Survey of Conversation to Automation in Banking Through Chatbot using Artificial Machine Intelligence Language

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Abstract:- **Artificial Machine Intelligence is a difficult subject. It entails the development of machines capable of imitating knowledge. This study covers some of the most recent AI trends and activities before proposing alternate theories of change for some of today's most widely held beliefs. System-Chatbots (or chatter bots) are created using basic A.I. (Artificial Intelligence) structuring and working for this. The article demonstrates that artificial intelligence is constantly developing. There is currently insufficient knowledge about A.I., but this study introduces a novel idea that addresses machine intelligence and illuminates the possibilities of intelligent systems. The advent of chatbots in the finance industry is the most recent disruptive force that has altered how customers interact. Artificial intelligence has spurred chatbots in the banking business, changing the face of customer-bank contact. Any country's financial sector plays a crucial part in its development. It also looks into the current usefulness of chatbots to see if they can meet customers' ever-changing needs.**

Keyword(s): Chatbot, Online Banking, AIML, Artificial Intelligence

I. INTRODUTION

A chatbot is a conversational agent that communicates with users using natural language. For service in multiple domains, several chatbots are necessary. Nonetheless, the knowledge base of chatbots is hand-coded in their heads. This paper summarizes the ALICE chatbot, its AIML structure, and our experiments with producing several ALICE prototypes automatically using a corpus method. A synopsis of the programme developed to convert readable text (corpus) into AIML format is provided, as well as a study of the corpora we employed.

The bulk of existing Chatbots face the most difficult challenge: understanding human inputs and emotional responses. Users would feel more understood and happier if Chatbots can sympathize with their emotions. The most popular strategies employed are pattern matching and parsing algorithms, although these approaches are unable to accurately imitate a natural dialogue. Because of the shortcomings of programmed responses, developers and researchers continued to add new functionality and techniques to the current methods, eventually settling on the usage of Semantic Nets and Machine Learning to remember facts from conversations and discern user intents. This not only increased Chatbot efficiency, but also created new work flows, technical approaches, and multiple solutions to the same problem.

Chatbots are a new disruptive force in the financial industry that has transformed the way consumers communicate. The introduction of chatbots powered by Artificial Intelligence has changed the face of the bank-customer relationship, particularly in the banking industry. The practicality of the banking industry's rising use of chatbots is investigated in this article. In any country's economy, the banking sector is extremely important. It also evaluates the most recent chatbot features to see if they can meet customers' ever-changing needs.

II. TECHNIQUES AND APPROACH TO DEVELOP CHATBOTS

1) Rule Based Conversation: It's a really basic strategy that most Chatbots employ. It is made up of a set of predefined rules that are used to convert user input into an output. The collection of rules, which can be basic or sophisticated, breaks down the input into a series of tokens in order to detect patterns. Understanding the grammatical structure of an input requires decomposing text into a group of words. The result is generated using the classified set of keywords or patterns. This is how the first Chatbot, ELIZA, was created. These Chatbots, on the other hand, are unable to respond to patterns that do not follow a predefined script.

2) Deep Learning: Chatbots are constructed using Machine Learning Algorithms in this manner. A Deep Learning Chatbot learns what it knows from its data and human interactions. It has been educated to form its own opinion on text and can become more successful as more data is gathered. Deep Learning can be used to construct two sorts of bots: RETRIEVAL BASED and GENERATIVE. Heuristics and semantic nets are used by retrieval-based bots to estimate the most accurate response from specified repositories, while the Generative model is a more advanced variant that does not use any type of repository. Chatbots that are creative can create responses that they have never seen before. Generic models are prone to errors and are difficult to train.

3) Ensemble Methods: Modern Chatbots, such as Alexa, are designed to communicate as if they were a virtual family member. They were created with Ensemble Approaches, which combine the capability of Rule-Based, Retrieval-Based, and Generative methods to handle user requests.

Chatbots created with this method are capable of simulating conversation on unspecified topics.

4) Domain Specific Chatbot: The Domain Specific Chatbot technique improves the efficiency of chatbots. Chatbots of this type are employed in a range of fields, including education and health care. This method enables Chatbot to apply the ideas and procedures outlined above to a specific domain. It allows Chatbots to broaden their coverage in a specific subject.

*5) Chatbot Builders: C*hatbot Builders are software that allows you to construct chatbots without having to code. There are pre-built solutions and situations that may be utilized to construct Chatbots in a short amount of time. It simply works by dragging and dropping. Mobile Monkey, Botsify, Chatfuel, SnatchBot, and more AI Bot builders are available to make Chatbots in a short amount of time and at a low cost.

