

# Artificial Conversational Entity – A Survey

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**Abstract**— Chatbot is a computer program designed to simulate conversation with human users especially over the internet. The request of majority of the users is not being fulfilled on time due to the shortage of time or manpower. A Conversational Entity addresses all these issues and provides a better medium for conversation. Conversational Entity conducts a conversation via auditory and textual methods. It uses pre calculative user phrases to provide the response.

**Keywords:** Artificial Conversational Entity, Chatbot

## I. INTRODUCTION

Chatbot are being made to ease the pain that the industries are facing today. The purpose of Chatbot is to support and scale business deals in their relation with customers. It is designed in such a way that it will answer the queries in a way like human does. Natural Language Processing and Artificial Intelligence are used to create a chatbot. Chatbot are used to increase the productivity of the organization. Chatbot fuel conversations and enhance social experiences. The novelty of chatbot sparks curiosity. Simple chatbots work based on pre-written keywords that they understand. Smart chatbots rely on AI when they communicate with users. Chatbot personalize communication, improve responsive and automate repetitive task.

## II. RELATED WORK

NeelKumar et al, [1] they have used a AIML for the chatbot and program Eliza. It performs pattern matching and provides the response only if matched. The interface is effectively interactive. The time of response is minimal. It requires less memory and data hits are less.

Heru et al, [2] their chatbot is called as Dinus Intelligent Assistance. It uses knowledge base as a center for ML approach. Pattern extracted from kb is used to give responses. Kb is taken from universities Dian Nuswantaro. It contains questions and answers about admissions.

R Angeline et al, [3] more convenient and advanced supermarket experience is created for hassel free shopping. AI and IOT is used to increase efficiency. Data is collected by sensing activities. Aim is to have a store with zero human interaction and nominal one time investment.

Albert et al, [4] easy conversational system for tourists. It aims to respond to issue by applying hierarchical cluster analysis on a set of tourism sites. They use AGNES

algorithm. This provides optimal information to the tourists under limited vacancy time constraints.

Neha Godse et al, [5] chatbot specifically tailored for software firm employees. It process input using NLP. Decisions are made using IBM conversation API's. It remembers context of conversation and creation of ticket. Users will be able to have a 2-way textual conversation REST API's are also used.

Liala et al, [6] provides easier interaction between seller and customer. It has frequently asked questions knowledge base. Additional query expansion mechanism based on the implementation. Cosine similarity metric is used to measure similarity between query and question in faq.

Alessandro et al, [7] these chatbots rely on humans in the loop to operate. They exploit human intelligence, brought for instance by crowd workers or full time employees, to fulfil the gaps caused by limitations of fully automated solutions.

Dipesh et al, [8] used for asthma care. Knowledge unabled personal chatbot is designed. Android application with front end chat interface. It handles data collection, processing and dialogue management. Takes inputs from online partners.

Bhaumik et al, [9] it describes various data driven approaches depending on natural expressions implemented in python. It provides better platform, web connectivity is provided to evaluate chatbot on a web based platform which helps in analysing human chatbot interactions.

Hemkesh et al, [10] it is a robot receptionist designed to be deployed in university premises. Data was scraped from university website. Personality data was created from reddit data. Average response accuracy of 92% and BIEU score of 0.53.

Ly et al, [11] converts documents into the knowledge of chatbot systems. It extracts text using OCR. Generate questions via over generating transformation and ranking algorithm. String matching pattern is used to fetch the result.

Divya et al, [12] this system provides the knowledge about all the medicines and diseases. AI predicts disease based on symptoms. Gives composition of medicines also helps to get the proper treatment.

The following table gives us an idea about the various methodologies used by different authors in the field of chatbot.

REF NO.	#1	#2	#3	#4	#5
DISADVANTAGE	Less database hits and less success rates.	Accuracy is only 80%.	Lot of sensors needs to be installed in the super market and also maintenance is required.	Tough to collect all the regional information of all the countries accurately.	Cannot handle any attachments directly.
ADVANTAGE	Less time consuming and requires	Very less waiting time and very easy	No need of waiting in a queue in the super market for	Optimal results under limited vacancy time	Generates a relevant response which will help end

	less manpower and minimal response time.	access to information.	billing and it is hassle-free.	constraints of tourists.	user to solve the query.
RESULT/OUTCOME	Chatbot that answers queries related to admission .	Provides consultation service to students of university.	Super market automation.	Chatbot that answers and suggests tourists on what places to visit.	Specially tailored chatbot for software firm employees
METHOD	Artificially intelligent mark up language and pattern matching	DINA knowledge base and question matching method is used to generate response.	AI,OpenCV,QR code Recognition ,Aurdino and face recognition technologies are used.	Hierarchical clustering and Agglomerative Nesting is used.	ITSM,IBM Watson and NLP technologies are used.

REF NO.	#6	#7	#8	#9	#10
DISADVANTAGE	Experimental results are not as good as the theory.	Tough to cope up with real time requirements of conversational agents.	Patient needs to answer many day to day questions.	Success probability is less.	BLEU score of 0.53.
ADVANTAGE	Less waiting time and easier interaction.	Issues of scalability latency and privacy are addressed.	Chatbot has the ability to contextualize and also to hyper personalize the questions.	Analyzing and replying without any hardcoded text.	Response accuracy of 92%.
OUTCOME/ RESULT	Chatbot that answers queries of the consumers on behalf of the seller.	Human aided chatbot that can be used for multiple purposes.	Conversational entity that helps Asthma patients	Platform that evaluates the interaction between humans and chatbot	Robot receptionist for answering university related queries.
METHOD	Uses faq and thesaurus as database	Crowdsourcing is used to collect data required for knowledge base.	Patient related health data is the dataset and IOT is the technology used.	Python and web based utilities are used.	Retrieval techniques are used to get response. Reddit dataset is used.

REF NO.	#11	#12
DISADVANTAGE	Only pattern matching is used. Hence, accuracy is reduced	Tough when the patient is not completely aware of the symptoms.
ADVANTAGE	Wide knowledge base for chatbot and easy acquiring of knowledge.	Predicts list of available treatments and also composition of medicines.
RESULT/ OUTCOME	Converts documents into knowledge of chatbots.	Provides medical Assistance.
AMETHOD	Extracting text using OCR and over generating	The prediction is based on symptoms.AI

	transformations and ranking algorithm technologies are used	technology is also used.
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### III. CONCLUSION

Chatbots simplify the interaction between humans and computers. It is often described as one of the most advanced and promising expression of interaction between human and machine. Chatbot represents the natural evolution of a question and answering system leveraging NLP. This technology is very useful when customized for a particular task. It saves time and manpower. This is even efficient at times.

In this paper we have discussed the various approaches of chatbot and their uses.

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