Chathotel Advisor using Prompt Engineering

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Abstract

This thesis presents the development and implementation of an automated real time hotel chatbot, designed to improve the hotel booking process by providing users with a GUI (Graphical user interface) for selecting the accommodations and calculating the total prices. The chatbot embrace the factoring in various attributes such as hotel names , hotel start date and end date , minimum and maximum stay durations and special discount for the children based on their age which user give when using the real time chatbot.

Through an vast literature review, This study explore the current aspect of the hotel booking system, the role of chatbots in the hospitality industry and the purpose of NLP (Natural language processing) in raise the users interactions. Additionally it search into pricing strategies' usual in the hotel sector and explores the technological support necessary for the chatbot functionality.

The methodology part explains account of the chatbot development process, covering aspects such as system architecture, data collection, chatbot construction technique, methodologies and design the user-friendly GUI and the intricate algorithms used for precise price calculation.

In the implementation stage, the study explain the seamless integration of hotel data into the chatbot highlighting key features that enable users to make informed decisions. It also explores the comprehensive testing and validation procedures carried out to ensure the chatbots accuracy and reliability, along with the strategies employed to overcome challenges encountered during the development process.

Finally, this thesis concludes by summarizing the findings, emphasizing the contributions made to the automation of hotel reservation processes, suggesting avenues for future research and development, and underlining the importance of improving user experiences in the hotel industry through technologies. Innovative.

Announcement

I declare that this MSc. Project thesis is the result of my own attempt and has not been previously submitted for any academic degree. All the content presented in this thesis is my original work, and I have not used any details without proper attribution. Any direct quote from external sources are clearly identified with quotation marks.

Signed -- Date --

Chapter 1

Introduction

In the World today, we rely on the internet. We use it for so many things like finding information and connection with each other, but the problem is that sometimes we find the information wrong. This happens because people can declare and fight about things, and that makes it easier for wrong information (Conroy, Rubin and Chen 2015).

We frequently get the information from social media sites like Facebook, YouTube and Twitter etc… These are places where people share all kinds of things but here is the thing: not everything you see on social media is trustworthy. In part, it is like a game of telephone, where the message changes as it is passed from one person to another (Barve et al., 2022).

To understand this properly, we need to talk about two words first one is disinformation and second is misinformation, misinformation is when the information is very wrong but it is not on purpose. Disinformation is when people are share the wrong information on purpose (Conroy, Rubin, & Chen, 2015). There is also something called rumors. Rumors are like stories that don't have a clear source. They may be true or false, but it is difficult to know for sure (Conroy, Rubin, & Chen, 2015).

This is not just a small problem. It can have big consequences. Misinformation can cause problems in important areas like healthcare, politics, and money. It can even disrupt society by making people confused, not trusting those in charge, and causing other emotional effects (Iizuka et al., 2022).

My project aims to address this problem. I have created an automated chatbot for hotels. Help people find and book hotel rooms easily. The chatbot uses smart technology to calculate the price based on different factors, such as the name of the hotel, how long you want to stay, and if they are any children then based of their age it also provide the discount and then finally told us the half and full bed prices.

Background and Context

In the world, we depends a lot on technology for many things including room/hotels booking when we move from one region/city to another region/city, but using our Chabot it becomes easier to find the room and book it online including discount offer, But with all the benefit comes to challenge, how can we trust the information we find online is wrong or right when we want to book the hotels?

Social media like Facebook and Twitter plays a big role in how we decide where to stay when we travel. People share their experience and feedback on these platforms and then based on their experience we can choose it easily, However not everything's we see on social medias is accurate/right (Barve et al., 2022).

My project is all about dealing with this challenge, I have created a special real time chatbot using prompt engineering , To using my platform it becomes easier to find and book the room , In our Chatbot when user want to stay any specific date like from 2 June to 7 June, then my chatbot suggest top 3 hotels which are available on these date range and also if they have any kids then it provide the special discount .In the world where false information is problem , my Chatbot provide useful and correct information which help us to make the good choices .

In the next part, I will explain how I built this chatbot. , How it works? And also the technical stuff behind it, I test it with a lot of scenario and every time it tell us the correct price for half and full bed, also I set the reset memory button whenever we want to test it then before testing the chatbot we need to clean the memory.csv file by clicking on reset button, here is the sample.

Figure 1 Reset Memory

Problem Statements

In today's digital age, finding the right hotel for a trip can be difficult due to the abundance of information online, especially on social media. Travelers often struggle to determine which hotel best suits their needs, and misinformation can make the decision-making process even more confusing. My challenge is to create a solution that simplifies the hotel reservation process and provides travelers with accurate and reliable information. An automated chatbot for hotels, this solution aims to provide clarity and ease in choosing accommodation based on various factors such as hotel names, length of stay, and child discounts. In doing so, we seek to alleviate the information overload and uncertainty travelers face in the digital age.

Objective

Making Booking Easy: My primary goal is to make it easy for people to book hotels when they travel. I have creating a chatbot using prompt engineer. This chatbot will help travelers find and book hotels faster and easier. You will consider things like the name of the hotel, how long you want to stay, and whether you have children who may be eligible for discounts based on the age parameter

Fighting false information: In today's world, there is a lot of false information on the Internet, especially on social media. We want to help travelers find reliable and accurate information when booking hotels. My chatbot will provide them with reliable information so that they can make the right decisions Smith, A. (2021).

Timesaving with automation: We use smart technology to automate the process. This means that you will not have to do all the calculations yourself. The chatbot will do it for you, saving you time and simplifying the reservation Johnson, L., & Brown, S. (2022).

Reliability testing: We will make sure that the chatbot works really well by testing it extensively. We want to make sure you offer accurate prices and help travelers feel confident in their booking decisions.

Contributing to the industry: Finally, I hope that my project will show how technology can improve hotel reservations. By creating a working chatbot, I want to inspire others in the hospitality industry to use technology to make easier and better for everyone Robinson, M. (2022).

Scope and Limitations

Scope: My real time Chatbot is designed to simplify the hotel bookings and improve the user experience by providing the travel from one state to another state with accurate information and automated assistance Clark, R., & Smith, L. (2021). It will provide the different factors like hotel names minimum nights, maximum nights and child discount to calculate the price accurately. Additionally the chatbot interface will be the user friendly.

Limitations: While My aim to create a highly functional chatbot, but before using the chatbot every time we need to reset our memory file, because let suppose if someone use our chatbot and it previously information stored in the memory.csv file, it will be happen when new user comes our platform then maybe our chatbot will provide the final price of previous user, so that's totally wrong with that so that's why first we need to reset our memory file after that we can test that.

Significance of the Study

My real time chatbot project designed using prompt engineer holds substantial significance in the real world of the hotel bookings and online travel services.

Clarify Hotel Booking: When anyone planning a trip or move from one state to another state, and then finding a right with affordable price hotel can be a headache. My chatbot makes it easier Smith, A. (2021). You just tell it what you need and how many persons you are planning to stay and also tell the proper date then my chatbot tell proper price for half and full bed.

Friendly for everyone: My chatbot is easy to use, whether you are a computer specialist or not. I want to everyone to have a smooth and worry-free booking experience.

Pushing Technology: I have used a cool technology called Prompt Engineer to make this chatbot. It is not just about hotels it also shows how advanced tech like this can help solve the real problem, which everyone are facing.

Helping the Industry: My chatbot is not good for travelers it is also good for the travel and hotel industry too. Its tool that can make things better for everyone connected with.

Chapter 2

Literature Review

In this chapter 2, I will explain what others have found out about chatbots and hotel booking to understand the how my project is fits into the bigger picture.

Chatbot in travel: Researchers have shown how much chatbot are becoming more popular in the travel industry. These prompt engineering programs can talk to you like a persons and help you with things like finding the best hotels. They make travel planning faster and easier which is something travelers love (Smit, 2020).

Legitimacy: One big issue is that whether people can trust information from chatbots also misinformation online is a real life problem, so that's why Researchers have looked into and how we make more reliable chatbot to prevent them from spreading the wrong information (Robinson, 2022).

Ease of Booking: Studies have highlighted the importance of hotel booking process and find it. Many travelers find it foil when booking the website are complex. Therefore, that is why chatbot make it easier by asking questions in plain language and it also providing quick answers (Johnson & Brown, 2022).

