

Evolution of Chatbots Using Artificial Intelligence and Machine Learning

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Abstract

Artificial Machine Intelligence is a very complicated topic. It involves creating machines that are capable of simulating knowledge. This paper examines some of the latest AI patterns and activities and then provides alternative theory of change in some of the popular and widely accepted postulates of today. Based on basic A.I. (Artificial Intelligence) structuring and working for this, System-Chatbots are made (or chatter bots). The paper shows that A.I is ever improving. The paper comes under a major Domain of AI. It also has a sub domain as machine learning, because machine learning algorithm is used in this paper. The scope of this paper is to show the closest match of the input which is provided by the customer. It interacts with a customer until the customer queries get solved. It is used in the business website purpose. Natural Language Processing, allowing users to communicate with college Interactive agent using natural language input and to train Interactive agent using appropriate Machine Learning methods so it will be able to generate a response. There are numerous applications that are incorporating a human appearance and intending to simulate human dialog, yet in most part of the cases knowledge of Interactive agent is stored in a database created by a human expert.

Keywords: *AI, ML, NLP, Chat Bot*

Introduction

A chatbot, also known as a conversational agent, is a computer software capable of taking a natural language input and providing a conversational output in real time. This human-chatbot interaction is typically carried out through a graphical user interface based on human computer interaction (HCI) principles. Interactive agent applications streamline interactions between

people and services, enhancing customer experience. At the same time, Agent offer companies new opportunities to improve the customers engagement process and operational efficiency by reducing the typical cost of customer service. To be successful, an Interactive agent solution should be able to effectively perform both of these tasks. Human support plays a key role here. Regardless of the kind of approach and the platform, human intervention is crucial in configuring, training and optimizing the Interactive agent system. Automated Interactive Agent Framework. Regardless of the use case for which it is built, an Interactive agent basic objective is the same find and return the information a user has requested or assist them with a task. This framework can be easily customized for specific tasks and industry requirements.

Artificial intelligence (AI), the ability of a digital computer or computer controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the paper of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Since the development of the digital computer, it has been demonstrated that computers can be programmed to carry out very complex tasks as for example, discovering proofs for mathematical theorems or playing chess with great proficiency.

Artificial intelligence (AI) is intelligence demonstrated by machines as opposed to natural intelligence displayed by animals including humans. Leading AI textbooks define the field as the study of "intelligent agents": any system that perceives its environment and takes actions that maximize its chance of achieving its goals. Some popular accounts use the term "artificial intelligence" to describe machines that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving", however, this definition is rejected by major AI researchers.

A Brief History of Chatbots

As it was already mentioned, a chatbot is a program with a certain level of artificial intelligence, which communicates with a person or another chatbot in order to give the observer of the conversation impression that it is a conversation with a real person. This impression can be so authentic that users unknowingly include these technologies in rules of social norms, relationships and obligations as if they were human beings. In the development of chatbots, programmers mainly focus on two aspects: emotions and agency. [3]

A boom in the use of chatbots, whether with a simple or more advanced implemented artificial intelligence, began with the massive expansion of the Internet and especially social networking sites. These programs are used to communicate with a customer in online shops, such as customer service, marketing and advertising, entertainment industry, data collection and they are also used as tools for hybrid threats used to influence public opinion.

Eliza. One of the oldest and also best-known chatbots is a program called Eliza created by the Artificial Intelligence Laboratory in MIT, which dates between 1964-6. This programme, which became an inspiration for many developers in the field, was developed by the professor Joseph Weizenbaum. The program is named after Eliza, a character from a comedy called Pygmalion

written by G. B. Shaw in 1912. In this satirically critical work, Eliza Doolittle, a simple English street flower girl, learns how to speak like a lady to eventually impress London high society by her performance. In the early scenario called DOCTOR, Eliza chatbot simulates a role of a Rogerian psychotherapist - she asks open questions with which she also answers - thus she diverts attention from herself to the user. It was a surprise that people soon started to anthropomorphised Eliza and confide in her their personal stories, sensitive data and secrets. [3]

