

# **Mini Project Report on**

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## **AI-BASED CHATBOT**

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**Submitted in partial fulfillment of the requirement for the award of the degree of**

**BACHELOR OF TECHNOLOGY  
IN  
COMPUTER SCIENCE & ENGINEERING**

**Submitted by: ANIKET**

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Dehradun, Uttarakhand  
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## CERTIFICATE



Certified that ANIKET(2017462) has developed a mini project on “**ARTIFICIAL INTELLIGENCE BASED CHATBOT**” for the CSE 4th Semester Mini Project Lab in Graphic Era Deemed to be University, Dehradun. The project carried out by students is their work to the best of my knowledge.

ANIKET  
(2017462)

## **ACKNOWLEDGMENT**

Hereby I'm submitting the project report on **AI BASED CHATBOT DEVELOPMENT**, as per the scheme of Graphic Era University, Dehradun.

In this connection, I would like to express my deep sense of gratitude to our beloved institution Graphic Era University and also like to express our sincere gratitude and indebtedness to **Prof. (Dr). Kamal Ghansala**, founder of GEU, Dehradun.

I would like to thank particularly **Mr. VIKAS TOMAR** sir my mentor for his patience, support, and encouragement throughout the completion of this project and for having faith in me

Finally, I would like to thank all the faculty members of the Department of Computer Science and Application, friends, and my parents for their constant encouragement, support, and help throughout the project's conduction.

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## Introduction

Technology plays a massive role in the industry and daily chores. It serves a variety of purposes and is applied in different ways in different parts of the world. Recently, the public has been fantasizing about Artificial Intelligence. Artificial Intelligence simulates the cognitive abilities of a human. To be more precise and closely related to humans, AI Chatbots are now replacing human responses with this software. A Chatbot is a computerized program that acts as a colloquist between the human and the bot, a virtual assistant that has become exceptionally popular in recent years mainly due to dramatic improvements in the areas like artificial intelligence, machine learning, and other underlying technologies such as neural networks and natural language processing. These chatbots effectively communicate with any human being using interactive queries. Recently, there's been a massive increase in many cloud-based

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chatting bot services which have been made available for the development and improvement of the chatbot sector[1] such as IBM Watson, Cleverbot, ELIZA chatbot, and many others. These conversational agents have become more responsive and the art of conversation between humans and robots over the past few years has improved drastically. In this paper, we have generalized the AI chatbots and described the general template for the same.

## **TOOLS USED:-**

### **LANGUAGE:**

- Python

### **LIBRARIES:**

- Numpy
- Pandas
- Seaborn

### **PLATFORM FOR DEVELOPMENT:**

- VS CODE

### **FRAMEWORK:**

- RASA FRAMEWORK
  - DJANGO FRAMEWORK

## **TYPES OF CHATBOT:**

- **Rule-based chatbots are also referred to as decision-tree bots.** As the name suggests, they use a series of defined rules. These rules are the basis for the types of problems the chatbot is familiar with and can deliver solutions for.
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Like a flowchart, **rule-based chatbots map out conversations**. They do this in anticipation of what a customer might ask, and how the chatbot should respond.

**Rule-based chatbots can use very simple or complicated rules.** They can't, however, answer any questions outside of the defined rules. These chatbots do not learn through interactions. Also, they only perform and work with the scenarios you train them for.

- **Artificial intelligence chatbots are chatbots trained to have human-like conversations using a process known as natural language processing (NLP).** With NLP, the AI chatbot is able to interpret human language as it is written, which enables them to operate more or less on their own.

In other words, [AI chatbot software](#) can understand language outside of pre-programmed commands and provide a response based on existing data. This allows site visitors to lead the conversation, voicing their intent in their own words.

What's more, AI chatbots are constantly learning from their conversations — so, over time, they can adapt their responses to different patterns and new situations. This means they can be applied to a wide range of uses, such as analyzing a customer's feelings or making predictions about what a site visitor is looking for on your website.