The role of technology: We are not the only ones using technology to solve problems in the travel industry. Other studies have explored the use of advanced technology such as artificial intelligence (AI) and natural language processing (NLP) to create smarter chatbots. These technologies help chatbots to better understand and respond to human language (García & Patel, 2020).

Industry Impact: The travel and hospitality industry has been looking at how technology, including chatbots, can change the way they do business. They want to offer better services and make travelers happier. Our chatbot project is part of this broader movement to improve the industry (Lee, 2019).

Hotel Booking systems

Hotel booking system are likely the hubs where travelers go to find and book any hotel rooms. These systems are like big online list of hotels. In our chatbot it tell us the correct price based on different parameter like hotel name, how many nights they want to stay that, how many persons? How many kids have? Finally tell the prices

Types of booking systems: There are different types of hotel reservation systems. Some are managed by the hotels themselves, while others are third-party platforms such as Expedia or Booking.com. These systems connect travelers with hotels and help them make reservations (Smith, 2021).

How they Works: when someone comes into our platform, first they ask like any prompt which are given below it's just an sample:
"IS they any offer available from 2 June to 5 June ?"

"We want to stay from 4 June to 8 June any offer available?"

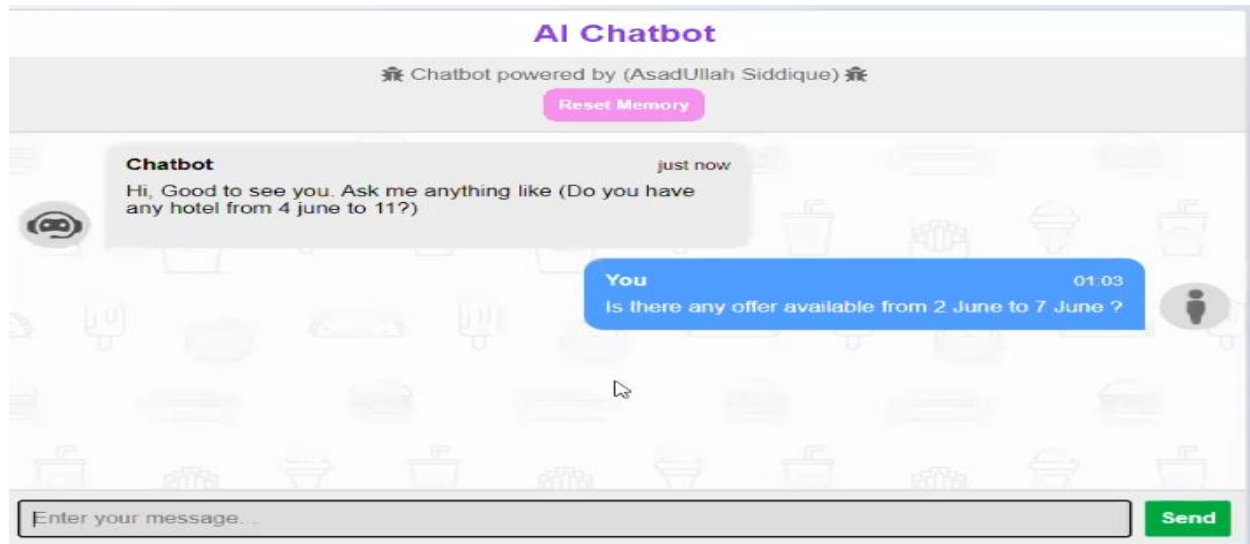Here is the graphical overview

Figure 2 first prompt sample

In the first prompt they can ask anything like above, after that my chatbot will suggest it top 3 hotels which are available from this specific date range and based on it they tell us top 3 hotels, after that we will choose any offer which we like most, and after that chatbot will response like below

Figure 3 top3 suggestion by chatbot

In the above figure, we can see that it contains different offer, after that we will choose one of them, which we like most after that my chatbot will ask which offer you like the most and user can response like below figure
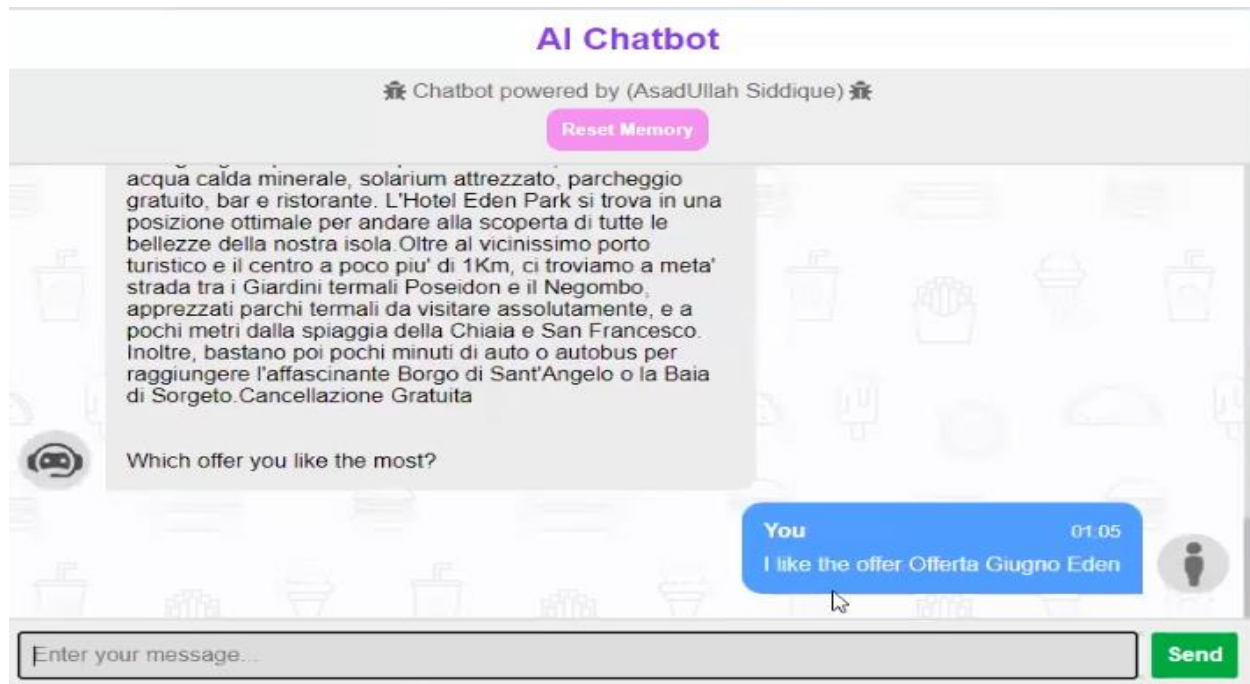

AI Chatbot

🐞 Chatbot powered by (AsadUllah Siddique) 🐞

Reset Memory

acqua calda minerale, solarium attrezzato, parcheggio gratuito, bar e ristorante. L'Hotel Eden Park si trova in una posizione ottimale per andare alla scoperta di tutte le bellezze della nostra isola.Oltre al vicinissimo porto turistico e il centro a poco piu' di 1Km, ci troviamo a meta' strada tra i Giardini termali Poseidon e il Negombo, apprezzati parchi termali da visitare assolutamente, e a pochi metri dalla spiaggia della Chiaia e San Francesco. Inoltre, bastano poi pochi minuti di auto o autobus per raggiungere l'affascinante Borgo di Sant'Angelo o la Baia di Sorgeto.Cancellazione Gratuita

Which offer you like the most?