PARRY. Another well-known chatbot is PARRY, which was introduced by Kenneth Mark Colby, a psychiatrist and computer scientist, at Stanford's Psychiatry Department in 1972. This program for diverting attention from itself used an opposite strategy from Eliza. It did not behave as a doctor but as a paranoid schizophrenic patient. It tries to provoke controversies and thus make the participant give more elaborate answers. It did not serve only as a didactic tool for young psychiatrists to learn how to communicate with patients who were diagnosed with paranoid schizophrenia, but also as a functional

Racter. Another interesting chatbot was a program written by William Chamberlain and Thomas Etter under the Inrac Corporation called Racter (short for raconteur - a storyteller) in 1983 [7]. This artificial intelligence originally created for Amiga, Apple II, Macintosh platforms randomly generates English prose and it should be added that successfully. In 1984, Chamberlain published a 120-page book *The Policeman's Beard is Half Constructed* and it used to be sold for \$9.95 in a paper form and its author was Racter itself. The book is still on the market - it is available on Amazon in a paperback form for \$69.99. At the beginning of the book, Chamberlain [7] states: "An important faculty of the program is its ability to direct the computer to maintain certain randomly chosen variables (words or phrases), which will then appear and reappear as a given block of prose is generated. This seems to spin a thread of what might initially pass for coherent thinking throughout the computer-generated copy so that once the program is run, its output is not only new and unknowable, it is apparently thoughtful. It is crazy 'thinking', I grant you, but 'thinking' that is expressed in perfect English." [7]. It is necessary to point out that Racter was written in BASIC on a Z80 micro with 64K of RAM, which is hardware incommensurable with hardware that is commonly used today.

Methodology

Machine learning programs can perform tasks without being explicitly programmed to do so. It involves computers learning from data provided so that they carry out certain tasks. For simple tasks assigned to computers, it is possible to program algorithms telling the machine how to execute all steps required to solve the problem at hand; on the computer's part, no learning is needed. For more advanced tasks, it can be challenging for a human to manually create the needed algorithms. In practice, it can turn out to be more effective to help the machine develop its own algorithm, rather than having human programmers specify every needed step.

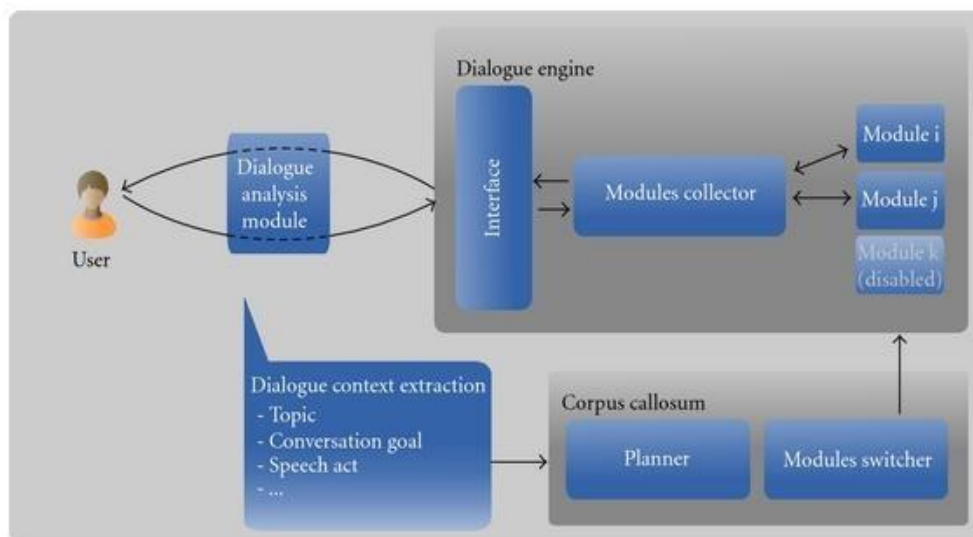


Figure 1: Architecture of an Interactive agent.

