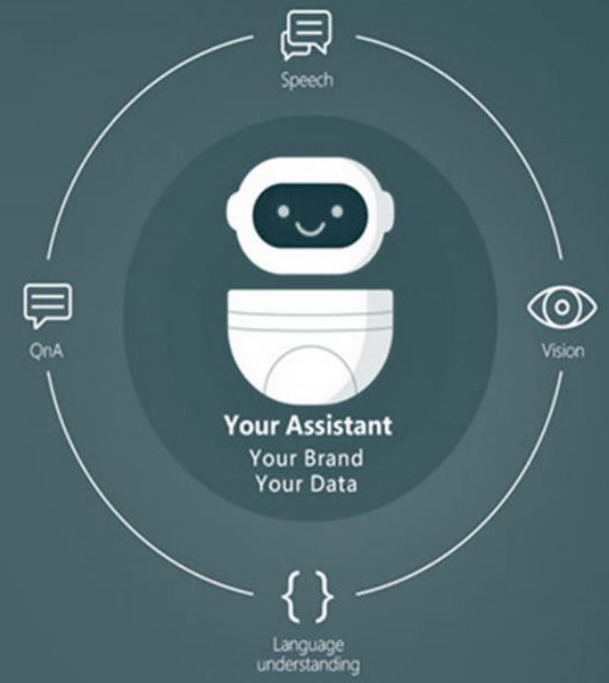
Create a Chatbot in Python

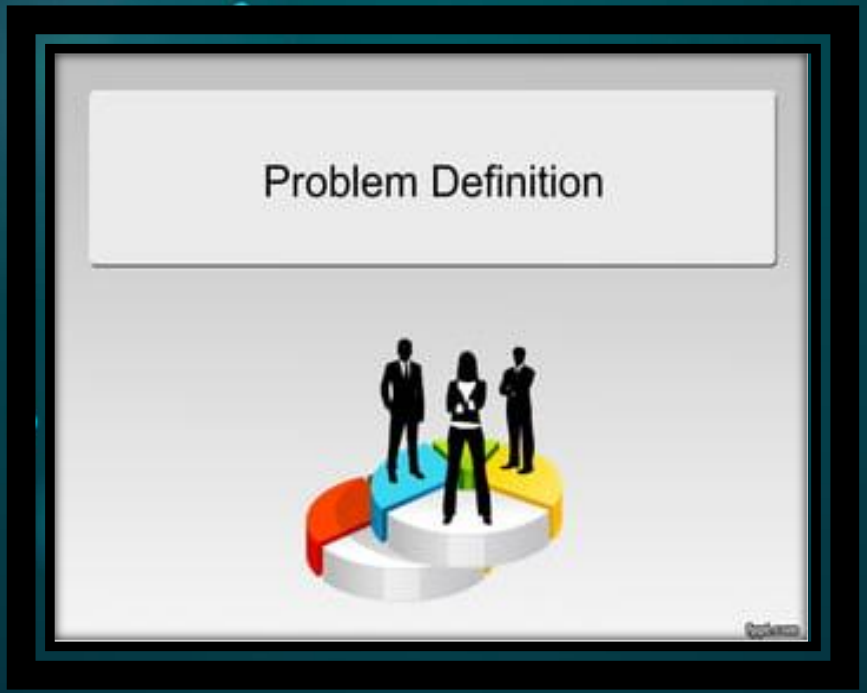
Phase 1: **Problem Definition and Design Thinking**

Build a ChatBot Using Python



OBJECTIVE :

The challenge is to create a chatbot in Python that provides exceptional customer service, answering user queries on a website or application. The objective is to deliver high-quality support to users, ensuring a positive user experience and customer satisfaction



The problem is to build an AI-powered diabetes prediction system that uses machine learning algorithms to analyze medical data and predict the likelihood of an individual developing diabetes. The system aims to provide early risk assessment and personalized preventive measures, allowing individuals to take proactive actions to manage their health.