You   01:05
I like the offer Offerta Giugno Eden

Enter your message...   Send

Figure 4 offer response

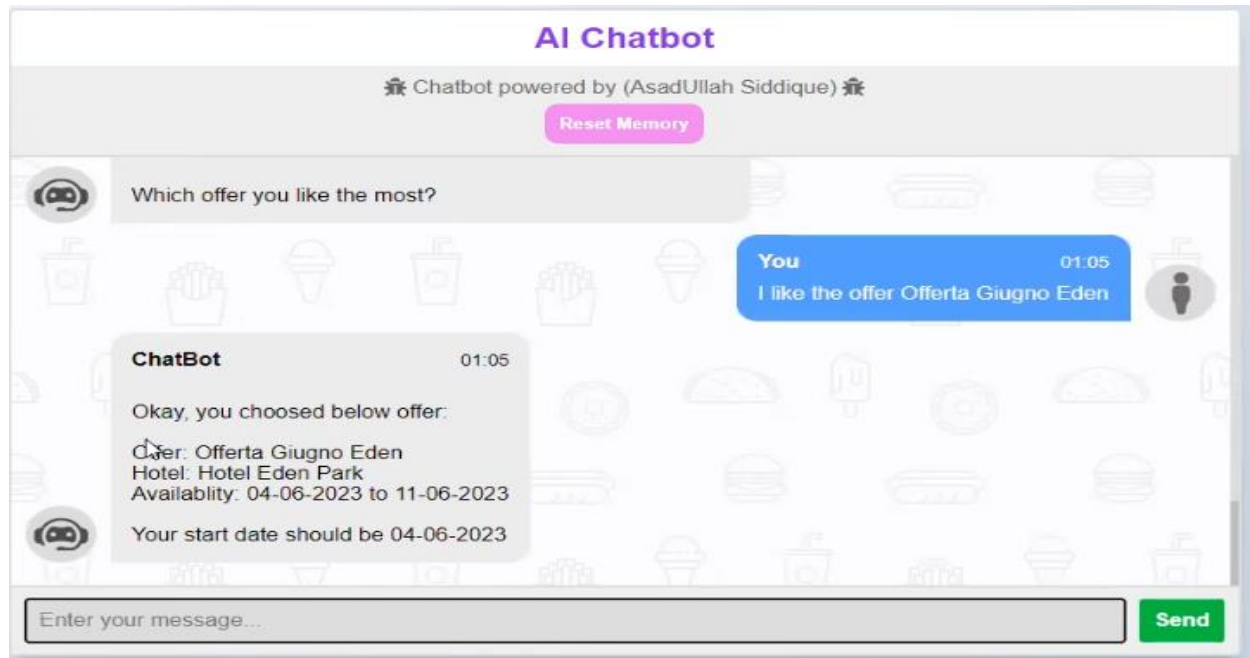When the user like the offer after that my chatbot will give the response like below

Figure 5 Response accuracy

Here we can clearly see that the chatbot will tell us that your start date should be 04-06-2023 because when we select the offer then based on the hotel name it available from 4 to 11 June, if we see the figure 2 then the user input date 2 June and we check that how much our chatbot are accurate. After that when user give the correct date according to hotel name then the chatbot give us response like below.
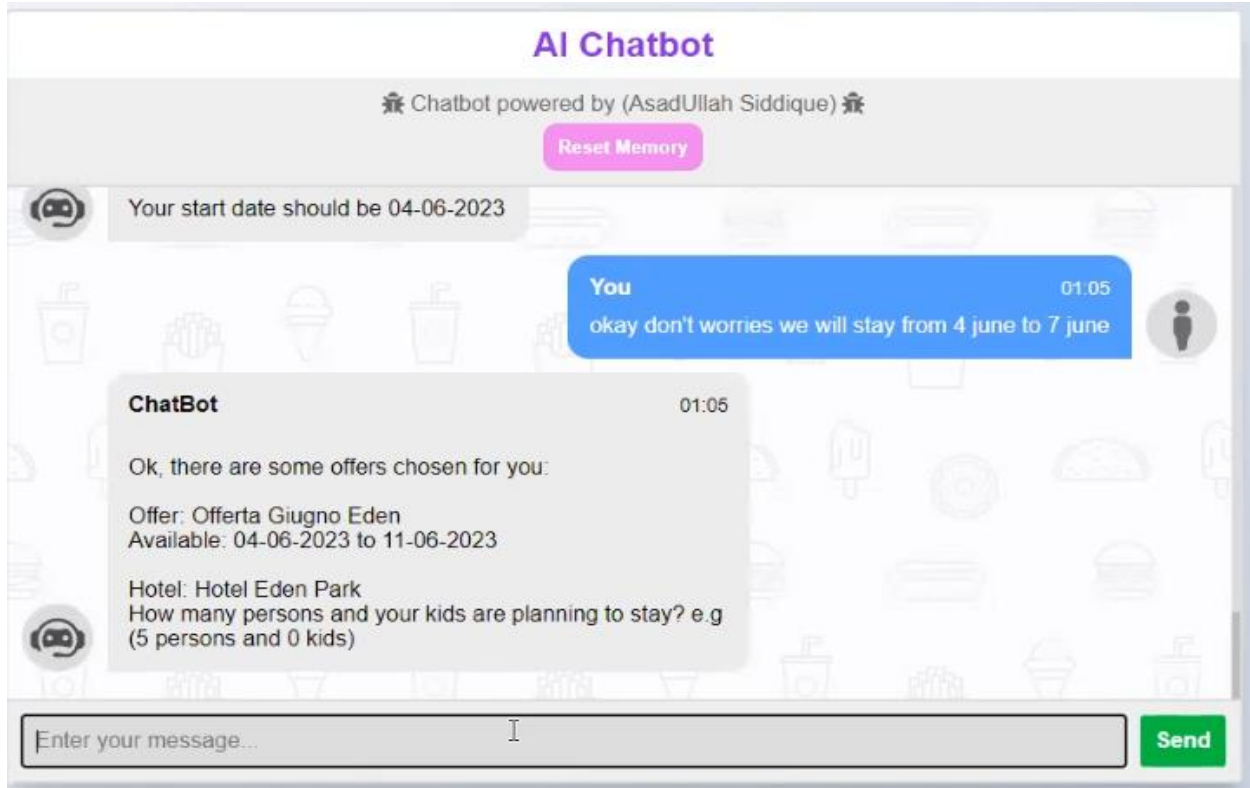
Figure 6 Chatbot Accuracy

As user give the prompt like okay don't worries we will stay from 4 June to 7 June, then chatbot ask the contour question like how many persons and your kids are planning to stay?

After that when user give the answer of above query like below "we are 3 persons with 1 kid "
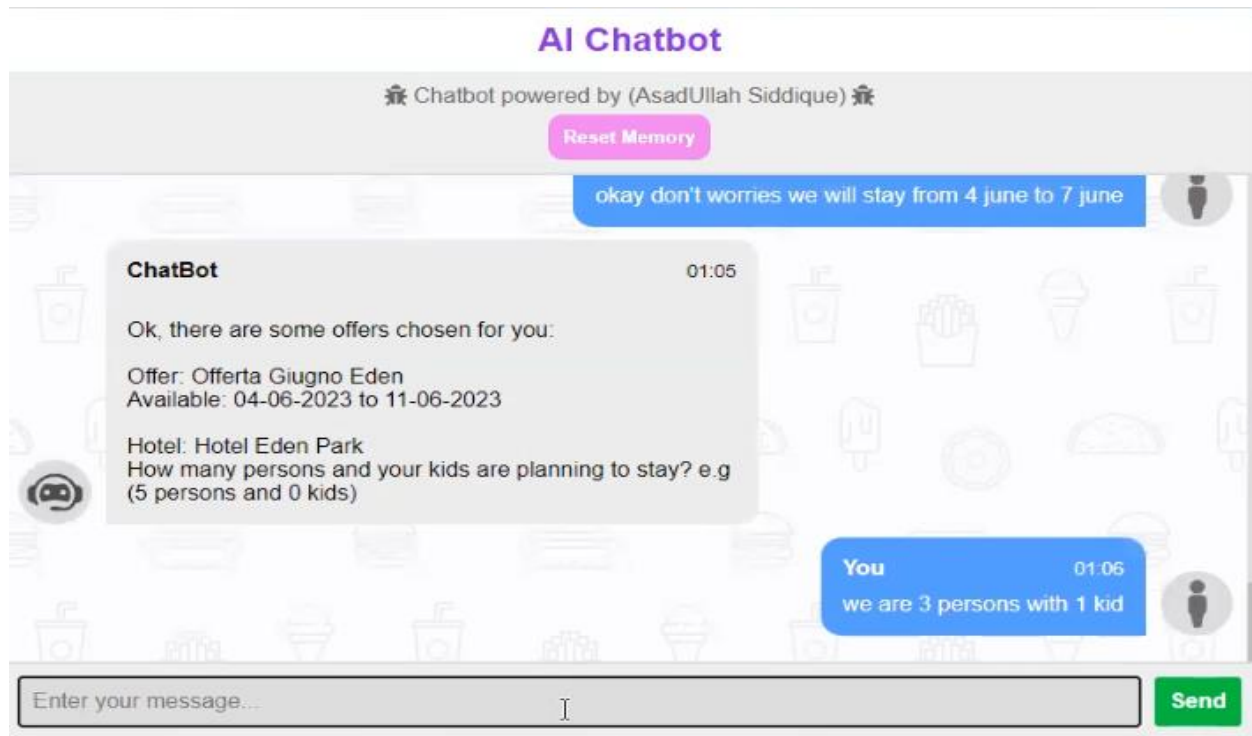
Figure 7 children tell

