

INSTITUTE FOR ADVANCED COMPUTING AND

SOFTWARE DEVELOPMENT AKURDI, PUNE

Documentation On

# “Chatbot-Hotel-Booking”

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*Submitted By:*

**Group No: 08**

**Sujata Shriram 229348**

**Pooja Wankhede 225032**

# Mr. Rohit Puranik Dr. Shantanu Pathak

**Centre Coordinator Project Guide**

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Introduction:

## Problem Statement: Chatbot-Hotel-Booking

## Abstract

Chatbot is a computer program which is made in such a way than can understand human language. Chatbots can simulate the human conversation that usually found in call center or service center by using natural language processing to adapt the responses to fit in the following situation. Nowadays, chatbots can be found in e-commerce websites and social messaging services in order to help human if someday they need service that concerned to following websites such as for reservation or call center. The chatbot we use is built using RASA and RASA CORE, RASA is an open-source machine learning framework to automate text and speech conversation.

## Project Scope:

The main use of this chatbot, chatbot is a computer program which is made in such a way than can understand human language. Chatbots can simulate the human conversation that usually found in call center or service center by using natural language processing to adapt the responses to fit in the following situation. Nowadays, chatbots can be found in e-commerce websites and social messaging services in order to help human if someday they need service that concerned to following websites such as for reservation or call center.

## Aims & Objective

The aim of this project is to book hotel using chatbot, the chatbot should be able to respond user questions. Chatbot is a computer program which is made in such a way than can understand human language. Chatbots can simulate the human conversation that usually found in call center or service center by using natural language processing to adapt the responses to fit in the following situation. Nowadays, chatbots can be found in e-commerce websites and social messaging services in order to help human if someday they need service that concerned to following websites such as for reservation or call center. Therefore, the aim of this project is to book hotel using chatbot, the chatbot should be able to respond user questions.

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Workflow of Project:

The diagram below shows the workflow of this project.

Diagram

Description automatically generated

*Figure 1Workflow Diagram*

**2 System Architecture:**

**Diagram

Description automatically generated**

*Figure 2 System Architecture*

* 1. Rasa has two main components:

1. Rasa NLU (Natural Language Understanding) :

Rasa NLU is an open-source natural language processing tool for intent classification (deciding what the user is asking for), extraction of the entities by bot in the form of structured data helps the chatbot understand what the user is saying.

1. Rasa Core: (for holding conversations and deciding what to do next)

Rasa Core is a machine learning-based dialog management chatbot framework that takes the structured input of the NLU and predicts the next best action using a probabilistic model such as LSTM neural network instead of if/else statement. Under the hood it also uses reinforcement learning to improve the prediction of the next best action.

Use case diagram:

*Diagram

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*Figure 3 Use case diagram.*

Sequence diagram:

Diagram

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*Figure 4 Sequence diagram.*

State Diagram:

Diagram

Description automatically generated

*Figure 5 State diagram.*

**3 Chatbot Capabilities:**

All chatbots are made by using natural language processing (NLP) of RASA. Rasa is an open-source machine learning framework to automate text and voice-based conversations. NLP is the main point of chatbot. By using NLP, chatbot can be able to process human language and give feedback according to the input from human or user. Some of NLP capabilities as follows:

- Room Booking

- Handle Greetings.

- Booking Cancellation

- Question answering.

- Machine translation.

In this project, the hotel reservation chatbot has some NLP capabilities in order to process input that comes from the user to get the information from the user. The

kind of information is same as when user input their information regarding to the following reservation questions. Moreover, user do not need to navigate the reservation website even input their information; only use chatbot, chatbot will give some question regarding to the reservation, instead of navigating, user just answer the questions like normal chatting activity. This is one of the chatbot benefits, practical and efficient as well.

**3 System Implementation:**

Rasa is an open-source machine learning framework for building Artificial Intelligent assistants and chatbots. In general, you don't need any programming language experience to work in Rasa. Although there is something called "Rasa Action Server" where you must write code in Python, which is mainly used to trigger external actions like calling Google API or REST API etc.

This Project contains two major modules they are:

1. Administrator Module

2. Customer Module

3.1 Administrator Module:

The administrator is responsible for adding the different intents. The admin can do the different actions some of them are:

• Adding Stories

• Editing Stories

• Delete Stories

3.2 Customer Module:

The Customer can interact with the chatbot using Rasa shell. If the customer implements the custom webpage, then it should be run on the localhost and the port number should be different from one which is running actions of rasa.

3.3 Chatbot Specification

For this project, the chatbot specifications as follows:

- Chatbot name: Hotel Booking.

- Programming language: Python programming language.

- Additional NLP tool: Rasa

3.4 Conversation Model

The conversation model will be separated into some parts. Each part has its own kind of conversation. Some parts are:

- Greeting.

- Introduction.

- Reservation.

- Final checking.

**4 Result and Output:**

The Rasa chat-bot implements the stories mechanism and follows the story when we are interacting with them.

Text

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Text

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Text

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**3.Rasa Configuration:**

1. Install Python 3.10.9:
2. Install Anaconda 3
3. After installing Anaconda, follow below commands to create a virtual environment in conda. This will allow you to run Rasa without errors.
4. Create Anaconda environment

steps:1. conda create -n environment\_name python=3.10.9

steps:2. conda activate environment \_name

1. *Open command Prompt and navigate to project path*
2. *Enter – rasa train*
3. *Enter – rasa shell*
4. nlu.yml : your NLU training data. Here you can define Intent. Like Order Pizza or Book Uber. You need to add related Sentences for that Intent. Remember if you are using Rasa, your training Intent and Data will be added automatically.
5. domain.yml: your assistant’s domain. This file combines Different Intent which chatbot can detect and list of Bot replies. Remember you can define your Custom Action Server Python method name here (in underscore format), so that Rasa will call that python method for you.

10.Stories.yml: This is required for Rasa Core. There is something called “Dialog Flow in Rasa” where Rasa Core controls the flow of the conversation between you and chatbot, so for that flow, you need to train chatbot using these stories. So in case you want your chatbot to be very perfect on different context (stories) you can add those stories here.

## Conclusion:

Chatbots is an effective way if implemented carefully. Chatbots are the forms of automation and they would replace human agents because chatbots are really fast and never get tired compared to human agents can get fatigued or overwhelmed. Thus, many people try to make chatbot for their company for customer service purpose in order to serve their customers 24 hours with zero mistake, while human agents cannot do. The most important is chatbots make it easier to get closer to customers and they will serve the customers with fast response.

From this simple hotel booking bot, the required NLP capabilities are less than the complex one. Complex chatbot need more NLP capabilities in order to make it reliable and works as same as human agent. For future works, this hotel booking bot should be able to connect to online data in order to query the name and price of accommodation according to the location.

## Future Scope

For future works, this hotel reservation bot should be able to connect to online data in order to query the name and price of acomodation according to the location.

## References

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