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A Survey of Chatbot in Artificial Intelligence and Comparing Chatbots used earlier with Chatbots used now

Lavina Jadhav[1], Aakanksha Khandelwal[2]
[1, 2]*IT department, MET Institute of Computer Science*

Abstract: Chatbots or chatter bots were first introduced in 1966. The Name of first chatbot was ELIZA and after taking so much of efforts, a chatbot was developed that would pass Turing Test. After this chatbot, many more chatbots were created using variety of technology. Here we are going to discuss about the chatbots earlier and the chatbots now used. We will also discuss about the chatbots who won Loebner prize Competition.
Keywords: Chatbot, ALICE, ELIZA, Turing test.

I. INTRODUCTION

Human computer interaction can be done through various approaches, one is using natural Language which has its own ways and methods. here in this paper we will talk about chatbots, which is becoming very much popular. Most Popular chatbots are Siri, Google assistant, Evi, Call mom, Natasha, Etc.

The Main purpose of a chatbot is to perform interaction with human client and ease their work. Human should feel like they are talking to another human body. But in actual, they would be talking to a chatbot! Till date most of the chatbots are following ELIZA'S approach. The chatbots are responsible for searching anything on the internet, listen to instructions, do tasks (like setting an alarm, mark a reminder, call a person, etc.) Currently, Their Biggest challenge is to correctly Understand human input. After receiving input, how to give proper response is the biggest challenge.

Although sometimes they do have flaws/bugs in their responses. For correcting that, many research is done by developers and then many new ways are discussed and they keep updating the functionalities which leads to introduction of many different approach system and gave solution to many flaws.

II. CHATBOTS USED BEFORE

In 1950, the article 'Computing Machinery and intelligence by Alan Turing was published which is now called Turing Test and is then used for a criteria of intelligence. The main use of a chatbot is to take input from human client in form of voice or text and give proper response so that human thinks that on the other side there is another real human and not a program. ELIZA and PARRY are the classic historic chatbots. Recent programs include ALICE, DUDE. In 1984 a book named ' The policeman's Beard is Half constructed' was published and written by RACTER Chatbox.

Both ELIZA and PARRY use different approaches and methods so that it can successfully perform operations, ELIZA program does not understand much, like for eg., If it gets input "mother" then it will respond Tell me more about your family. the rule behind this is made following the theory that mother and family are central to psychological problems. And PARRY which came after ELIZA on 1975, is in contrast to ELIZA, instead of simulating psychotherapist, PARRY modelled a paranoid patient during interview which then is a therapist. Both used different approaches to give proper response.

III. TURING TEST

Turing test was developed in 1950 by Alan Turing. It is the test which is used to check intelligence of machine and it also checks whether it is same like a human conversation or different. It basically is used to check whether the machine generates human like response or not, This test does not check how correct the answer is given but it checks how close the answers are.

IV. LOEBNER WINNERS

LOEBNER Prize competition is for artificial intelligence. It is an annual competition for chatbot or talk bot or interactive agent. Where in they are put under testing phase and it uses method called Turing Test (Turing 1950)

Many Controversies were made thinking whether is this competition is really contributing to development of AI or it is blocking it. however this competition methodologically compares the technologies used in chatbox and rates them accordingly.

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Year	Chatbox	Technology
1991	Pc therapist III	Pattern matching, word vocabulary, remembers sentences
1992	PC Professor	
1995	PC therapist	
1998 , 1999	Albert one (garner 1995)	Pattern matching, hierarchical composition of other chat bots
2000	A.L.I.C.E	AIML (Artificial intelligence mark up language - advanced pattern matching)
2008 2009	Elbot Do-much-more	commercial NLI system Commercial Property of Intelligent toys ltd
2010	Suzette (wilcox 2011)	Chat Script (AIML successor. Concepts, triples)
2011	Rosette (Wilcox 2011)	

V. TECHNICAL APPROACHES & ALGORITHM.

A. Pattern Matching

This is the most common approach and technique used in chatbots. The approaches followed by the chatbots may vary but the basic idea is sam. The pattern used in ELIZA is the simplest.

For example

Pattern: 'I want? A'
Response : 'What would it mean to you if you got a ?A?'s

B. Text Parse

Text parsing is a kind of approach which takes the original texts and converts it into a set of words and mostly it determines its grammatical structure. On top of that in lexical Structure can be then checked if it forms allowable expression. (Syntactical Parsing)

The historic chatbots were not prone to search proper keyword and latter parsers could solve this error by properly converting the input to complete grammatical parsing.

C. Aiml

AIML or artificial Intelligence markup language is derived from XML. it was made by the ALICE bot during 1995-2000 to allow people to input pattern knowledge into ALICE chatbots. The pattern must cover input and is not case sensitive. The wildcard (*) binds words.

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Eg.

<category>

<pattern> i want this * </pattern>

<template> can you tell what exactly you want </template>

</category>

VI. COMPARITIVE TABLE

BOT NAME	PLATFORM	FEATURE	PROGRAMMING LANGUAGE	TECHNICAL DETAIL
IBM Watson Conversion Service		It is Built on a neural network.	Node SDK, Java SDK, Python SDK, iOS SDK, Unity SDK	
Agent Bot	Aivo's own natural language processing technology.	It maintains coherence during long conversation by understanding natural languages also delivers customised solutions by gathering customer information.	To integrate with your CRM and other platforms it uses REST API	It easily integrates with any CRM internal system, human chat and third party application.
Twyla	A proprietary	Ability to learn from the client(agents or customer). Uses	Uses api from help desk or chat solution to analysis data and also can analysis from file uploaded	It is integrated with cloud helpdesk and live chat solution like zendesk,

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		machine learning and rule-based method.		salesforce and liveperson

VII. CHATBOTS USED NOW

Nadia - this chatbot is claimed to have an“emotional intelligence”, as it connects with people at an emotional level. It can even read human emotions,facial expressions and understand your tone.

