USER MANUAL

Artificial Intelligence based Virtual Chat Assistant (AivaBot)

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| 1. Getting Started |
| --- |

Welcome to the user manual of the Chatbot functionality, an added convenience to the user. The manual offers a detailed account of all the features incorporated in the functionality. The functionality processes the given data to generate the response, by implying the rules of NLP

(natural-language processing), AI (artificial intelligence), and ML (machine learning). Users are requested to go through the manual and keep it in a safe place for future reference.

| 1. Brief about user manual |
| --- |

This user manual provides step by step illustration of all the functionalities that are incorporated in the Chatbot. The present manual comes with pictorial representation, which enables users to get a complete grasp on the subject and avail the maximal benefit in a very subtle way.

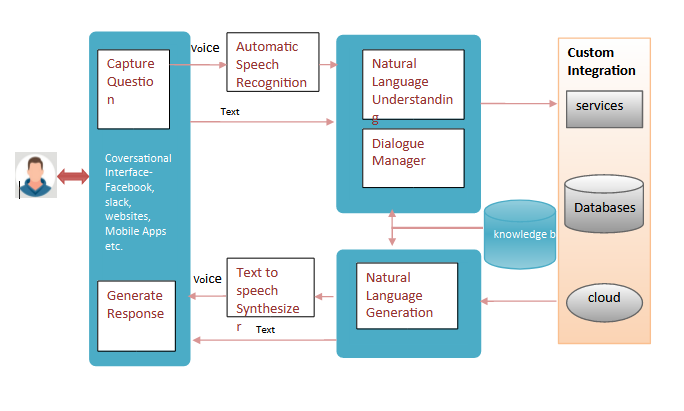
| 1. Overview |
| --- |

C-DAC's Artificial Intelligence and Machine Learning based Conversational Framework can be utilised by people to build their own virtual assistants in any domain to automate the chats with their customers. The framework has an intelligent Natural Language Understanding module that can help to extract the entity-intent information from a user query using state-of-the-art machine learning algorithms. The intelligent dialogue flow in the system is powered by LSTM and Reinforcement learning generates appropriate responses for users in real time. The framework can be easily integrated with any messaging apps, websites, API or web services. It provides a rich GUI that helps user to select the appropriate options from the menu . The framework also has the live chat facility that allows the users to switch to live chat dynamically. The system is also enriched with analytics that provides reporting on conversations, messages, user activity and retention. The framework supports multilingual chat in both text and voice and can be easily integrated with any Automatic Speech Recognition (ASR) system.

The Whole system consists of 4 components - 1) GUI and Bot engine, 2) Analytics Dashboard, 3) Live Chat Support and 4) Visual Editor

The details of these components are discussed below.

System Architecture-



*Figure 1 System Architecture*

| 1. Features |
| --- |

C-DAC's intelligent Conversational platform has the following features-

* Natural Language Understanding (NLU, Entity-Intent Classification)
* Intelligent Dialogue Management
* Multi-lingual support (English and Hindi)
* Live Chat Support
* Multiple Session Handling
* Multiple Platform Support for various messaging channels
* API Integration Support
* Interactive Conversational Interface
* Rich Text (Redirection to external web pages)
* Analytics Dashboard
* On-premises/Cloud Deployment
* Visual Bot Editor
* Automatic Query Suggestion
* ASR TTS Integration Support

| 4.1 Greet Message |
| --- |

As the bot window is opened, the user will be greeted and presented with options from which the user can select the appropriate topic in which he/she is having a query. The system can further guide the user by presenting a set of questions related to the topic. The user can then click the question and a related solution will be provided to the user.



*Figure 2 Greet Message*

| 4.2 Automatic Query Suggestion |
| --- |

Apart from this, the user can also write his query in the text box. While typing the query, the user will be displayed related questions in a pop up window. The user can select the query from there or he can enter his entire query. The system will then understand the user and query and appropriate responses will be provided or the user can enter the full query by himself to get the appropriate response.



*Figure 3 Automatic Query Suggestion*

| 4.3 Multilingual Support |
| --- |

Our Chatbot has a multilingual support users can communicate in their mother tongue to get his query resolved at the earliest. Currently Mobileseva Bot is developed in English,Hindi & Marathi.



*Figure 4 Language Selector Button*

| 4.4 ASR & TTS Integration Support |
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We also have support for Automatic Speech Recognition [ASR]& Text to Speech [TTS] API integration. If a user wants to get his/her query resolved with typing he/she uses the mic option provided in the UI. When the user speaks through the chat window, system sends it to ASR Module and in return the ASR Model gives the query in text format then the query is sent to the AI model to give an answer .When the AI model gives answer we send the answer to TTS API in return we get the Answer in audio file which is being played.



