

# Chatbot Using Python

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**Abstract:** *Nowadays it is the era of intelligent machine. With the advancement of artificial intelligent, machine learning and deep learning, machines have started to impersonate as human. Conversational software agents activated by natural language processing is known as chatbot, are an excellent example of such machine. This paper presents a survey on existing chatbots and techniques applied into it. It discusses the similarities, differences and limitations of the existing chatbots. We compared 11 most popular chatbot application systems along with functionalities and technical specifications. Research showed that nearly 75% of customers have experienced poor customer service and generation of meaningful, long and informative responses remains a challenging task. In the past, methods for developing chatbots have relied on hand-written rules and templates. With the rise of deep learning these models were quickly replaced by end-to-end neural networks. More specifically, Deep Neural Networks is a powerful generative based model to solve the conversational response generation problem. This paper conducted an in-depth survey of recent literature, examining over 70 publications related to chatbots published in the last 5 years. Based on literature review, this study made a comparison from selected papers according to method adopted. This paper also presented why current chatbot models fails to take into account when generating responses and how this affects the quality conversation.*

**Keywords:** Artificial Intelligent, Deep Learning, Chatbot, Deep Neural Networks.

## I. INTRODUCTION

A chatbot is an AI-based software designed to interact with humans in their natural languages. These chatbots are usually converse via auditory or textual methods, and they can effortlessly mimic human languages to communicate with human beings in a human-like manner. A chatbot is arguably one of the best applications of natural language processing. Today, we have smart AI-powered Chatbots that use natural language processing (NLP) to understand human commands (text and voice) and learn from experience. Think about Apple's Siri, Amazon's Alexa, and Microsoft's Cortana. Aren't these just wonderful?

Customer satisfaction with a company's services is often seen as the key to success and long-term competitiveness for a company. The insurance industry such as credit card insurance, is getting a lot of attention as customer satisfaction. Credit card insurance is a competitive market so a strong marketing strategy is vital [1]. Its inclusions are confusing and complex, in a world dominated by cashless payments, consumers are using credit cards at a growing rate. Most credit cards offer their consumers some form of embedded complimentary insurance product. Consumers are often not aware of these complementary products and it is difficult to understand the inclusions and benefits. For example, the majority of cards and accounts include complimentary travel insurance, however, customers are not aware of the detail around what this cover includes if the cover includes family or travelling companions, how the cover is activated and who to call when they need help or need to make a claim. In addition, insurance personnel required reference materials, policies and procedures. Getting all of this information they need is a challenge. Insurance personnel had to sift through long documents to find the answer. As a result, the only way to get help quickly was to pick up the phone and talk to underwriting or sales support – even for answers to FAQs or to basic “how-to” questions. This overloaded the call centers, resulting in long wait times as it takes a long time to process a single request. As a result, customer experience their interactions disappointed and dissatisfied which reduces the throughput and business performance drastically. Research showed that nearly 75% of customers have experienced poor customer service [2-4].

The technology platforms allow modelling the entire credit card insurance ecosystem with Artificial Intelligent (AI) to simulate scenarios of different economic, market and individual conditions. There is an increase in the demand for AI

capabilities to interact with customers in benefits, insurance coverages and claims processes. Because it removes human factors and provides 24-hours service. This will advise the customer on the most appropriate course of action such as help customers to make clearer and easier to understand embedded benefits into a credit card, summarize level of coverage and insurance claims process. It will allow customers to utilize credit card coverages with the peace of mind, knowing they have independent experts looking after them. Furthermore, it can generate revenue and save costs for the credit card insurance industry. In order to truly be effective and make business processes automated an alternate system is required. An advance dialogue system known as AI chatbot application system could automate the entire business processes. Thus, chatbot application system must have natural language processing (NLP), deep neural networks (DRN) so that it can understand what customers are looking for. In the case of the credit card insurance industry, chatbot can be used to answer basic questions, resolve insurance claims, sell products and make sure customers are properly covered by their insurance. AI chatbot can analyse data better than humans to more accurately predict each customer's risk, thereby providing customers with the right amount of insurance and companies with protection from risky customers

## **II. LITERATURE REVIEW**

**Endurance: A Companion for Dementia Patients:** Many people suffering with dementia retain much of their conversational abilities as their illness progresses. However, the shame and frustration that many dementia sufferers experience often make routine, everyday talks with even close family members challenging. That's why Russian technology company Endurance developed its companion chatbot. Many people with Alzheimer's disease struggle with short term memory loss. As such, the chatbot aims to identify deviations in conversational branches that may indicate problem with immediate recollection – quite an ambitious technical challenge for an NLP- based system. In addition, since the chatbot is a cloud- based solution, physicians and family members can review communication logs taken from the bot to identify potential degradation of memory function and communicative obstacles that could signify deterioration of the patient's condition. Interestingly, the as-yet unnamed conversational agent is currently an open- source project, meaning that anyone can contribute to the development of the bot's code base. The project is still in its earlier stages, but has great potential to help scientists, researchers, and care teams better understand how.

