



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** I **Month of publication:** January 2024

DOI: <https://doi.org/10.22214/ijraset.2024.57932>

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AI Chatbot using Machine Learning

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Abstract: *Technology has had a significant impact on civilization in the contemporary era. Since the development of the greatest virtual assistants, chatbots have grown in popularity in conversational services. Chatbots are software systems that understand and process natural language. Chatbots can be a source of amusement, a vital component of home automation projects, offer advice on company strategy, and aid in other ways, in addition to supporting users with duties such as booking movie tickets or identifying the nearest restaurant. This paper will go over the many types of chatbots and their definitions. Furthermore, we propose a classification based on requirements, utility, and current market trends.*

Keywords: *Machine Learning, Artificial Intelligence, ALICE*

I. INTRODUCTION

Technology has an important role in both daily work and the enterprise. It is used in various ways around the world and serves a variety of purposes. Artificial intelligence has recently gained popularity. Artificial intelligence (AI) simulates human cognitive functions. More specifically, and in close proximity to humans, AI chatbots are currently taking the place of human responses in this software. A chatbot is a computer program that acts as a virtual assistant and a bridge between humans and bots. It has grown in prominence in recent years, owing primarily to considerable advances in technology. Artificial intelligence, machine learning, and other fundamental topics such as natural language processing and neural networks. These chatbots perform admirably. To engage in a conversation with any individual, use interactive inquiry. The number of cloud-based chatbot services lately made available for the improvement and expansion of the chatbot industry has skyrocketed. IBM Watson, Cleverbot, the ELIZA chatbot, and countless other services are examples of these services. The art of human-robot conversation has advanced significantly in recent years, and these conversational agents have become more receptive.

II. TYPE OF CHATBOTS

Prior to the entrance of the current technology era, manual labor was crucial to every area of the industry. Chatbot development in the modern day has proven beneficial in businesses such as customer service. However, not every chatbot fits neatly into a single category. Chatbots are classified based on their underlying technology, algorithms, and ease of use of the user interface. This research (figure 1) proposes that chatbots can be roughly classified into three groups.

A. Button/Menu-Based Chatbots

Until the advent of the modern technological era, manual labor was vital to every facet of the industry. In the modern era, chatbot development has shown advantages for sectors like customer support. However, not all chatbots fall into a single group. Chatbots are divided into groups based on the underlying technology, algorithms, and ease of use of their user interface. In this paper, it is proposed (figure 1) that chatbots fall into three general categories.

B. Recognition Of Keywords In Chatbots

These chatbots recognize specific terms in order to deliver the desired result. Following their hearing what customers have to say, they respond suitably. The bot makes use of AI technology, a customized keyword list, and algorithms to determine the appropriate response for the user. These chatbots get glitchy when they come across the same keyword in a string of related questions. In order to determine the best answer to a user's question, such as "How do I set up an auto-login authentication on my phone?" the bot will likely use keywords like "auto" and "login."

C. Contextual Chatbots

Among the most advanced chatbots on the market today are those that can comprehend context. They use AI and machine learning technologies, such as voice recognition and speech-to-text conversion algorithms, to read the user's emotions.

The underlying principle of this type of bot is to interpret the user's intents and then, by examining patterns in the database, provide a thoughtful response based on that interpretation. Over time, the bot learns and grows as it encounters a lot more. An example of a simple bot like this can be found in a food delivery app. Here, the database retains the user's payment preferences, shipping address, and previous order history. Based on the user's preferences and subsequent orders, these chatbots assess the user's point of view and offer recommendations.

D. The Basic Tags' Template

AIML, or Artificial Intelligence Markup Language, is a sophisticated markup language that is derived from Extensible Markup Language (XML) and is used to create special chatbots like ALICE. AIML-based chatbots make it easier to create more artificially intelligent software because they are lightweight and easy to set up [2]. They are so well-liked for this reason. They train the bot by parsing natural text using an organized template. This arrangement is more flexible and Because of a range of APIs and packages including AIML files, interactive can be used in a variety of disciplines [2].

What is this?XML version="1.0" encoding="UTF-8"?> aiml version="1.0.1"> category> /pattern> template>/template> /category> /aiml>

Other tags that can be used in addition to the template tags are listed below: (See also Table II.)