*Figure 5 Mic Button*

| 4.5 Related Queries |
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Based on the users’ previous query the bot shows related queries to make the conversation more engaging and user can get all the doubts resolved from a particular topic



*Figure 6 Related Queries*

| 4.6 Matching Questions |
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Whenever the bot fails to answer for the entered user query, the user query is passed to the matching algorithm and the most close set of questions is then shown to the user.



*Figure 7 Matching Questions*

| 4.7 Live Chat Support |
| --- |

Whenever the user feels his/her query is not resolved he/she can opt to talk to Liveagent. Upon filling some details if any LiveAgent’s Status is online it gets connected with the User and he /she can get his query resolved from the LiveAgent.



*Figure 8 Live Chat Form*

| 4.8 Rich Text (Redirection to external web pages) |
| --- |

The AivaBot supports rich text (Redirection to external web pages) depending upon the requirements we can provide links to external web pages, PDFs, articles etc.



*Figure 9 Rich Text*

| 4.9 Feedback |
| --- |

AivaBot users’ can provide feedback about overall performance of the AivaBot similarly in this same way if they want to suggest some modification they can provide.



*Figure 10 Feedback Form*

| 4.10 Like, Dislike |
| --- |

AivaBot users’ can like or dislike the bot messages in order to show their response towards the query resolution.If AivaBot users dislike a message they can provide reason for disliking.



*Figure 11 Like,Dislike Buttons*

| 1. Analytics Dashboard |
| --- |

The dashboard module can be accessed by login to the dashboard

[Dashboard Login](https://10.210.0.44/completedashboard1/index.jsp)

Username: admin

Password: admin

The Dashboard has 3 modules: Analytics, Editor & Interactive Learning.

| 5.1 Analytics Dashboard Login |
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Users need to login to the portal by entering their “Username” & “Password” created at the time of registration



*Figure 12 Dashboard Login*

| 5.2 User Registration |
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Users need to register to use the portal by providing some basic details like “Name”, “Mobile No.”, “Email” & creating a strong “Password”

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*Figure 13 User Registration*

| 5.3 Analytics Dashboard Homepage |
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We are storing the Chatbot Conversations in MySQL Database. We use this Conversations data to Analyse the Bot Performance.

Dashboard has an analytics section where we are showing the performance of our bot which is linked. Here we have used so many different types of matrices like “Total Messages”, “Average Session Length'', “Sentiment Analysis” etc. These matrices keep the track record of bot performance in graphical format like line graph, bar graph, scatter chart, pie chart and many more.

Matrices are mentioned below with detailed information :

1. Total Messages: It is displaying the total number of messages sent by bot and received from users.

2. Total Sent Messages: It is displaying the total number of messages sent by bot to the user while chatting.

3. Total Received Messages: It is displaying the total number of messages received by bot from the user while chatting.

4. Overall Messages: It is displaying overall performance of chat receiving, sending and conversation.

5. Miss Messages: It keeps record about bot not able to respond to user query.

6. Total Conversations: It is displaying the total number of chats between user and bot.

7. Average Session Length: It is displaying the average session duration while a complete chat.

8. Total User: It is displaying the total number of users connected to us day by day.

9. Sentiment Analysis: It is displaying the sentiment of User while chatting with the bot.

10. Most Common Intent: It is displaying the intent which is fired maximum time while chatting.

11. Liked & Disliked Intent: It will display the most liked intent and most disliked intent by User.

12. Overall Feedback: It will display the feedback and rating by the User for complete chat experience.

13. Expected Answers: Users can add answers to missed questions which bot could not answer.

14. Tables: Tables will display all data, whatever we are saving in the database.

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*Figure 14 Analytics Homepage*

| 5.4 Date Range Selection |
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In the Analytics sections user can analyse the data between two particular dates by selecting the date in the UI



*Figure 15 Date Range Selection*

| 5.5 Graph Types |
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Variety of Graph types are available in the dashboard analytics to analyse the data e.g Bar graph, Scatter graph, Pie Chart, etc.

For the count we query in the MySQL Database. For the Graphs we have used the **Chart.js** Library.



*Figure 16 Line Graph*

**

*Figure 17 Pie Chart*

| 1. Visual Editor |
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After login to the dashboard, we can access the ["Bot Editor"](https://10.210.0.44/completedashboard1/bots.jsp) section from where we can see the bot internal file data and we can also edit, update or delete the file data. We can also create a new bot from here. We can train our new or existing bot to generate new models.

| 6.1 Homepage |
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It will display the description and features of Dashboard along with the sidebar and navigation bar to toggle between the modules.



