Literature Review Based on Various Approaches to Rasa Chatbot

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Abstract— This paper provides how AI is used in RASA Chatbot and how it understands the natural language processing. The demands for the online services like Chatbot getting higher respectively. Nowadays the use of Chatbot is increasing rapidly.

Index Terms— Chatbot, Artificial Intelligence (AI), NLP (Natural language Processing), RNN (Recurrent Neural Network), Stress, NLG (Natural Language Understanding), NLU (Natural Language Understanding).

I. INTRODUCTION

1.1. RASA

RASA is a tool to build the AI chatbots. Chatbots are systems that simulate human conversation. simple rule-based chatbots, solution that the bot provides, all the way to A chatbot is a AI based software which manually interact with humans in their Natural language.

1.2. AI (ARTIFICIAL INTELLIGENCE)

AI is a software used in the different fields in the present world. In chatbot AI helps to interact with humans and also initially trains its own data. AI based chatbots understands the human's texts and voice to understand and learn from it.

1.3. AI IN CHATBOT

AI technology is growing rapidly. The usage of AI tools is also increasing to integrate in AI software. RASA chatbot in AI consists of RASA NLU and RASA CORE.

1.3.1 RASA NLU

RASA NLU consists of intent classification which decides what the user is asking. Entity understands structure data and help the chatbot to understand user queries.

1.3.2 RASA CORE

RASA CORE is a framework with ML based which takes the user input from RASA NLU and identifies the next action of the user. There are 3 types of chatbots used: Support, Skills and Assistant.

II. RELATED WORKS

[1] International Research Journal of Engineering and Technology- A Survey Paper on Chatbot.

This paper contains the Chatbots which are designed and developed to reply the users only in the positive manner. This paper aims at bringing the positive attitude among the adolescents in order to reduce their pressure and stress. So basically, the users can receive a positive response from this chatbot. In order to reduce stress among the teen agers this type of chatbot is been built. There are 2 different tasks which is the most commonly used step in chatbot they are: User request analysis is the first step that is performed by all the chatbots so here it first analyses the request sent by the user and it extract the appropriate entities and suppose if we fail to analyse the requests the user will not get correct response from the chatbot.

[2] Critical Literature Review on Chatbots in Education

This paper tells us about how chatbots are used in the field of education. There are specialized bots for education like ALICE (Artificial Linguistic Internet Chat Entity) which contains the data of tons of students and helps them in improving their curriculum. There are many advantages of chatbot in education they are: Customization in learning, Spaced Interval Learning, Assessment of composition skills, Teacher-Student Interaction, Chatbot Integrated Classrooms, Methods to improve online education, Improving Communication Skills.

[3] A Literature Review on Chatbots in Healthcare

Domain-Nivedita Bhirud, Subhash Tataale, Sayali Randive, Shubham Nahar

In this paper the authors have discussed the various ways in which chatbots can be used in solving the people's simple small case diseases which can be cured in the home itself. Already there are many chatbots which serves healthcare domain, but the problem here is they provide the solution only in the form of general FAQ's, i.e., they are not able to provide the user in the form of natural language just like a doctor can do. So here are some of the ways in which the chatbots can perform their jobs just like a doctor can do. So, this paper provides various NLU, NLG and ML techniques is been integrated in the chatbots. The chatbots which are built using NLU, NLG and ML techniques are known as Smart

chatbots.

[4] An Analytical Study and Review of open Source Chatbot framework, RASA-Rakesh Kumar Sharma, Manoj Joshi

This paper is a study of how RASA is implemented in performing the complex tasks in the day-to-day life. The author proves that rasa is not only used in answering the simple questions but also to perform various different activities like booking a moving ticket, fetching the result and integrating with an API's and so on. The studies made on this paper tells that Bocklisch, Now chatbots are having may applications in the filed of robotics and NLU and in the field of AI it acts as customer serving agents. As mentioned in the introduction RASA has two types rasa NLU and rasa core.

III. METHODOLOGY

Methodology is defined as the collection of different methods that are used to perform the desired goal. They give us the detailed explanation of the accuracy and AI techniques are used.

Eg:

In [1] The chatbots are trained to reply to the user in the positive manner so its been trained using the methods like building up an Android based mobile application using the RNN and NLP techniques and also libraries used are TensorFlow and Keras.

[2] Education chatbot such as SnatchBot is used. It does not require coding and work according to the user's purpose. The techniques and algorithms used are RNN, NLP, LDA (Latent Dirichlet Allocation) algorithm and AI markup language. Also, TML (Technology Mediated Language) and ITS (Intelligent tutoring system) is used.

[3] A smart chatbot is been developed This smart chatbot have been developed using the following components like chat interface, NLU Word segmentation, POS tagging, Dependency Parsing, Synonym and Pattern Recognition. These are the methods used in Smart chatbot which helps in healthcare domain.

[4] Here in order to integrate RASA with API's interface RASA NLU, RNN and DIET along with neural network method is used.

IV. COMPARATIVE STUDY

The below table compares the technologies used based on the related papers.

Table 1:

RELATED WORKS	TECHNOLOGIES USED
[1] SURVEY ON CHATBOT	Android mobile applications RNN, NLP TensorFlow, Keras
[2] EDUCATION	ALICE (Artificial Linguistic Internet Chat Entity) TML (Technology Mediated Learning) ITS (The Intelligent Tutoring System)
[3] HEALTHCARE DOMAIN	NLTK package Neural network algorithm Graph data structure ML (Machine Learning) NLU NLG
[4] OPEN SOURCE CHATBOT SYSTEMS	NLU RNN DIET (Dual Intent and Entity Transformer)

V. CONCLUSION

In conclusion it is considered that RASA chatbots can be used in various fields and it can be implemented using various technologies and techniques in order to solve the problems in the fields like education, Travelling and hospitality, Healthcare, Banking and finance, Media and Entertainment etc.

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[5] Practical Applications of Chatbots for Customer Service3 Practical Applications of Chatbots for Customer Service | by Deena Zaidi | Chatbots Magazine

[6] Smart Chatbot Implementation using RASA Smart Chatbot Implementation using RASA | TO THE NEW Blog

[7] Literature Review: Chatbots & Conversational Experiences

https://studio.carnegiemuseums.org/literature-review-chatbots
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[8] A Literature Survey of Recent Advances in Chatbots Guendalina Caldarini , Sardar Jaf and Kenneth McGarry file:///E:/information-13-00041-v2.pdf