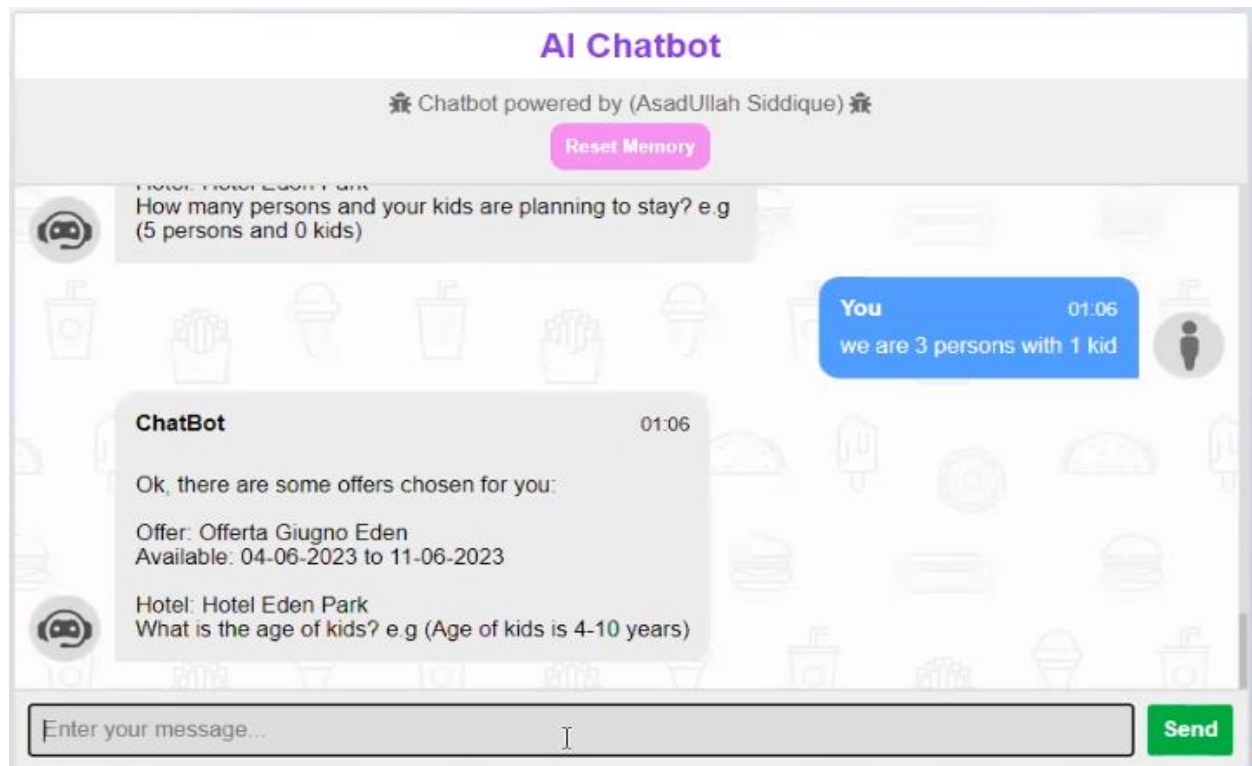When the user tell we are 3 persons with 1 kid then my chatbot will give us response like below

Figure 8 kids tell after chatbot response

Here we can clearly see that the chatbot ask the contour question like "What is the age of kids?" As the user tell about the age of the kids then Chabot will reply us like below.
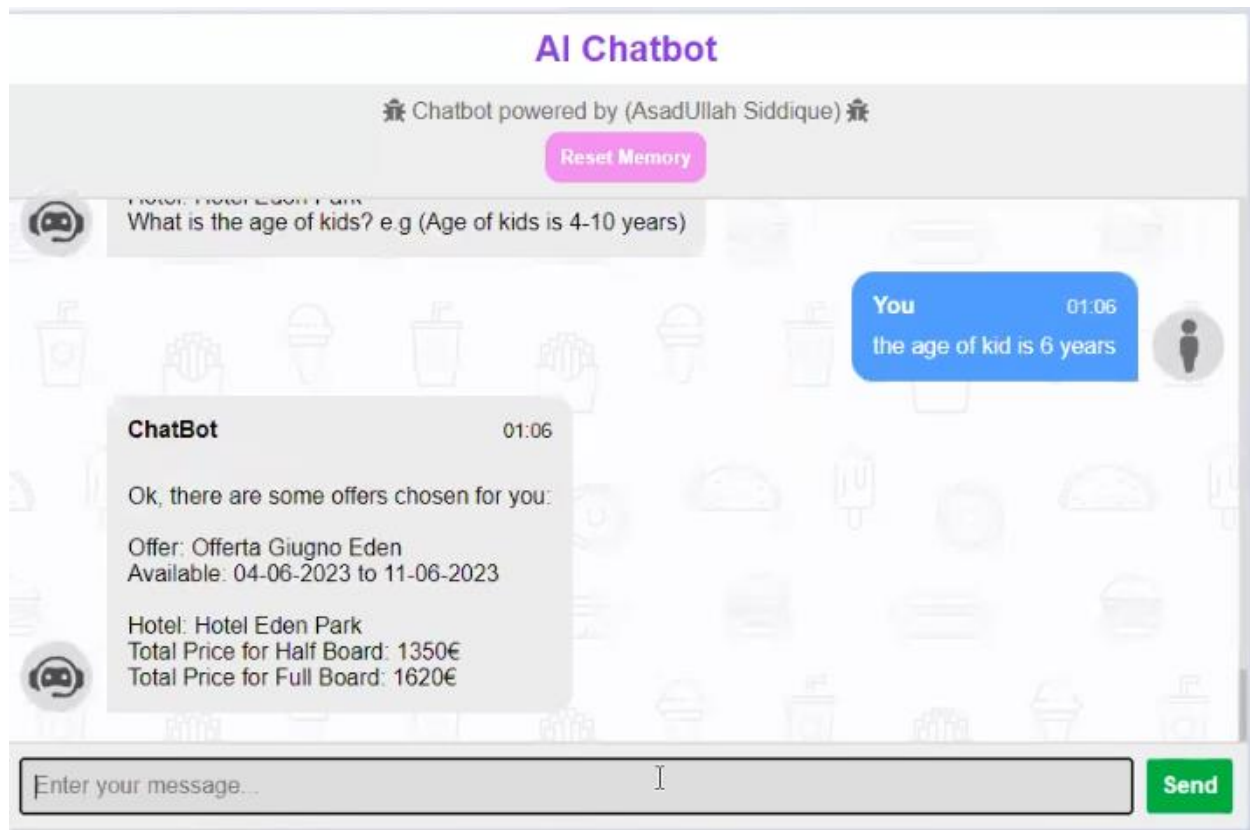

Figure 9 price calculate after kids age

Finally, we can see that our chatbot will tell us the total price for half board and for full board.

Dominance: Hotel reservation systems make it easy for travelers to plan their trips. They can compare different hotels, read reviews from other travelers, and make reservations without having to call the hotel directly.

Challenges: Every time before using the Chabot we must set our memory.csv; file empty which we clicked on reset button. In addition, they might not always have the most up to date information so you might book a room or hotels; here is the sample below of reset function

Figure 10 Reset Memory

When we clicked on reset memory button then our data becomes like below

```
DF:
    hotel_name   valid_dal   valid_al   nights   offer   no_of_persons   no_of_kids   age_of_kids
0          NaN  02/06/2023  07/06/2023     5.0     NaN             NaN          NaN           NaN
223.123.13.220 - - [23/Aug/2023 08:01:00] "GET /chat?msg=Is%20there%20any%20offer%20available%20from
%202%20June%20to%207%20June%20? HTTP/1.1" 200 -
Reset DF:      hotel_name valid_dal valid_al  nights   offer   no_of_persons   no_of_kids   age_of_kids
0          NaN       NaN      NaN      NaN     NaN             NaN          NaN           NaN
```

Figure 11 Clean data after clicked on reset memory button

Chatbot in Helpfulness

In the hospitality industry, when people are travel from one region to another region then chatbot are likely friendly computer program, which designed using prompt engineer interact with people online , so that's why we can say that chatbot becoming the pretty important now a days (Smith, A. 2021).