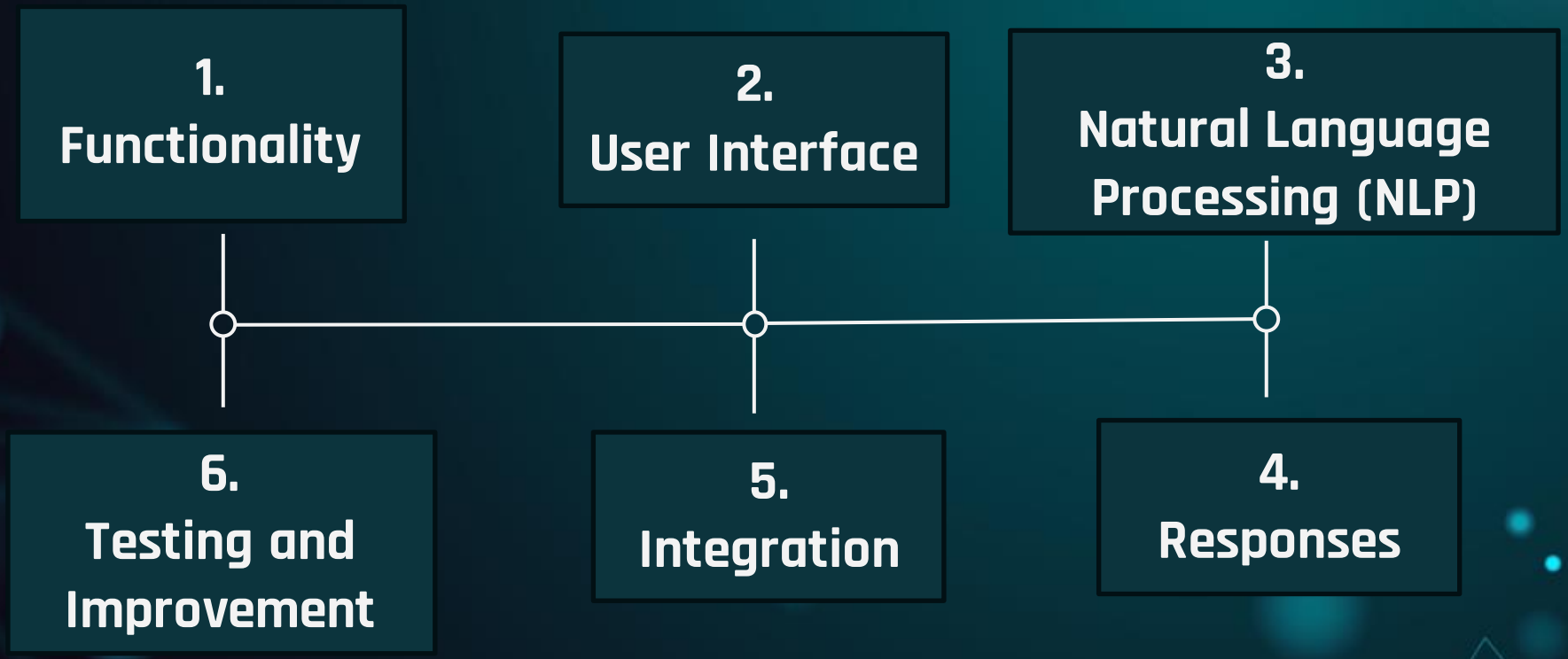
DATA SOURCE :

Dataset Link: https://www.kaggle.com/datasets/grafstor/simple-dialogs-for-chatbot

DIALOGS DATASET :

	hi, how are you doing?	i'm fine. how about yourself?
0	i'm fine. how about yourself?	i'm pretty good. thanks for asking.
1	i'm pretty good. thanks for asking.	no problem. so how have you been?
2	no problem. so how have you been?	i've been great. what about you?
3	i've been great. what about you?	i've been good. i'm in school right now.
4	i've been good. i'm in school right now.	what school do you go to?
...	...	...
3719	that's a good question. maybe it's not old age.	are you right-handed?
3720	are you right-handed?	yes. all my life.
3721	yes. all my life.	you're wearing out your right hand. stop using...
3722	you're wearing out your right hand. stop using...	but i do all my writing with my right hand.
3723	but i do all my writing with my right hand.	start typing instead. that way your left hand ...