III.   ADVANTAGES AND GROWTH OF CHATBOT

The bot gives users the impression that they are engaging with a real person. The bot is quite responsive. This system is user friendly and easily understandable. The intelligent system quickly comprehends and responds to user requests. Users are not required to compose their queries in standard format. The advancement of natural processing languages (NPLs) is critical to the evolution of chat and speech technology. Voice and chat bots are becoming more popular, and they will continue to compliment one other.

The chatbot's development is expected to expand at a rate of 200 percent. Historical Site Statistics on the Internet (Chatbots Magazine reposted the graph) The graph below shows a comparison of the use of websites versus chatbots at various eras around the world. However, even though it began off about the same at different eras, the distance between chatbots and humans continues to grow. Furthermore, the rate at which it grows is considerably different for both.
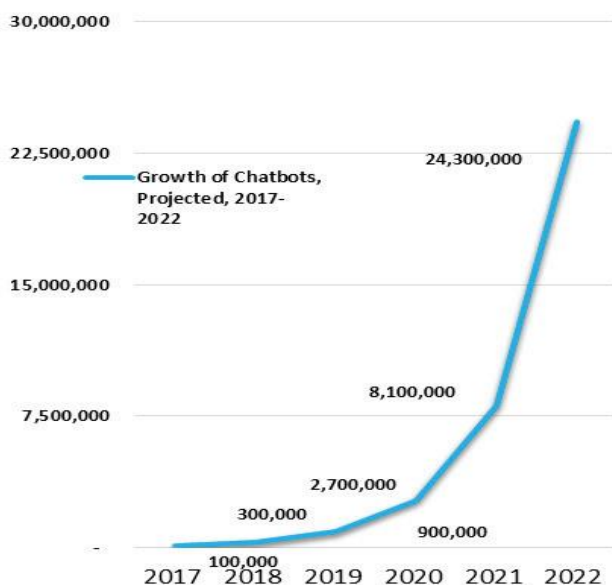

Figure 1: Projected Chatbot Growth 2017-2022

The use of chatbots is far more popular in the industry from 2017 to 2022, as shown in Fig 1. Organizations favor chatbots because of the ease with which they can supply clients with what they need, as well as the opportunity to reduce human workload and have technology handle more and more work, making them faster, better, and more reliable.

IV.   GROWTH OF BANKING INDUSTRY

A bank's business procedures as a financial transaction middleman are primarily focused on offering savings and lending money to potential borrowers for organizational development. Technology innovation allows a bank to join a larger market by expanding its footprint, and it is required to give consumers with rapid, safe, and omnipresent products (as in financial services) in order to create revenue by implementing various business goals and strategies. The banking business is made up of bank compilations; this is to distinguish the aims of the banking industry itself— from financial assistance, savings, and insurance, the banking industry is advancing toward giving people with useful assistance.

The banking industry is continuing to expand, and total reserves remain healthy in comparison to the financial crisis of 2008. Disruptive technology businesses and neo banks enter the market as a result, and incumbent banks negotiate or merge with them to expand their operations.

IV.   ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE

Artificial Intelligence Markup Language has three fundamental components. The category is an AIML building block. In each category, a question/answer or input/response pair is represented. Patterns and templates are used to create categories. The AIML interpreter offers feedback in the form of patterns. Templates are representations of the interpreter's reaction to a specific input.

To build a basic AIML class from the ground up, we must first define the software type (in this example, XML with an XML version and encoding declaration). Compare this to an open AIML comment, which is a comparable variety. Begin by closing the AIML declaration, as seen below. To begin, apply the above-mentioned class instance to the software and create a valid question/answer pair.

V.   THE ALICE CHATBOT SYSTEM

The Artificial Linguistic Internet Computer Enterprise A.L.I.C.E (Foundation of Artificial Intelligence, 2007) was first introduced by Wallace. AIML documents incorporate Alice's English dialogue series data. AIML is a subset of the extensible markup language (XML) or artificial intelligence markup language.

AIML is made up of AIML objects, which are made up of structures called subjects and categories. The topic is an additional top-level object with a name property and a set of related categories. The AIML design is as follows: THE TEMPLATE PATTERN The tag is optional and indicates that the current pattern is based on a prior chatbot input. The AIML template is simple, consisting only

Special Issue - 2022

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
RTCSIT - 2022 Conference Proceedings

of letters, spaces, and the wildcard and* signs. A.L.I.C.E has been working on an AIML draught proposal from the beginning of 2013.

> *<aiml version – "1.0.1">*
> *<topic name- "About TOPIC">*
> *<category>*
> *<pattern> .About the PATTERN.</pattern>*
> *<that>.About the THAT</that>*
> *<template>.About the TEMPLATE.</template>*
> *</category>*
> *</topic>*
> *</aiml>*

There are no alternative representations for terms other letters and numbers. Characters are grouped together in a single room, and the wildcard's characters are interchangeable. The series has an invariant pattern language. Pattern matching methodology is centred on identifying the best matching pattern that was utilised to generate the ALICE chatbot's answer.