*Figure 18 Homepage*

| 6.2 Bot Section |
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In the “Bots” section we can do the following tasks.

a) Show : Here we can see the list of bot added.

b) Add : We can add a new bot.

c) Delete : Delete the existing bot.

d) Edit : Update the existing bot. Change the data in the config.yml file.



*Figure 19 Bot Section*

| 6.3 Intent Section |
| --- |

a) View : We can see the available intents, entities, examples etc. According to the existing bot.

b) Add : We can add intents and entities.

c) Delete: Delete the examples in the existing bot.

d) Edit : Update the examples of existing intents.

In the intent section we have provided a dynamic table which enables users to add examples & entities in a very easy way. The Syntax part is eliminated completely.

The Add Row button adds a new row in the table where the user can add examples. In the Action column we have provided two buttons i) Edit & ii) Delete.

a) On clicking the edit button a popup window is shown where the user can create training data without the actual syntax required by the AI model.

b) On clicking the delete button that particular example is deleted from the table & file.



*Figure 20 Dynamic Table in Intent Section*



*Figure 21 Popup Form on Clicking Edit Button*

| 6.4 Domain Section |
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a) View: We can see the details available on the domain page according to the existing bot.

b) Add : We can add new domain data here.

c) Delete : Remove the existing domain data from the domain file.

d) Edit : Update the existing domain file.



*Figure 22 Domain Section*

| 6.5 Stories Section |
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a) View : We can see the existing story available on the story file.

b) Add : We can add the new story data.

c) Delete : Delete the existing story.

d) Edit : Update the existing story data in the story file.

  
*Figure 23 Stories Section*

| 6.6 Training |
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Here we can train any existing bot for a new model.



*Figure 24 Training Section*

**Note-** Interactive Learning facility is under development and need not be tested.

| 1. Live Chat |
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Live chat is a feature we have embedded in our chatbot. So, it can automatically transfer the call to a real time live agent when the user faces three(3) time sorry responses for his/her single query.

In another scenario, if the user writes - "I want to talk to a human", then the user will be connected to the next available agent.

While starting a chat with a live agent User has to submit his/her basic information like name and email Id. When any live agent is active then the user will connect to that agent. If all agents are engaged then the user will get the message “Try after sometime”. If the user is satisfied with the live agent response and his/her query was resolved then he/she can close the chat by clicking on close chat button.

This is Agent Portal for using this portal Agents need to login, we have also provided an account creation page to register the LiveAgent.

[Live Chat Portal](https://10.210.0.44/LiveChat/)

Username: admin1

Password: admin123



*Figure 25 LiveChat Login window*

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*Figure 26 LiveChat Account Opening Window*

Whenever the users query is not resolved he/she can opt to talk to liveagent by typing "I want to talk to human" or when the user faces three(3) time sorry responses for his/her single query automatically the call is transferred to LiveAgent



*Figure 27 Chatbot User Interface while connecting with the LiveAgent*



*Figure 28 LiveAgent portal after a user is Connected*

Whenever a LiveAgent status is active a user is automatically assigned to it to resolve the query.

i) Log Out: Log Out button is provided in the portal.

ii) Leave User: When the LiveAgent feels the user has no furthermore queries the liveagent can click on Leave User button after clicking the button the current chatbot user is disconnected if any other chatbot user is in queue is then assigned to the LiveAgent.



*Figure 29 Chatbot & LiveAgent Chat window while communicating*

iii) The user can click "Exit Live Chat" to end the session



*Figure 30 Exit Live Chat*

| 1. Glossary |
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| Sr. No. | Term/Acronym | Description |
| --- | --- | --- |
| 1) | CDAC | Center for Development of Advanced Computing |
| 2) | NLP | Natural Language Processing |
| 3) | AI | Artificial Intelligence |
| 4) | ML | Machine Learning |
| 5) | ASR | Automatic Speech Recognition |
| 6) | TTS | Text to Speech |
| 7) | GUI | Graphical User Interface |
| 8) | UI | User Interface |
| 9) | API | Application Programming Interface |
| 10) | PDF | Portable Document Format |

| 1. Contact Us |
| --- |

The contact details are as follows:

**Center for Development for Advanced Computing**

Gulmohar Cross Road No.9,

Juhu, Mumbai 400049

Maharashtra (India)

The user can also drop their queries at:

Email: [akanksha@cdac.in](mailto:akanksha@cdac.in)

Phone: 022-26201606 Ext-572