We reviewed the basic chatbot types above, and now it's time to find out how they operate for instance rule based chatbots have a list of interactions based on 'playbooks' the developer set up on the back end of the user interface. It's common for such bots to work by choosing options to click. For instance, if the client buys shoes, they should select 'Red' or 'White' colour in rule-based chatbot.

Step 1: Create a paper name.

First when you finished installed the Pycharm IDE in your computer, open it and then create a "paper name" after creating a paper name click the "create" button.

Step 2: Create a python file: Second after creating a paper name, "right click" your paper name and then click "new" after that click the "python file".

Step 3: Name your python file: Third after creating a python file, Name your python file after that click "enter".

Step 4: The actual code: This is the actual coding on how to create Chatbot in Python, and you are free to copy this code and download the full source code given below.

Experiments and Results

It means the study of meanings in a given language. Process of extraction of insights from the text. It includes the repetition of words, who said to whom? etc. It understands that how people communicate with each other, in which context they are talking and so many aspects. The code given below is for the design of this paper



Figure 2: Sample Chatbot

Today's buyers prefer social media over emails and other messaging tools, as they get quick information easily accessible to them at their convenience. Wondering Well, chatbots allow buyers to find information and solutions no matter what device they use. It fills the gap between businesses and consumers, allowing them to improve the responses as per its clients' requirements. In a nutshell, it helps brands to build a credible business model that provides the best possible customer experience. Major brands across Technology, AI, Online Retailers, Consumables and Electronics are constantly working to create their own chatbot platforms.

As Chatbots can be extremely helpful for a business to create a strong brand image in 2021 and they will continue to evolve and perform a vital role in customer service for all different types of companies, here's how Top 4 Chat-Bot Trends to Watch for in 2022 Chatbots are Now

Based on Natural Language Processing (NLP):

In an effort to stand out and get into the spotlight, businesses have already started their research on Natural Language Processing (NLP) to understand and send accurate responses to users' inquiries. Here, the ultimate goal is to allow users and AI to communicate more naturally and understand as well as respond to complex requests.

Bots for Internal Business Communications:

Along with addressing common problems and answering customer queries, chatbots can also be used to communicate with employees and finish HR-related tasks and transactional functions. From assisting the employee onboarding process, filing screen questions, recording answers to guiding new employees through company protocols, chatbots are now taking charge of internal business communications and helping IT desk agents to save time and fix more complicated

issues.

Voice-Bots are also Set to Help Businesses Enhance Customer Service:

Today, customers want to consume information rapidly and are increasingly shifting to voice search given the technological advancements, and hence, now, messaging platforms that have both voice and text-based programs are becoming a preferred method for companies to engage and connect with their target audience.

Live Chatbots to Bring a Human Touch

Chatbots are taking over a number of business sectors and are now ready to engage with the target market by communicating with them using complete sentences which have a natural, conversational flow. It is estimated that by the end of 2021, chatbots will have seamless and realistic conversations with the customers and will help enterprises to further improve their customer engagements.

Conclusion

This study aimed to analyse the types of chatbots and the possibility of their use as language learning medium. From the results, it is known that chatbot can be categorized into three types, and has advantages and disadvantages. As the advantages, chatbot is reported can help language learners through six ways:

- students tend to feel more relaxed talking to a computer than to a person;
- chatbots are willing to repeat the same material with students endlessly;
- many bots provide both text and synthesized speech, allowing students to practice both listening and reading skills;
- Bots are new and interesting to students;
- students have an opportunity to use a variety of language structures and vocabulary that they ordinarily would not have a chance to use;
- Chatbots could potentially provide quick and effective feedback for students' spelling and grammar.

In this constantly evolving world of technology, businesses that still manage and prefer one-on-one or telephonic conversations are considered to be outdated. Today, customers have become more critical when it comes to instantaneous forms of communication while using different messenger applications. As per the current market scenario, enhancing customer experience is the only way to increase the conversion rate. Experiences that make customers' and employees' lives more easy, safe, rewarding and of course productive!

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