Eno - eno is a chatbot that can track account balances, check recent transactions, see available credit and get bill due dates, etc. It helps the customers to manage their money. Users can view their transactions and can analyse their spending habits.

Siri - siri is an apple chatbot used in all apple devices. It is an intelligent chatbot designed to have a back and forth conversation with you as it helps you get tasks done.

Google assistant - it is majorly used chatbot nowadays. It can connect with your smartphones and other assistant platforms like smart watch, home theatre,etc, so you can talk to your smartwtoatch and see the result on your tv or car’s dashboard.

VIII. CONCLUSION

So through the years we sat how Chatbots evolved from a very Basic Level to a Complex Structure . From a very Simple pattern Matching to complex and Complicating system in combination with ontologies and knowledge. The historic ELIZA, ALICE to major bots like and many. But yet more is to come. Through Loebnar Prize Competition the chat technology is growing rapidly. And independent of Loebnar competition and other bot system, IBM has developed question answering system (Watson) in 2004 which won the show in 2011. It technically is not a chatbot but their research currently leads into this direction and there are hundreds of different text processing ways, they are DBPedia, WordNet & Yogo which uses ontology to support other chatbot approach.

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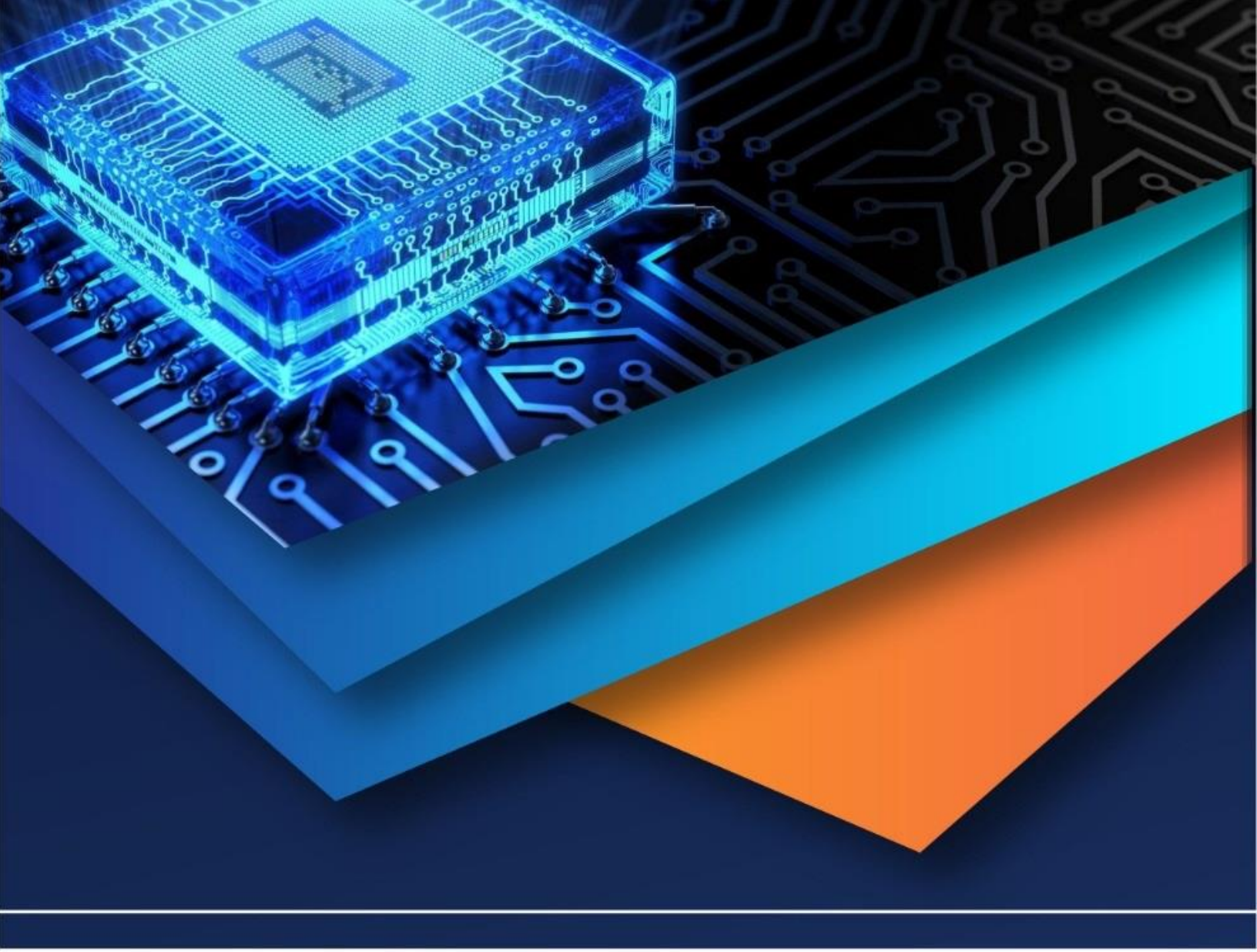

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