

# Developing a Chatbot Using Machine Learning

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**Abstract:** Now-a-days development of chatbot using different methods become trendier, till now many conversational chatbots were designed for the replacement of traditional chatbots. A chatbot is a software that is capable of communicating and performing actions like the way human do. Chatbot will give response for the query given by the user and it also capable of executing tasks. Chatbots developed in olden days are so difficult to perform task but chatbot developed in recent years are good in performance and its development also become easier because of wide availability of development platforms and wide availability of source code. There are many methods to develop chatbot, it can be developed using either natural language processing (NLP) or deep learning.

In this project we developed a chatbot using machine learning which helps to give information about our college.

**Keywords:** Chatbot, Machine Learning, Natural language processor.

## 1. Introduction

Now-a-days human involvement in using digital devices has become more, which makes a way to development of chatbot. Chatbot helps humans to converse with digital devices. In earlier days chatbot are developed just for entertainment purpose.

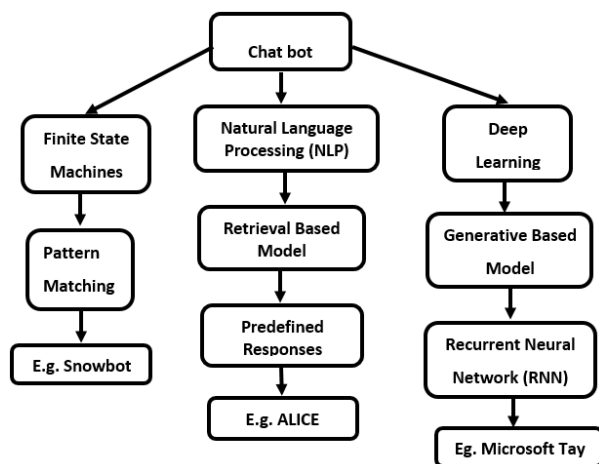


Fig. 1. Classification of different methods to develop chatbot

Chatbots can be developed using many different methods but chatbots developed using deep learning requires neural networks to understand the input sequence given by the user.

Chatbots like ELIZA, ALICE takes only text as an input but chatbots like google assistant, alexa, siri can accepts voice as input.

### A. Types of chatbots

There are two types of chatbot based on their purpose, design, and the based on the information they provide.

A. Conversational chatbots: this chatbots are designed either for fun purpose or to fulfil task. Chatbots that are designed for fun purpose will not have any target to reach but chatbots designed for task purpose will be task oriented for a specific task.

### B. Domain based chatbots

In this method again there will be two types open domain bots and closed domain bots. Open domain bots are designed to answer any number of questions like google assistant, siri, alexa. Closed domain chatbots are for specific task fixed for one task.

## 2. Software Requirements

### A. LTspice

LTspice is free computer software used to implement a SPICE electronic circuit simulator produced by semiconductor manufacture linear technology and now it is a part of analog devices. Now it is used in-house at linear technology for ic design, and the most widely distributed and used SPICE program in the industry.

Now we will use LTspice XVII in the software lab for the Accelerator Power Electronics course. We have slightly modified the standard installation in order to include some parts that are not in the standard distribution. These instructions detail how to both install the standard distribution and how to modify it to include our additions.

#### 1) Installation

The software is maintained by Linear Technology, Inc., and the software can be freely download,

<http://www.linear.com/designtools/software/>

Click and select download LTspice XVII for windows 7, 8 and 10. (You do not need to register for a MyLinear account. You can refuse this offer and just download the software.) You will be prompted to save the executable file LTspiceXVII.exe from <http://ltspice.linear-tech.com>.

After the file is downloaded, select it to run the installation program, agreeing to the standard Microsoft query about installing a file downloaded from the internet. (You may need administrative privileges to install the program).