DESIGN THINKING



1 . FUNCTIONALITY : Define the scope of the chatbot's abilities,including answering common questions,providing guidance,and directing users to appropriate resources.

This chatbot possesses a broad scope of abilities, encompassing the provision of answers to common queries, offering guidance on diverse subjects, and adeptly steering users towards pertinent resources. It excels at information retrieval, problem-solving, and facilitating user interactions, making it a versatile and valuable tool for addressing a wide array of inquiries and assisting users effectively.

2 . USER INTERFACE: Determine where the chatbot will be integrated(website,app)and design a user-friendly interface or interactions.

The chatbot will be integrated into websites and mobile apps to ensure accessibility across platforms. Its user-friendly interface will include a chat window with a welcoming greeting and easy-to-understand prompts. It will employ natural language understanding to engage users in fluid conversations, providing concise responses, interactive buttons for guidance, and contextual suggestions for resources. This design aims to enhance user satisfaction and efficiency in obtaining assistance.

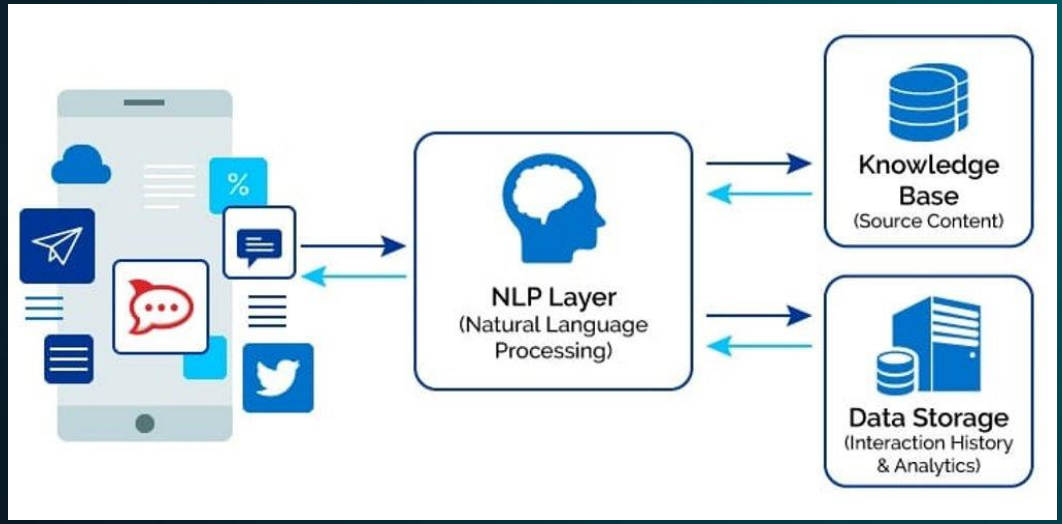
3.NATURAL LANGUAGE PROCESSING (NLP):Implement NLP techniques to understand and process user input in a conversational manner

In Natural Language Processing (NLP), advanced algorithms are applied to analyze and comprehend user input within conversational contexts. NLP techniques enable machines to interpret language, discern intent, and extract relevant information from text or speech. This empowers chatbots, virtual assistants, and sentiment analysis systems to engage with users in a natural, human-like manner, making it possible to automate tasks like language translation, text summarization, and more, thus enhancing the efficiency and effectiveness of human-computer interactions.