AIML is a fundamental pattern language differentiated by

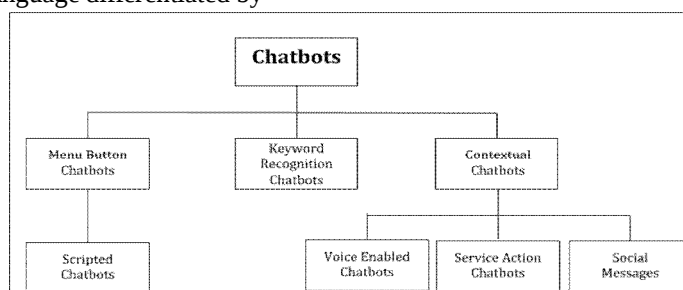


Fig. 1: Suggested Chatbot Classification

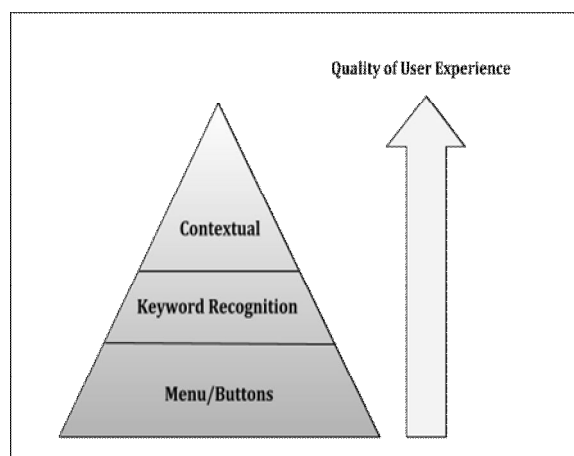


Fig. 2. Preference of Chatbots

III. APPLICATIONS OF CHATBOTS

Chatbots are capable of far more than is commonly realized. Chatbots have grown in popularity in recent years as a result of the advancement of advanced Artificial Intelligence and the innovative ways in which businesses have used them. Chatbots have made customers' lives easier by acting as a helpful assistant who is always available. They have helped businesses run their operations in a strategic, personalized manner. Although chatbots originated in the customer service business, their capabilities extend far beyond that. Chatbots are virtual assistants that can be utilized in marketing and sales to create leads, collect visitor data, and engage customers. consumers continuously throughout the lead funnel. Some of the various types of chatbots available on the market are listed below.

A. Humorist Chatbot System

The primary purpose of the Humorist bot is to make users laugh. A "humorist chatbot" is a conversational agent that leverages hilarious anecdotes from its knowledge base to teach a sense of humor. It can also listen to jokes to determine a user's sense of humor. It includes a set of Alice categories that allow for general user discussions [2]. The chatbot understands smart jokes and responds with humorous text and graphical responses by identifying particular keywords.

B. Dorothy, The Chatbot For Network Administration

All software applications and industries require network management. To keep undesired people out, network administration mainly relies on security procedures and approaches. A core module collects and processes all of the data generated by ALICE to produce distinct results. Another module that holds all of the information is the network history information module, which is made up of many modules such as the collect module and the history information base, which gather the relevant data and store it in the information base, respectively. Each and every one All modules generate data, which is then analyzed by the central module and returned to the user via ALICE.

C. Adaptive Modular Architecture Based Chatbot

ALICE technology is also used to build this chatbot. This conversational agent is built on proof-of-concept and modular knowledge representation[2]. Artificial intelligence is based on knowledge representation. With the help of this modular ontology, the chatbot will be able to answer in a more flexible manner. The knowledge representation model is composed of three major components: the corpus callosum, the dialogue engine, and the dialogue analyzer[2].

D. Web-Based Voice Chatbot

Siri is Apple's equivalent of Amazon's Alexa. Microsoft has Cortana now that web-based speech chatbots have emerged. This web-based system communicates with its users via voice recognition technologies. The ALICE bot engine is used to teach these intelligent digital assistants.

develop and emulate genuine dialogues with the consumers. They understand oral and written language because they often follow written or spoken directions. It is divided into three parts: client, server, and content acquisition, and it governs the structure of communication with web services. Each message is contained in an XML-formatted SOAP text-based message pack. The client includes a voice recognition processing module.

TABLE 1. ESSENTIAL BASIC TAGS

BASIC TAGS	DESCRIPTION
<aiml>	root tag that serves as an AIML document's beginning and finish.
<category>	consists of templates and patterns and constitutes the fundamental unit of knowledge.
<pattern>	This string matches a pattern within the tag and is meant to correspond to one or more user inputs.
<template>	describes how to react to a modified pattern.

Table II: EXTRA ATTACHED TAGS

Tags	Description
<star>	<star>This matches the wildcard * character(s) in the <pattern> tag when embedded in a <srai> tag.
<srai>	Applied to align with other classifications. A brief response is provided when entering a certain term.
	used for random answers from the supplied list inside the <random> tag.
<topic>	serves as a buffer to hold the context, allowing replies to be predicated on it. utilized most frequently in binary-style conversations and aids AIML in finding categories written in the context of the subject.



IV. CONCLUSION

A chatbot is a virtual person that is integrated with a variety of industrial applications, similar to an ecosystem. As time passes, the present platform gains new features to better virtual assistants. Chatbots like Alice and Eliza have had a big impact on the technology industry. Humanoid chatbots have recently been constructed as a result of artificial intelligence, machine learning, natural language processing, and recent advances in machine learning techniques such as Deep Learning. Neon, a Samsung Technology and Advanced Research Labs (STAR) chatbot, is intended to act and think like a human with emotional intelligence. These Unlike other AI technologies, this one will be used to improve human capabilities, allowing humans to act more strategically and creatively.

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