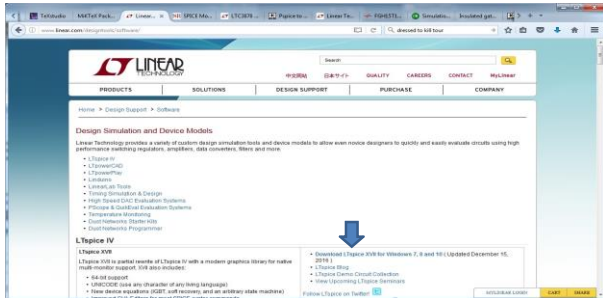


Fig. 2. Installation of LTSpice

*The installation directory:*

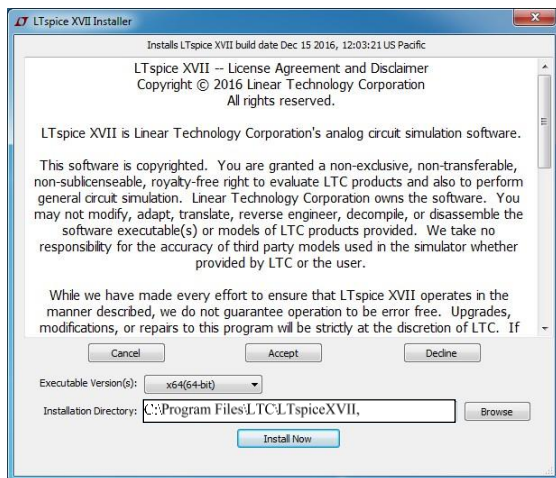


Fig. 3. Installation directory

Now maintain the default installation directory C:\Program Files\LTCLTSpiceXVII, accept the license agreement, and then Install Now.

### B. Python 3.6

Python is an interpreted, high-level, general-purpose programming language. Python is Created by one of the scientist called Guido van Rossum and first released in 1991 Python's design and its philosophy emphasizes code readability with its notable use of significant whitespace. Python's language constructs and its object-oriented approach aim's to help programmers to write clear and logical code for small and large scale projects.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural,) object-oriented, and functional programming. The Python is often described as a "batteries included" language due to its comprehensive standard library.

### 1) Tkinter module

Tkinter module ("Tk interface") is the standard Python interface to the Tk GUI toolkit. The Tk and Tkinter are available on most Unix platforms, as well as on Windows systems. The Tkinter (Tk) is a Python default GUI and comes with the Python installation on Linux, Mac, and Windows. Since Tk comes with most Python installations.

## 3. Working

The computer programming is basically a designing, implementing, testing, debugging and maintaining the source code and these codes are written in a particular programming language. The purpose of creating programming language is that exhibits a certain desired behaviour.

### A. Block Diagram of Chatbot

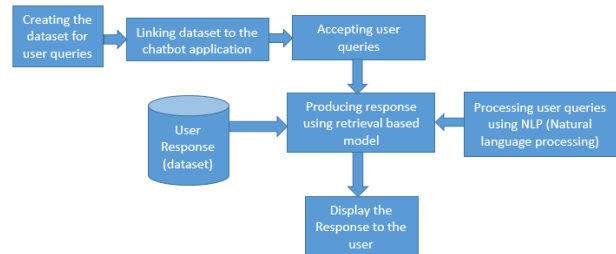


Fig. 4. Block diagram of Chatbot

The fig. 4, above shows the block diagram of chatbot. A chatbot is a software that is capable of communicating and performing actions like the way human do. It consists of different blocks in which each block will perform a unique task to help user. Here to help user a dataset is created to give answer for the user queries. Followed by linking the dataset to the chatbot application through coding. Once the linking is done chatbot is ready to accept the user queries. Now-a-days different type of chatbots are available in the market which are designed based on different types of models here we used one of the model to design chatbot it is called as retrieval based model. Retrieval based model means it consists of repository of input patterns and pre-defined responses which will help the chatbot to give response to user queries. Pre-defined responses are the previously saved replies which will be triggered automatically to the user. Then the queries given by the user is processed using NPL (Natural Language Processing). Natural language processing is a branch of artificial intelligence that helps the computer to understand human language, after processing the user queries the chatbot will give the proper response to the user.