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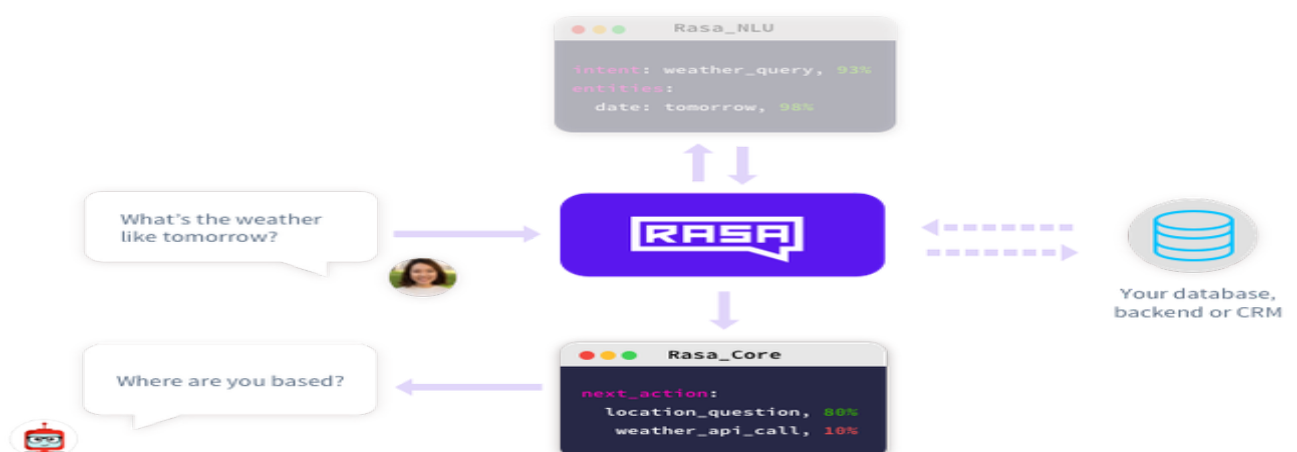
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## Technology and approach:

**RASA FRAMEWORK:-** Rasa is a tool to build custom AI chatbots using Python and natural language understanding (NLU). Rasa provides a framework for developing AI chatbots that uses natural language understanding (NLU). It also allows the user to train the model and add custom actions. Chatbots built using Rasa deployed on multiple platforms like FB messenger, Microsoft bot slack, etc.

### Rasa has two main components:

- Rasa NLU (Natural Language Understanding): Rasa NLU is an open-source natural language processing tool for intent classification (decides what the user is asking), extraction of the entity from the bot in the form of structured data and helps the chatbot understand what user is saying.
- Rasa Core: a chatbot framework with machine learning-based dialogue management which takes the structured input from the NLU and predicts the next best action using a probabilistic model like LSTM neural network rather than if/else statement. Underneath the hood, it also uses reinforcement learning to improve the prediction of the next best action.



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## DJANGO FRAMEWORK:-

Django is a Python-based web framework that allows you to quickly create efficient web applications. It is also called batteries included framework because Django provides built-in features for everything including Django Admin Interface, default database – SQLite3, etc. When you're building a website, you always need a similar set of components: a way to handle user authentication (signing up, signing in, signing out), a management panel for your website, forms, a way to upload files, etc. Django gives you ready-made components to use and that too for rapid development.

### Why Django Framework?

- Excellent documentation and high scalability.
- Used by Top MNCs and Companies, such as Instagram, Disqus, Spotify, Youtube, Bitbucket, Dropbox, etc. and the list is never-ending.
- Easiest Framework to learn, rapid development, and Batteries fully included.
- The last but not least reason to learn Django is Python, Python has a huge library and features such as Web Scrapping, Machine Learning, Image Processing, Scientific Computing, etc. One can integrate it all with web applications and do lots and lots of advanced stuff