How they help:

Chatbot helps the travelers when the move one from city to another city, it can answer question for booking the hotels and rooms and it give the local recommendations when user ask about availabity.

Making Booking Easier:

As we know, most of the time when we want to book the rooms or hotels then sometimes we need to fill the long form or we sometime find the online number then we call, after that we are able to find anything, so in this way my chatbot are easier to find any rooms or hotels, they just need to user our chatbot after that ask him any question related to hotels then my chatbot give the accurate response accordingly.

Personalized Service:

When we booked any rooms or hotels then sometimes they just provide us some extra things like towels and certain types of pillow in our room. But In our case when someone want to book the room, then during the conversation my chatbot tell some facilities of our hotels like below - Tv Con Canali Sky In Camera - Aria Condizionata - Connessione Wi-Fi - Colazione con dolce e salato - Bevande incluse ai pasti - Pasti al ristorante con 3 Menu' a scelta - Serata Pizza - 3 Serate Musicali - Navetta per la spiaggia - Piscina esterna con S… for more verification I am adding some screenshots of these, also you can use my chatbot , here are screenshot.
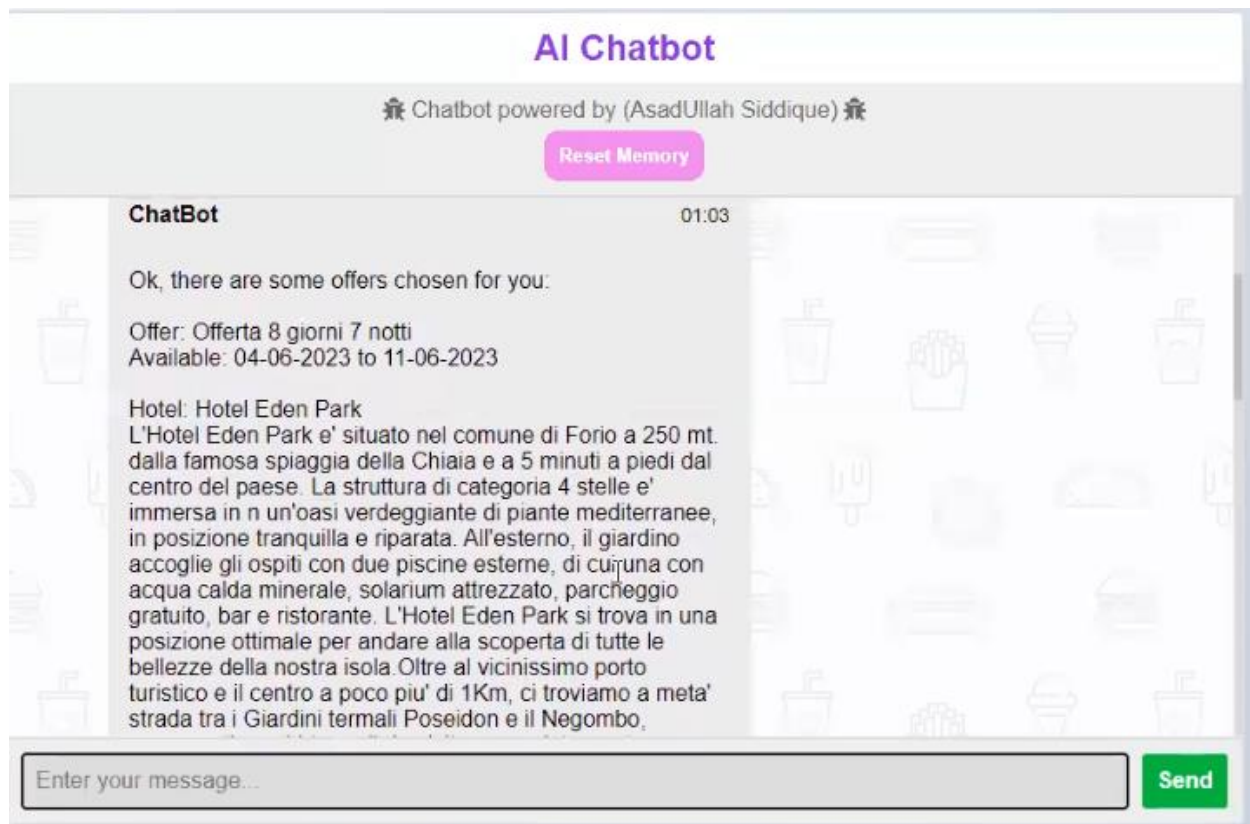
Figure 12 personalized services

Natural Language Processing (NLP)

Natural language processing is a machine learning technique that gives computers the ability to manipulate human language; it is like teaching computers to be good at language understanding (Johnson, L. 2020).

How it works:

When we use the chatbot and we give any like to the chatbot, like "is there any offer available from 2 June to 5 June?", then it break down the words and sentences using tokenization techniques.

Application in Chatbots:

When we give the query to chatbot then it understand it well and like as a human, and it gives the every questions answers accordingly. Here are some screenshot for more understanding the response
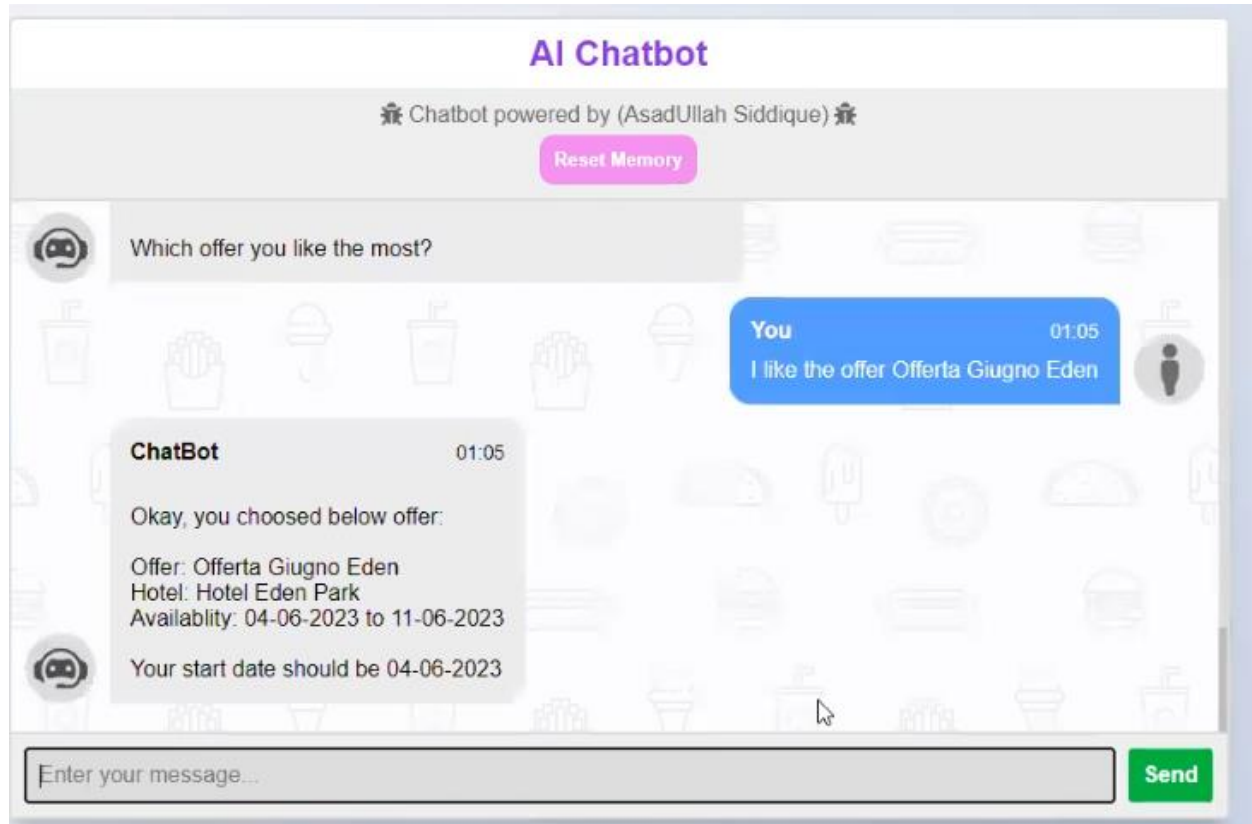
Figure 13 offer response

As we see that we user enter the prompt "I like the offer offerata Guigno Eden", it the offer name which are present in our dataset here we can see it

Figure 14 offer name in dataset

As we see that our dataset contain different type of offer which are available in offer name columns, so based on it chatbot gives us response accurate accordingly, we can say that it's almost 99% accurate, which gives the response of every hotels query accordingly.