The AIML structure is as follows: the $<tag>$ is optional, and it indicates that the current design is based on a previous chatbot output. AIML's design is straightforward, with only lines, spaces, and wildcard indicators. There are no other characters in the terms that include letters and digits. Words are separated by a single space, while the wildcard characters are similar to words. The template's vocabulary is invariant string. The idea of matching pattern technique is to discover the shortest and best match between patterns.

VI. FRAMEWORK FOR CHATBOT INTERACTION

Let's say we recommend a Virtual Chatbot to a bank called XYZ. This would be the assumption for the following framework based on the example of opening a new account that would require assistance from a website or mobile application.

STEP 1: Open an account by setting the parameters

Banks that require the most vital and critical data from customers for their databases. The customer is offered three types of card accounts to pick from in this example so that the system may narrow down the procedures it has to run later in the chatbot and just use the data that is required, making it more time efficient and fast.

Fig. 2. Customer Interface for Interaction

STEP 2: Submission of file

A Reference ID is generated for the consumer, as seen in Fig 3 below. A pop-up message then appears, informing them of the time it will take for the Reference ID to appear in the email.

Fig. 3. Generation of Reference ID (Interface)

STEP 3: Checking the status of the account

Or commands are used for the Bank ID and Reference ID, whereas if-else commands are used for the other account kinds. If the customer chooses one of the three card account options, another pop-up page appears, displaying a virtual chatbot that shows them their account status, or if the customer has additional account details that need to be enquired about the card account, the following information will be displayed. As you can see, this is only a representation, and the bank's chatbot system can be built to work in whatever way they desire.

Another option is given in case the customer has queries outside the given selections if so, it then connects the user to a human for further assistance making it convenient to ask about anything related to the bank and any kind of account.

Special Issue - 2022

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
RTCSIT - 2022 Conference Proceedings

Fig. 4. Chatbot Internal Search

STEP 4: Examples for designing codes for the virtual chatbot
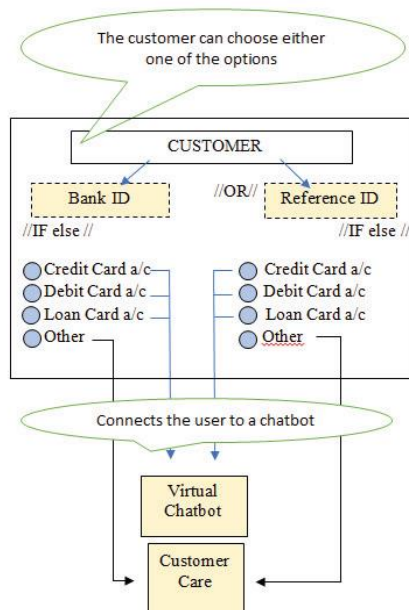
```
<aiml version = "1.0.1" >
<category>
<pattern> * name is * </pattern>
<template>
Hello ,how can I help you <star index="2"/>
</template>
</category>


<category>
<pattern>My address is * . I want a new cheque
book

delivered at home </pattern>
<template>
Hello!  Alright  !  <think><set  address  =
"addr_name">
<star/></set></think>
</template>
</category>
<category>
<pattern>Bye. </pattern>
<template>
Bye. Cheque book will be delivered at <get name
=
"addr_name"/>
</template>
</category>
</aiml>
```

VI.   CONCLUSION AND FUTURE WORK

This paper proposes ontology-based solutions for addressing conversation in the banking and financial industry. Although this study has not yet been thoroughly evaluated, the existing results are promising. The framework must be completed, and a chatbot must be developed in the future [24]. The future system would serve as a stepping stone toward the implementation of an intelligent question management programme capable of not only responding but also self-learning and improving itself in subsequent stages, thereby not only improving user service quality but also reducing human workloads, increasing productivity, and, of course, increasing the number of satisfied users.

In the rapidly evolving realm of AI, consumers are receiving technical assistance in all parts of their lives. The internet offers a variety of information sources and has transformed how we communicate. With greater chances, innovation has improved our lives, and we now have a relatively uncomplicated life. Everyone enjoys working together and expecting quick responses.

A chatbot is a computer or service that can effortlessly connect with you to assist you in solving your problems. A chatbot's capabilities are wide-ranging, ranging from providing life-saving safety updates to checking the weather forecast to ordering a new pair of shoes. When communicating with a chatbot, you should feel as if you're conversing with a genuine person.

VII.   REFERENCES

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