### B. Flowchart

- The above figure 5 shows the flowchart for the user.
- When user opens the chatbot application user will get welcome screen with welcome note.
- And also, it consists of buttons for displaying current date and time. When user press this button, it will show the current time and date to the user.

- User has to navigate to next screen by clicking the forward arrow icon which is present in the top right corner of the welcome screen then he will be taken to chat screen.
- The next screen is the chat screen, in this screen the user can do a conversation with the bot.
- If user enters the improper question user will get Exception message.
- After the conversation if user wants to go back to previous screen i.e. welcome screen then he has to press the backward arrow icon present at the top left corner of the chat screen or if the user wants to exist from the entire chatbot application then user can press the exit icon which is present in the top right corner of the chat screen.
- So, the conversation between the chatbot and the user will be ended.

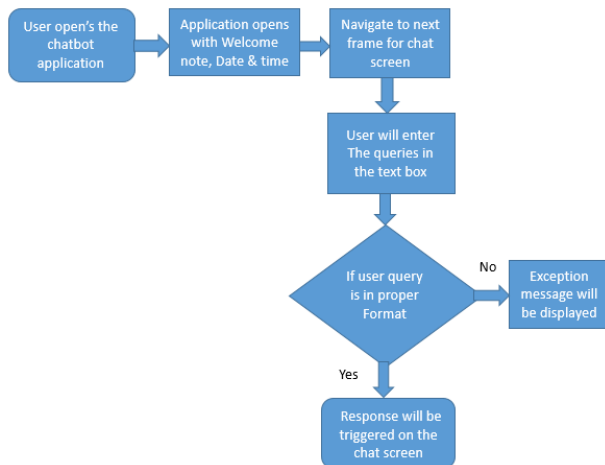


Fig. 5. Flow Chart

**C. Design**

**1) Welcome frame**

Here Python 3.6 software is used to write the code for entire chatbot. Once the user run's the code chatbot application opens with GUI consisting of welcome note, time, and date. It is shown in fig. 6 below.

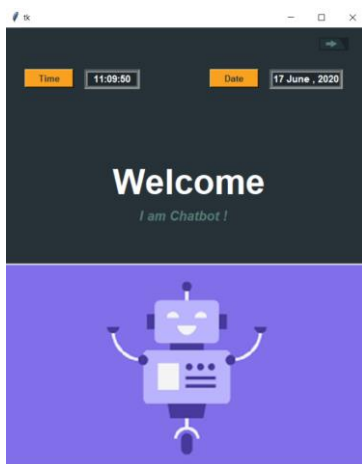


Fig. 6. Welcome frame with time and date

**2) Chat Frame**

Once user get this frame he has to click on the forward arrow button which is present in the top right corner of the frame which navigates him to the next page. Next frame is the main frame which is chat frame where user will interact with chatbot. The chat frame consists of name, text box, submit button (To submit the queries) and exit button. Once the user gets into this frame he can ask or enter his/her queries in the text box give in the chat frame, accordingly response for the user queries are triggered on the chat screen. It is shown in the figure 7 below.