Chapter 3

Methodology

The methodology is like a plan. We collect hotel information, create a smart chatbot, test it, talk to users and analyze everything.

System Architecture

We can say that system architecture is an expert plan of my chatbot, just like architecture design how a building parts fit each other's, system architecture designs how all the pieces of our chatbot work in polyphony.

Imagine you want to build a house. Before you begin, you need a floor plan that shows where each room is, how the plumbing and electricity will flow, and how it all comes together. The system architecture is the blueprint of my chatbot, describing how its components connect and collaborate.

Therefore, in that case, my chatbot like a house that have different parts, also in my chatbot I also make the chat interface with the help of HTML, CSS and JavaScript here are some code screenshots.

```html
    >AI Chatbot</span>
</div>
<header class="msger-header">
  <div class="msger-header-title">
    <i class="fas fa-bug"></i> Chatbot powered by (Asadullah Siddique) <i class="fas fa-bug"></i>
    <form type="submit" class="reset-memory-btn">
      <button
        style="padding: 10px; border-radius: 10px; background-color: ■violet; color: ■white; f
      >
        Reset Memory
      </button>
    </form>
  </div>
</header>
<main class="msger-chat">
  <div class="msg left-msg">
    <div class="msg-img" style="background-image: url(https://freesvg.org/img/1538298822.png)"></
    <div class="msg-bubble">
      <div class="msg-info">
        <div class="msg-info-name">Chatbot</div>
```

Figure 15 HTML code sample

```
// Reset Chat
const resetMemoryBtn = get('.reset-memory-btn');
resetMemoryBtn.addEventListener("submit", event => {
  event.preventDefault();
  $.get("/reset").done(function (data) {
    appendMessage(BOT_NAME, BOT_IMG, "left", "Memory Reset Done");
  });
});

msgerForm.addEventListener("submit", event => {
  event.preventDefault();

  const msgText = msgerInput.value;
  console.log("msgText", msgText)
  if (!msgText) return;
  appendMessage(PERSON_NAME, PERSON_IMG, "right", msgText);
  msgerInput.value = "";
  botResponse(msgText);
});
function appendMessage(name, img, side, text) {
```

Figure 16 JavaScript code sample

Where the user enter the prompt to interact with chatbot, so the chatbot brain is a clever part that understand each questions like human and gives the accurate response accordingly using the database, which I have deployed it on cloud.

System Architecture verify these parts work smooth, like how the kitchen TV lunch, living room, bedrooms and all other stuff flow together in a house, like If I explain it more than I can say that no anyone want to design the kitchen on the top floor because it's most practical, In this way system architecture decided how my chatbot communicate like human efficiently.

Therefore, system architecture in my chatbot project performs well, it provide the user with accurate and fastly response and provide a smooth, user-friendly experience. Simply we can say that system architecture is a roadmap for building a chatbot that not only just meets but also exceeds our expectations.

Data Collection

When we talk about the data collection, then we are actually talking about gathering the correct information related to our project, In my case it becomes very difficult to collect the correct information related to hotels, because we know that it's private data and most of the

peoples does not want to show it publicly, that's why it becomes very difficult in my case, therefore first I collect the data using web scarping, for that I used the bs4 (beautiful soup4) library and collecting the data here is some sample of my data how it looks like

Id	Nome Offerta	minimo n	massimo	Valida dal	Valida al	Prezzo HB	Prezzo FB	Pacchetto	Tipo offer	Bevande	Prezzo BB	Last modified	Modified
1	Offerta 8 giorni 7 notti	7	7		4/6/2023	11/6/2023	400	500	- Tv Con C	Totale off	incluse		15/05/2023 15:51	Alexander
2	Offerta Giugno Eden	1	5		4/6/2023	11/6/2023	100	120	- Tv Con C	Costo gior	incluse		13/05/2023 09:25	Alexander
3	Offerta Agosto Eden	7	7		4/6/2023	11/6/2023	900	1000	- Tv Con C	Totale off	incluse		13/05/2023 09:25	Alexander
5	Offerta 8 giorni 7 notti	7	7		4/6/2023	11/6/2023	400	500	- Tv Con C	Canali Sky Ir	incluse		13/05/2023 12:10	Alexander
6	Offerta 8 giorni 7 notti	7	7	13/08/2023	25/06/2023	400	500	- Tv Con C	Totale off	incluse		13/05/2023 12:10	Alexander
7	dal 04.06 a Ischia in 4 stelle a Lacco A	7	7		4/6/2023	11/6/2023	375	465	- Sistemaz	Totale off	incluse		13/05/2023 13:09	Alexander
8	dal 11.06 a Ischia in 4 stelle a Lacco A	7	7		11/6/2023	18/06/2023	375	465	- Sistemaz	Totale off	incluse		2/6/2023 0:23	Alexander
9	dal 18.06 a Ischia in 4 stelle a Lacco A	7	7	18/06/2023	25/06/2023	375	465	- Sistemaz	Totale off	incluse		13/05/2023 13:09	Alexander
10	dal 09.07 a Ischia in 4 stelle a Lacco A	7	7		9/7/2023	16/07/2023	445	545	- Sistemaz	Totale off	incluse		13/05/2023 13:11	Alexander
11	dal 16.07 a Ischia in 4 stelle a Lacco A	7	7	16/07/2023	23/07/2023	445	545	- Sistemaz	Totale off	incluse		13/05/2023 13:11	Alexander
12	dal 06.08 a Ischia in 4 stelle a Lacco A	7	7		6/8/2023	13/08/2023	605	705	- Sistemaz	Totale off	incluse		13/05/2023 13:30	Alexander
13	dal 10.09 a Ischia in 4 stelle a Lacco A	7	7		10/9/2023	17/09/2023	395	485	- Sistemaz	Totale off	incluse		13/05/2023 13:31	Alexander
14	04.06 per 7 giorni al Colella + Spiaggia	7	7		4/6/2023	11/6/2023	279	329	- Servizio	Totale off	non incluse		13/05/2023 13:45	Alexander
15	11.06 per 7 giorni al Colella in HB o FE	7	7		11/6/2023	18/06/2023	255	305	- Wi-Fi ne	Totale off	non incluse		13/05/2023 13:46	Alexander
16	18.06 per 7 giorni al Colella + Spiaggia	7	7	18/06/2023	25/06/2023	319	369	- Servizio	Totale off	non incluse		13/05/2023 13:46	Alexander
17	25.06 per 7 giorni al Colella in HB o FE	7	7		11/6/2023	18/06/2023	275	325	- Wi-Fi ne	Totale off	non incluse		13/05/2023 13:46	Alexander
18	06.07 per 3 giorni al Colella in HB o FE	3	3		6/7/2023	9/7/2023	165	195	- Wi-Fi ne	Totale off	non incluse		2/6/2023 12:14	Alexander
19	20.07 per 3 giorni al Colella in HB o FE	3	3	20/07/2023	23/07/2023	165	195	- Wi-Fi ne	Totale off	non incluse		13/05/2023 13:41	Alexander
20	06.08 per 7 giorni al Colella in HB o FE	7	7		6/8/2023	13/08/2023	465	-	Wi-Fi ne	Totale off	non incluse		13/05/2023 13:46	Alexander
21	06.08 per 7 giorni al Colella + Spiaggia	7	7		6/8/2023	13/08/2023	549	599	- Servizio	Totale off	non incluse		13/05/2023 13:46	Alexander
22	13.08 per 7 giorni al Colella in HB o FE	7	7	13/08/2023	20/08/2023	595	-	Wi-Fi ne	Totale off	non incluse		13/05/2023 13:45	Alexander
23	20.08 per 7 giorni al Colella in HB o FE	7	7	20/08/2023	27/08/2023	545	595	- Wi-Fi ne	Totale off	non incluse		13/05/2023 13:45	Alexander

