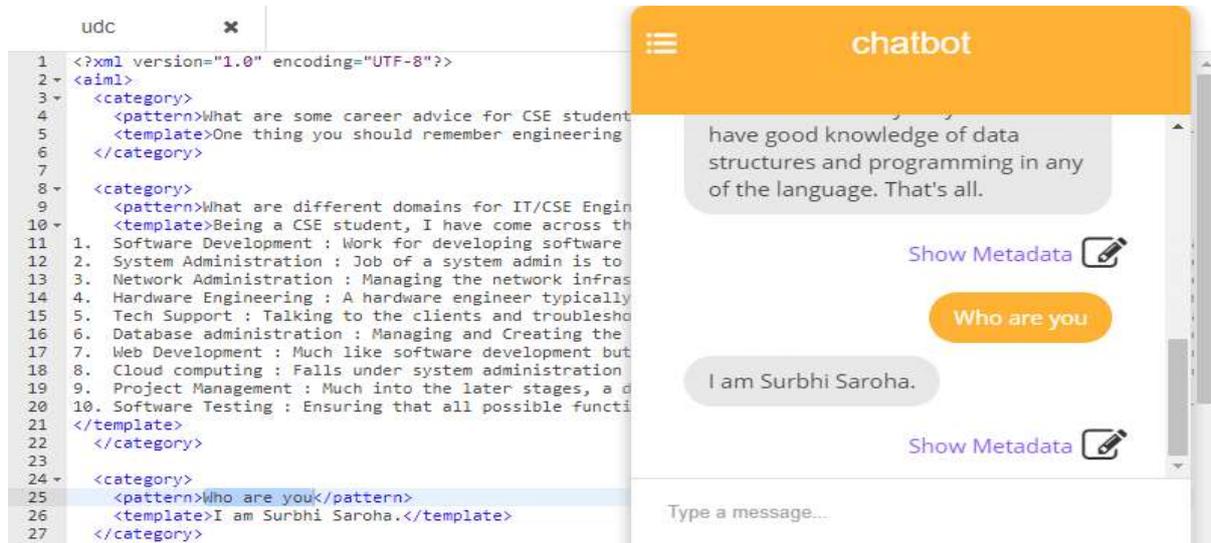


Fig 1  
User Interface Sample

*Response that is Random*

When the word career counselling in Computer Science comes with \* wildcard ,the algorithm will give a random response from the list as shown below.

```

<category>
<pattern>Career Counselling in Computer Science *</pattern>
<template>
<random>
<li>Software Development : Work for developing software
products, mobile apps, all sorts of maintenance of software
etc.</li>
<li>System Administration : Job of a system admin is to
manage the IT infrastructure. System admin is responsible for
the uptime of the servers and applying essential updates,
handling requirements of employees related to software.</li>
<li>Network Administration: Managing the network
infrastructure of company, implementing policies regarding
firewalls, routing etc.</li>
</random>
</template>
</category>

```

*What do you mean by supervised learning?*

It is a kind of machine learning and Artificial Intelligence. It helps business to solve variety of real world problems such as

classifying spam from inbox in Gmail. Naive Bayes is one of the technique in supervised learning.

*Naïve Bayes*

It follows the principal of class. It simply means that it is not dependent on each other.

There are three types of it. They are:

1. Multinomial Naïve Bayes
2. Bernoulli Naïve Bayes
3. Gaussian Naïve

This is basically used for text classification. That is spam identification.

Chatbot comes under **NLP (Natural Language Processing)**.Types of NLP are:

**1. NLU (Natural Language Understanding)**

It is the ability to understand natural language like Hindi and English.

**2. NLG (Natural Language Generation)**

It is the ability to get human written similar text.

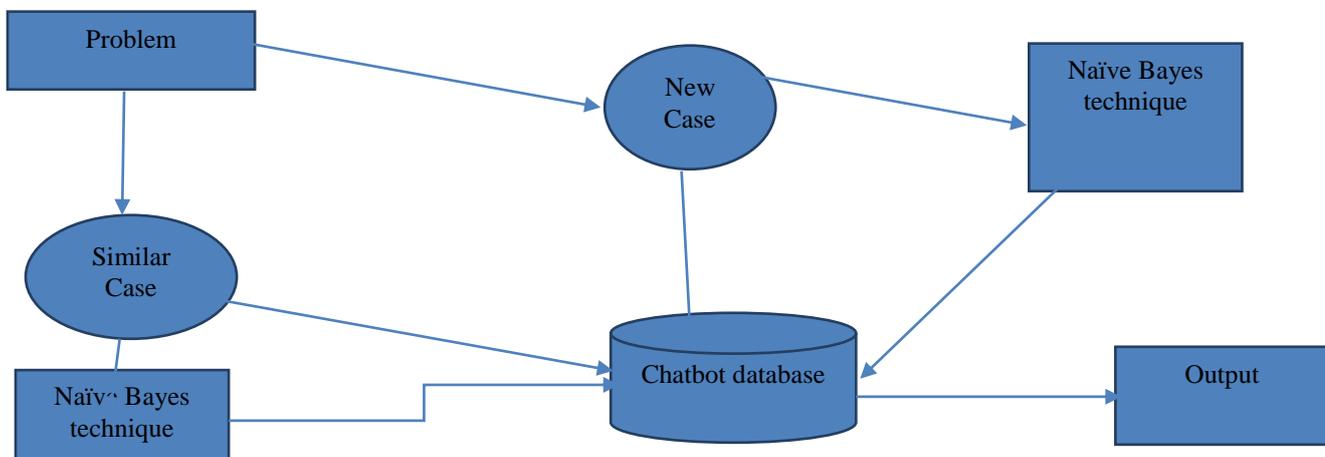


Fig 2. Human Computer agent architecture

### Steps for Building a Chatbot in Python are:

First of all we have to download Python latest version. Then we have to follow following steps:

1. Go to this PC.
  2. Local Disk (C)
  3. Users folder
  4. Then the name of the folder created by you. In our case it is DELL.
  5. Within DELL folder click on AppData.
  6. Then Local folder.
  7. Programs folder.
  8. Python folder.
  9. Python39 it is the latest version of Python folder.
  10. Then finally on Scripts folder.
- After going to this stage go to the command prompt by typing cmd command in the address bar. The command prompt will open then type.

### Pip install Jupyter notebook

This command will install Jupyter notebook. It will open the webpage of Jupyter notebook.

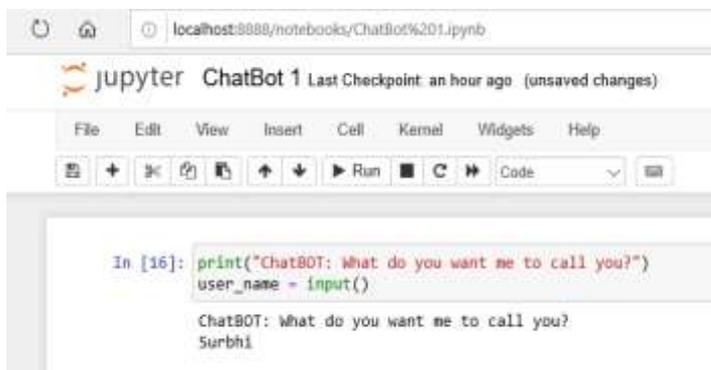


Fig 3 Jupyter Notebook

### CONCLUSION

The proposed model aims to constitute a computer application professional bot. Which will help the students to ask career related questions on computer.

The model permits mobility feature and response 24 hours with no time delay. Its advantages is it can be accessed from

### REFERENCES

- [1] <https://dzone.com/articles/python-chatbot-project-build-your-first-python-pro>
- [2] <https://www.ibm.com/cloud/learn/supervised-learning>
- [3] <https://www.upgrad.com/blog/how-to-make-chatbot-in-python/>
- [4] Maha Nawaz, Anum Adnan, Unsa Tariq, Jannat Fatima Salman, Rabia Asjad, and Maria Tamoor, "Automated Career Counseling System for Students using CBR and J48", Journal of Applied Environmental and Biological Sciences, ISSN: 2090-4274.

### Human Computer Interaction

The interaction goes between many humans simultaneously and our chatbot at other end. The interaction will be refined on every interaction. The chatbot which tells about career counselling related answers in computer application.

The technique applied is Naïve Bayes of Supervised learning which depends on the probability concept.



Fig 4 Sample database for career counselling

anywhere. They can communicate simultaneously to many users at the same time. They are very flexible.

Customer satisfaction is also achieved more in comparison to human's interaction. They also save cost as only one time training need to be done. It also saves lot of human efforts.

- [5] <https://towardsdatascience.com/building-a-chatbot-in-python-the-beginners-guide-2743ad2b4851>
- [6] Iulian Pah, Daniel Hunyadi, Dan Chiribuca, "A MULTI-AGENT ARCHITECTURE FOR HUMAN-COMPUTER INTERACTION", 12th WSEAS International Conference on COMPUTERS, Heraklion, Greece, July 23-25, 2008.
- [7] [https://www.researchgate.net/publication/262235293\\_A\\_multi-agent\\_architecture\\_for\\_human-computer\\_interaction/link/5873537d08ae329d621bca0/download](https://www.researchgate.net/publication/262235293_A_multi-agent_architecture_for_human-computer_interaction/link/5873537d08ae329d621bca0/download)
- [8] <https://www.mindler.com/careerlibrary/engineering/career-in-computer-science-in-india>

- [9] <https://towardsdatascience.com/beginners-guide-to-creating-a-powerful-chatbot-48fc6b073e55#c03d>
- [10] <https://chatbotslife.com/rule-based-standalone-aiml-chatbots-chatbots-part-2-f5dca9f15956>
- [11] [https://www.tutorialspoint.com/aiml/aiml\\_introduction.htm](https://www.tutorialspoint.com/aiml/aiml_introduction.htm)
- [12] <https://www.youtube.com/watch?v=49oJ9o2wj8A>
- [13] <https://www.devdungeon.com/content/ai-chat-bot-python-aiml>
- [14] <https://blog.ekbana.com/the-easiest-way-to-create-a-chatbot-using-aiml-ec09b12dd2e1>
- [15] Ahmad Ali, M. Arvindhan, "Conversational Chatbot with AIML", Journal of Xidian University VOLUME 14, ISSUE 5, 2020 ISSN No:1001-2400.
- [16] Surbhi Saroha, Mamta Bansal, Anil K Ahlawat, "An Intelligent Human-Computer Agent", Turkish Online Journal of Qualitative Inquiry (TOJQI) Volume 12, Issue 5, May 2021: 2071-2078.
- [17] [https://www.academia.edu/Documents/in/Aiml\\_Chatbot\\_Knowledge\\_Base](https://www.academia.edu/Documents/in/Aiml_Chatbot_Knowledge_Base)