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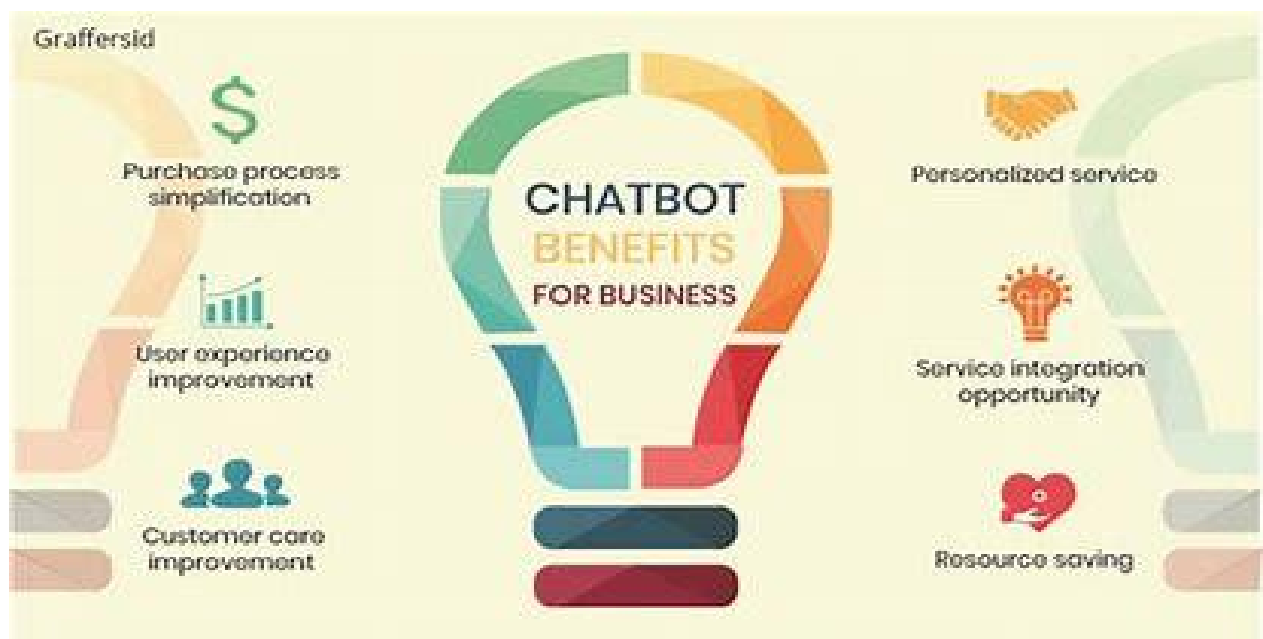
## Benefits to companies

### 1. Faster internal processes

Chatbots can be used to improve internal communication and processes within the company. Chatbots could be used in the onboarding process, for example, where the new employee asks the chatbot and gets an answer immediately, rather than having to contact various departments.

### 2. Cost savings

Companies' need for growing the customer service department can be managed by rolling out increasingly capable bots that can handle more and more complex queries.



### 3. Increased sales

Business leaders claim that sales chatbots have increased their companies' sales by 67%, on average. There are a couple of reasons for that

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#### **4. Reaching new customers**

B2B and B2Bot platforms such as WeChat or Facebook Messenger are some of the most popular messaging apps. Being continuously active on these platforms helps companies reach new customers who may otherwise not want to reach out to the company with an email or call.

#### **5. Gaining a deeper understanding of customers**

Your customers could rarely get the chance to directly talk to your business. Chatbots provide your business with detailed, actionable records of your customers' greatest pain points, helping your company improve its products and services. The chance of selling can be proportional to the data provided by the consumer. And chatbots can improve the rate of customer data.

#### **7. Scalability**

An operator can concentrate on one customer at a time and answer one question. However, a chatbot can answer thousands of questions simultaneously. Thanks to the speed of the cloud, internet, and advanced software mechanisms, the scalability of chatbots allow them to address numerous inquiries with minimal hassle.