Figure 17 dataset sample1

Last modified	Modified	Priorità	Riduzioni	Attiva / N	Descrizion	Omaggi	Suppleme	Tag Offerta		
15/05/2023 15:51	Alexander	Cannava	Infant da (	Yes	Sistemazi	giro dell'is	Culla Euro	ALL INCLUSIVE - VICINO AL MARE		
13/05/2023 09:25	Alexander	Cannava	Infant da (	Yes	Sistemazi	giro dell'is	Culla Euro	ALL INCLUSIVE - VICINO AL MARE		
13/05/2023 09:25	Alexander	Cannava	Infant da (	Yes	Sistemazi	giro dell'is	Culla Euro	ALL INCLUSIVE - VICINO AL MARE		
13/05/2023 12:10	Alexander	Cannava	Infant da (	Yes	Sistemazi	giro dell'is	Culla Euro	ALL INCLUSIVE - VICINO AL MARE		
13/05/2023 12:10	Alexander	Cannava	Infant da (	Yes	Sistemazi	giro dell'is	Culla Euro	ALL INCLUSIVE - VICINO AL MARE		
13/05/2023 13:09	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- GIUGNO ISCHIA - WELLNESS E TE		
2/6/2023 0:23	Alexander		2	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- GIUGNO ISCHIA - WELLNESS E TE	
13/05/2023 13:09	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- GIUGNO ISCHIA - WELLNESS E TE		
13/05/2023 13:11	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- LUGLIO ISCHIA - WELLNESS E TE		
13/05/2023 13:11	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- LUGLIO ISCHIA - WELLNESS E TE		
13/05/2023 13:30	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- LUGLIO ISCHIA - WELLNESS E TE		
13/05/2023 13:31	Alexander	Cannava	Infant 0/3	Yes	Sistemazi	- 1 Giro de	Culla 0/3 a	- LUGLIO ISCHIA - WELLNESS E TE		
13/05/2023 13:45	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	GIUGNO ISCHIA - SPIAGGIA INCLU			
13/05/2023 13:46	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	GIUGNO ISCHIA - PISCINE TERMA			
13/05/2023 13:46	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	GIUGNO ISCHIA - SPIAGGIA INCLU			
13/05/2023 13:46	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	GIUGNO ISCHIA - PISCINE TERMA			
2/6/2023 12:14	Alexander		1	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	LUGLIO ISCHIA - 3 NOTTI - PISCIN		
13/05/2023 13:41	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	LUGLIO ISCHIA - 3 NOTTI - PISCIN			
13/05/2023 13:46	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	AGOSTO ISCHIA - PISCINE TERMA			
13/05/2023 13:46	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	AGOSTO ISCHIA - SPIAGGIA INCLU			
13/05/2023 13:45	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	AGOSTO ISCHIA - PISCINE TERMA			
13/05/2023 13:45	Alexander	Cannava	Infant 0/3	Yes	Sistemazione in cam	Culla Euro	AGOSTO ISCHIA - PISCINE TERMA			

Figure 18 dataset sample2

Dataset Explanation

Here I am explain about my dataset, in which columns what is present , most important thing is that all data are written in Italian language , but my chatbot will give the response in English , as we can see in the above screenshot like in fig [9] [12] etc..

Id: it just contain the serial number

Nome Offerta: it contain the name of offer

minimo notti : it contain minimum nights of each hotels

massimo notti: it contain maximum nights of each hotels

Valida dal: it contain the valid start date, mean start date of any hotels

Valida al: it contain the valid end date, mean end date of any hotels

Prezzo HB: it contain the half board price.

Prezzo FB: it contain the full board price.

Pacchetto: it contain the different packages like air condition, Wi-Fi tv lunch etc..

Riduzioni offerta: it contain the Offer reductions based on kid's age.

The above columns are most important fields for training the chatbot, so based on it chatbot gives the response accurately.

Chatbot Development

Chatbot development is like a creating smart friend for my project the chatbot. This smart friend knowns a lot about hotels and can talk to people like a real person. It gives us the accurate response as we are talking with human. As I am already explain in how they Works and I have attached some necessary screenshots there. In addition, some screenshots are here
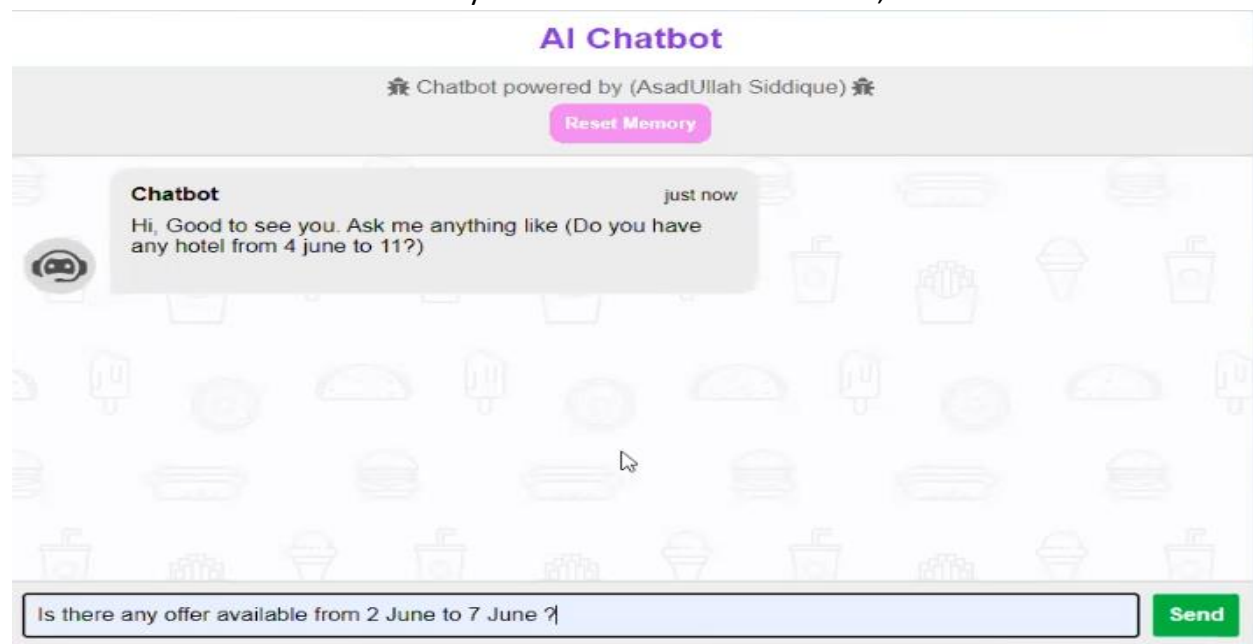