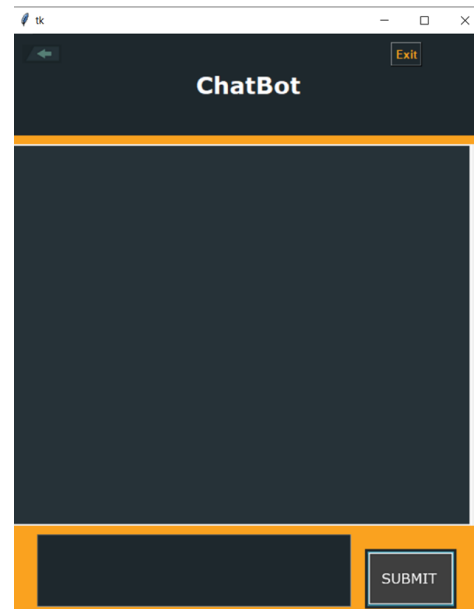
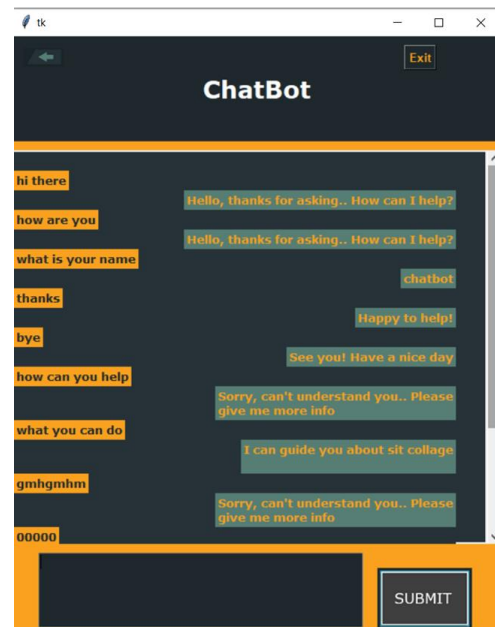


Fig. 7. Chat Frame

**4. Result**

**A. Result**



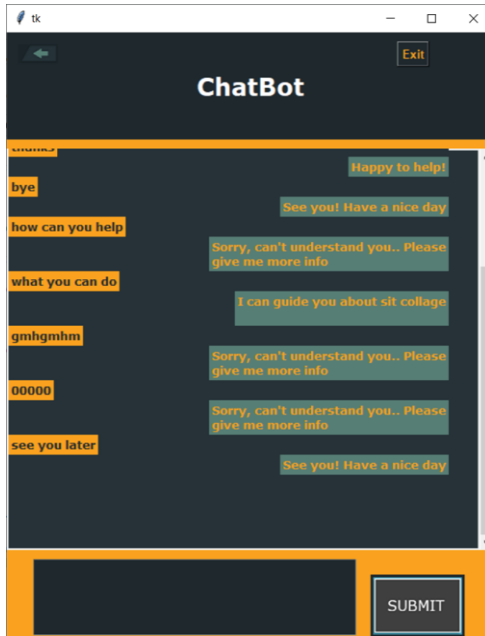
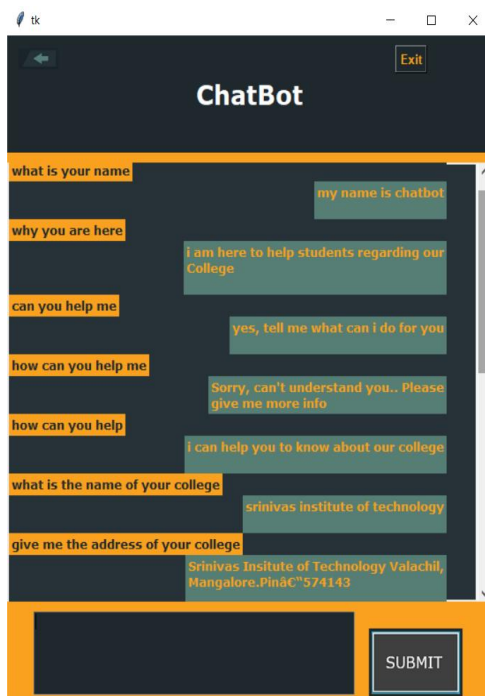


Fig. 8. Conversation with Chatbot



## 5. Conclusion and Future Scope

The outcome of this project will help the new people who are willing to know about our college and this project will provide complete information about our college. However, many people are willing to have extensive interactions with chatbots, suggesting that these artificially intelligent systems must be offering enough to capture the attention of millions of users. However, although chatbots seem capable of participating in and holding the attention of human users, natural language interfaces to computer systems cannot yet simulate the full range of intelligent human conversation.

Now-a-days Different types of chatbots are available with different features which are used for different types of services. So in upcoming days this can be improved with new emerging technology to help to serve the people.

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