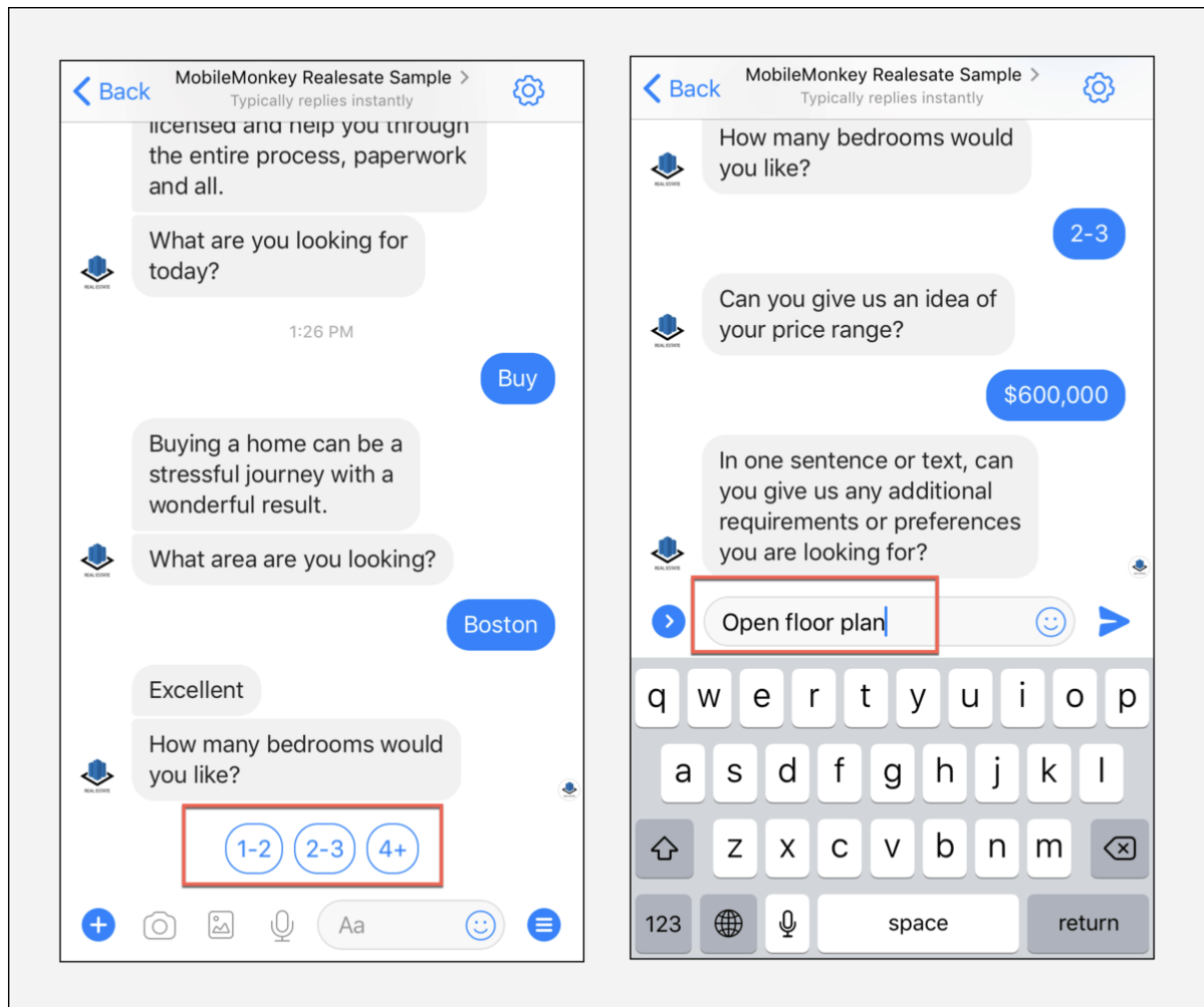
#### **8. Consistent answers**

Talking to different customer service representatives of even the same entity could result in discrepancies and inconsistencies in answers. That could have many reasons. The agent the customer talks to might be new at their job and might not have had the best onboarding session. Or they could just be having a tough day at work and cannot give all their attention to the customer, thus providing a different answer than the one the customer was expecting.

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## RESULT AND DISCUSSION



When testing the last prototype we got findings suggesting that the participants did not have a problem with getting information from a chatbot instead of a human. The information that they got was not seen as less trustworthy, this could be supported by the fact that the chatbot provided a source for the information it gave. It has been interesting to investigate how the participants interacted with the chatbot and how they reported on it afterward. Our findings have some indicators leading towards that a chatbot could be a good alternative for acting as a helpful friend for freshmen at a new school. Still, we have to stress the fact that the chatbot was not very intelligent and that the evaluators had to adjust their language to match the chatbot.

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## REFERENCES

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- [\(74\) What are Chatbots, Types and Implementation | A Beginners Guide – YouTube](#)
- <https://www.youtube.com/playlist?list=PLtFHvora00y8NBwCMoNnPqii-y2-gyI5p>
- [Zero to Bot: Create a simple curator chatbot using API.AI — A Guide for Non-Programmers](#)

# Thank you