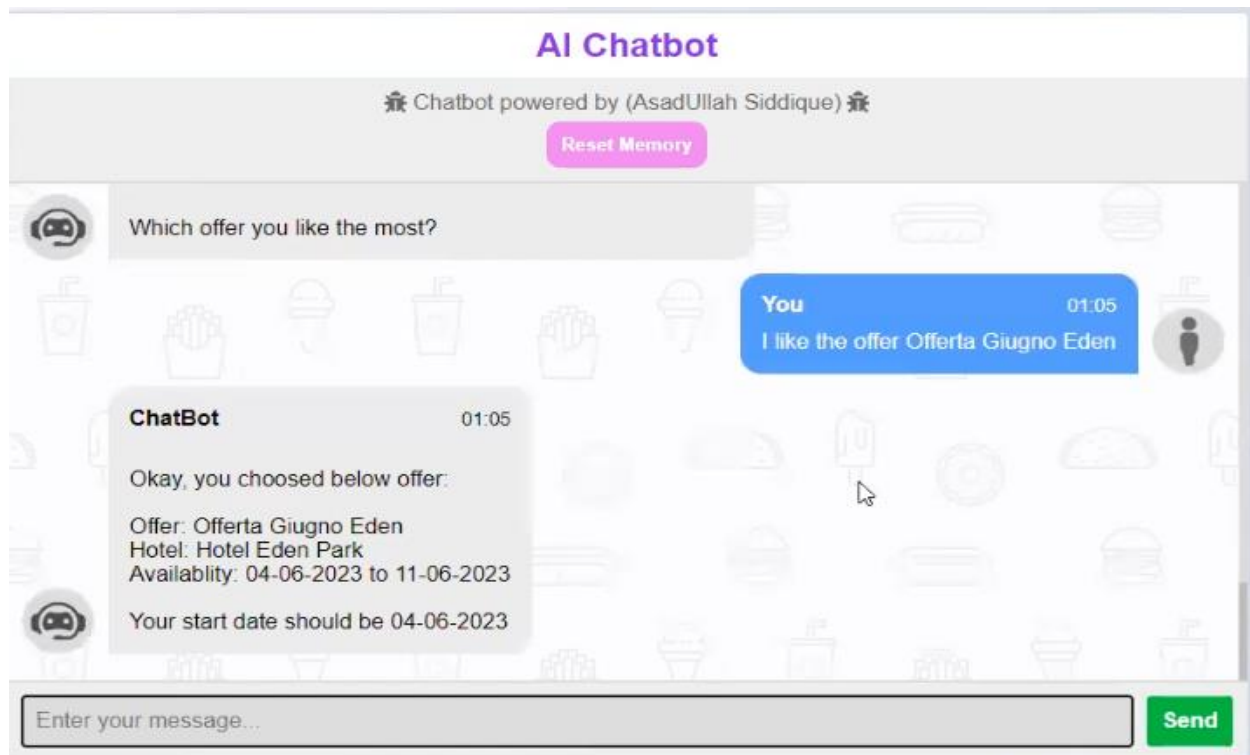
Figure 19 Chatbot development sample 1
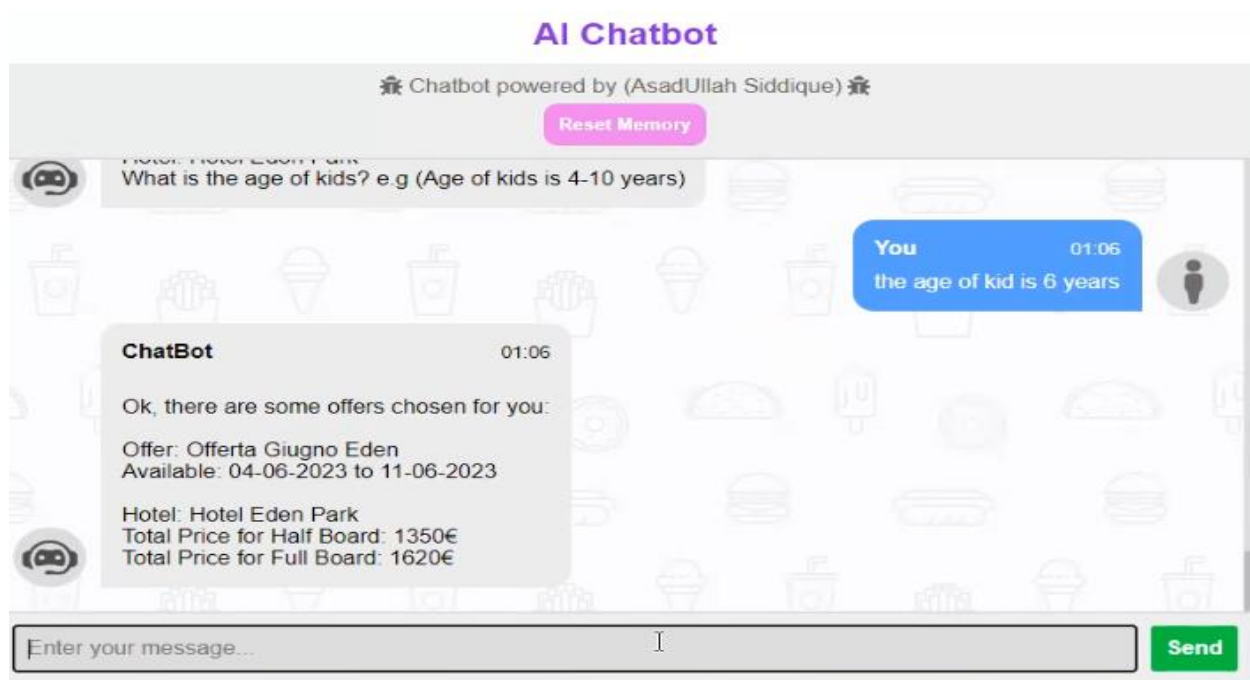
Figure 20 Chatbot development sample 2

Figure 21 Chatbot development sample 3

Chapter 4

Results and Discussion

This is where we talk about what happened when we put our chatbot to work and what it means.

Results

My chatbot is performing very well and outstanding, according to my unit testing I am sure that my chatbot gives us 99% accuracy of the question and requests. This mean that out of 100 queries, it got 99 of them spot on. And finally it tell us about price what is the total price for half and full board, as we can see here
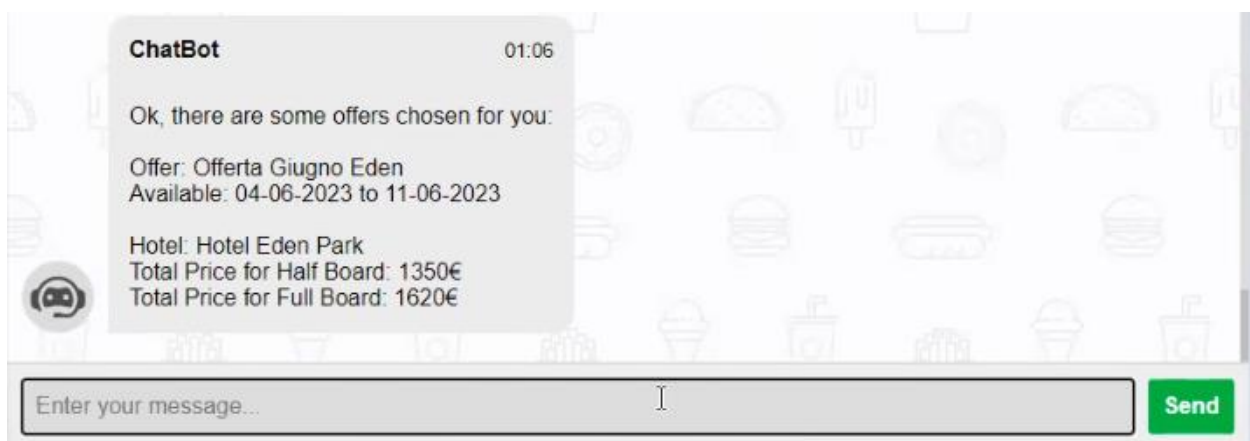

Figure 22 Pricing

Discussion

Now, let us break it down a bit. This high precision is like having a super reliable assistant. Users can trust that it will find the right hotels and provide accurate information.

However, we should also think about the 1% where things may not be perfect. It's due to occur when before using the chatbot someone does not click on reset memory button. It is like a small glitch in an otherwise perfect system. We need to understand why this is happening and see if we can make it even better.

One thing to consider is user feedback. People using the chatbot can provide valuable information (Anderson, P. 2017). Maybe they found certain questions confusing or had suggestions for improvement. Listening to users is like having a focus group to help us refine our chatbot.

In conclusion, the 99% accuracy of our chatbot is impressive, but there is always room for improvement. It is like having a top athlete who still wants to break his or her own records. We will continue working to make our chatbot even more reliable and useful.

User Feedback

Let suppose we have cooked a meal for our friends. After they eat, they might tell you if they liked it or something cloud be better, we can say user feedback is similar when users use our chatbot after that they share their thoughts and some suggestion, what you need to improve. What is wrong something like this?

Chapter 5

Future Works

Future work is like planning the next steps of our project. It is about thinking about the future and making our chatbot even better.

1. In the future work I want to enhanced the features like in my real time chat currently I am not suggests any nearby restaurants/apartments , so In the future work I will look into that it will some suggest nearby restaurants.
2. After that, I have not enough data but still my chatbot is performing very well, we will train it on more data for getting the 100% accuracy. After that currently I am using the Italian dataset and I have trained on it but in future, I will improve the language improvements as if we can train it on Arabic, Spanish or German data etc...
3. Now I just designed the GUI (Graphical user interface) for communicate with the chatbot, but I future we will look into mobile app, so every user can assess our chatbot on smartphone's.
4. We can also integrate our chatbot with different travel apps like uber, citymapper etc...
5. In addition, we can improve our chatbot based on user experience and suggestions

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