NATURAL LANGUAGE PROCESSING (NLP)

- Natural Language Processing (NLP) is integral to chatbot design thinking, aligning technology with user-centric principles. NLP empowers chatbots to understand and generate human language, fostering natural and intuitive interactions. It encompasses various techniques, including text analysis, sentiment detection, and intent recognition.

- In chatbot design thinking, NLP is a transformative force. It enables chatbots to comprehend user queries, identify their intentions, and extract relevant information from text or speech. This proficiency in linguistic understanding creates conversational interfaces that mirror human interaction, enhancing user engagement and satisfaction.

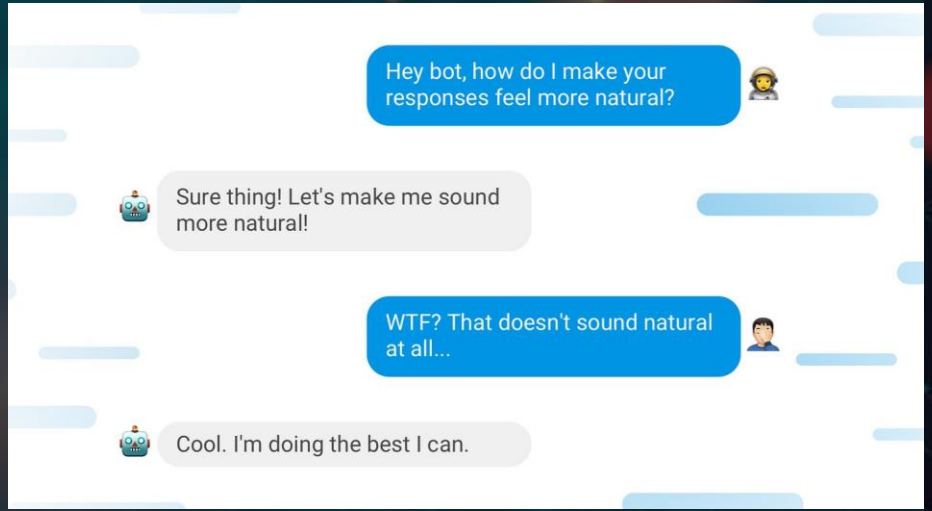


Moreover, NLP allows chatbots to adapt responses to individual user preferences, providing personalized solutions and making interactions more meaningful. By leveraging NLP, chatbots can offer efficient customer support, streamline information retrieval, and automate tasks, aligning with the core tenets of design thinking—empathy, user-centeredness, and iterative problem-solving. NLP-driven chatbots become not just tools but empathetic conversational partners in the design thinking process, enabling innovative and user-friendly solutions.

4.Response: Plan responses that the chatbot will offer, such as accurate answers, suggestions, and assistance.

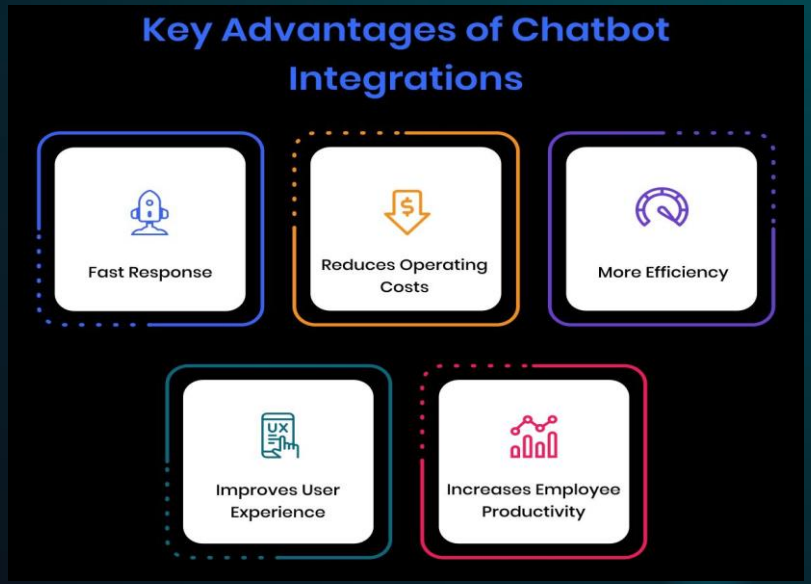
A bot response is a message your bot sends to the user. In ChatBot, you can choose from 6 types of bot responses:

1. Text
2. Random Text
3. Image
4. Gallery (Carousel)
5. Button
6. Quick Reply



5.Integration: Decide how the chatbot will be integrated with the website or app.

Chatbot integration means you are connecting the chatbot with various platforms. It's an entire process to deploy the chatbot with various social platforms and applications. You can integrate the chatbot with different platforms, such as websites, Apps, WhatsApp, Viber, Telegram, WordPress, Magento, Messenger, and more to interact with visitors.



6.Testing And Improvement: Continuously test and refine the chatbot's performance based on user interactions.

Testing strategies are required to improve the underlying machine learning (ML) models of chatbots – whether it be in Dialogflow, Watson, or any other natural language processing (NLP) technology engine. The consideration to use a content testing strategy is particularly useful when the responsibility of training and content writing for chatbots sits outside of the technology team – where the content team might not be able to develop advanced machine learning models and/or complex automation testing scripts to support their day-to-day content optimisation activities.

The testing strategies that will be discussed include:

1. Re-substitution
2. Bootstrapping
3. Hold-out
4. Random Sampling
5. K-fold cross-validation
6. LOOCV

8 Ways to Improve Chatbots

1. Put an Escalation Path in Place

2. Keep Feeding Chatbots With New Information

3. Make Chatbots More Empathetic

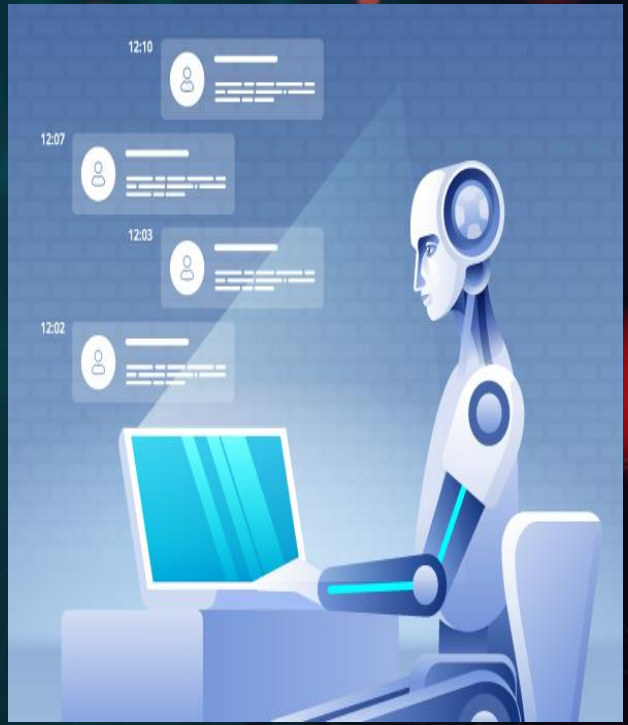
4. Use Them to Collect Information in the Initial Part of Conversations

5. Use Natural Language Processing (NLP) to Make Chatbots Seem Friendlier

6. Use Interaction Analytics to Make Chatbots More Conversational

7. Leverage Data

8. Understand Their Limitations



CONCLUSION :

- Building a chatbot in Python requires a good understanding of natural language processing and machine learning. By following the steps outlined in this presentation, you can create your own chatbot that can interact with users in a natural and intuitive way. Remember to choose a relevant dataset, preprocess it properly, and train your chatbot using the appropriate machine learning algorithm.