**Alzheimer's disease affects the brain.** A Russian version of the bot is already available, and an English version is expected at some point. **Casper: Helping Insomniacs Get through the Night:** If you suffer from insomnia, you'll know that the feeling of almost suffocating loneliness – the idea that everyone else in the world is resting peacefully while your own mind betrays you with worries and doubts – is among the worst parts of not being able to sleep. Enter Casper's amazingly named Insomno bot 3000 (which truly is one of the most tongue in cheek, retro-futuristic names for a chatbot I've ever come across), a conversational agent that aims to give insomniacs someone to talk to while the rest of the world rests easy. At this point, Insomno bot 3000 is a little rudimentary. The responses offered by the agent aren't quite right. But I'm not sure whether chatting with a bot would help me sleep, but at least it'd stop me from scrolling through the never-ending horrors of my Twitter timeline at 4 a.m **Med What: Making Medical Diagnoses Faster :** If you're the kind of person who has WebMD bookmarked, it might be worth checking out Med What. This chatbot aims to make medical diagnoses faster, easier, 19 and more transparent for both patients and physicians – think of it like an intelligent version of WebMD that you can talk to. MedWhat is powered by a sophisticated machine learning system that offers increasingly accurate responses to user questions based on behaviors that it “learns” by interacting with human beings. In addition to the ever growing range of medical questions fielded by MedWhat, the bot also draws upon vast volumes of medical research and peer-reviewed scientific papers to expand upon its already considerable wealth of medical expertise. In many ways, MedWhat is much closer to a virtual assistant (like Google Now) rather than a conversational agent. It also represents an exciting field of chatbot development that pairs intelligent NLP systems with machine learning technology to offer users an accurate and responsive experience. 20

## **III. METHODOLOGY**

The proposed solution is to create a chatbot to simulate a human conversation to assist users with their banking needs and to provide a more personal experience. Advancements in artificial Intelligence, machine learning techniques, improved aptitude for decision making, larger availability of domains and corpus, have increased the practicality of integrating a chat bot into applications (Dole et al., 2015). Users will be able to ask any banking related queries in natural language that they

are comfortable using such as; view account information, transactions and check balance. The chatbot will identify and understand what the user is asking and generate an appropriate response based on the conversational context. Immediate responses will be provided by the chatbot to redeem the need for the user to have to call or visit their local banks branch and wait in queue in order to get through to an advisor for assistance. Chatbots are computer programs that interact with the users using natural languages. This technology started in the 1960's. The aim was to see if chatbot system could fool users that they were real humans. However, chatbot systems are not only built to mimic human conversation, and entertain user. we investigate other applications where chatbots could be useful such as education, information retrieval, business and e-commerce. The need of conversational agent has become acute with the widespread use of the personal machines with the wish to communicate and the desire of their makers to provide natural language interfaces. Just as people use language for human communication, people want to use their language to communicate with the computers. Zadrozny et Al(2000) agreed that the best to facilitate Human Computer Interaction (HCI) is by allowing users to express their interest, wishes or queries directly and naturally by speaking, typing and pointing. This was the driver behind the development of the chatbots. A chatbot system is a software program that interact with the user using natural languages. Different terms have been used for chatbot systems such as : machine conversation systems, virtual agent, dialogue system and chatterbot. The purpose of the chatbot system is to simulate a human conversation, the chatbot architecture integrates a language model and computational algorithms to emulate informal chat communication between a human user and a computer using natural language.

A chatbot is a computer program designed to simulate a conversation with human users, especially over the Internet, — is the definition for chatbots on Oxford Dictionaries. I'd rather say: chatbots are AI software installed on communication platforms, which can answer some basic questions about a certain brand. The first modern chatbots are launched since 2010 from the biggest companies like Apple, Google, Amazon, and Microsoft. Their purpose was to simplify the communication: reducing the needed time to type on the search engine, press search and check out the results. Also, to give the impression to users that they are provided by human touch. In 2016, chatbots became too popular on Messenger. By the consequences is noted that 2016 was the year of chatbots. The software industry is oriented on chatbots. Thousands of chatbots are invented on startups and used by the businesses to improve customer service, keeping them hanging by a kind communication. According to a research, today chatbots are used to solve several business tasks across many industries like E-Commerce, Insurance, Banking, Healthcare, Finance, Legal, Telecom, Logistics, Retail, Auto, Leisure, Travel, Sports, Entertainment, Media and many others. That was the moment to look at the chatbots as a new technology in communication. The companies were using chatbots to answer quickly and efficiently some frequented asking questions from their customers. Some experts are claiming that more than 85% of customer interactions will be managed without a human by 2020. Since the success in commercial utilization, the idea is created that chatbots are saving humanity from loneliness and depression. If you want to prove it, just try “chatbots depression loneliness ” in every search engine. Plenty of results are about the goods of chatbots.

The problem with chatbots is a problem with technology in general: they tend to hide the problem and serve this as a solution. The founders, marketers, and influencers try to convince us that we can contend mental illnesses “using better” our smartphones. Probably they want to expand the market for their products (like chatbots, apps, etc.) to every single person on earth, by the evidence is that loneliness and depression are exact consequences of those products. Even why the scrolling addiction is becoming more serious every year, the recipe of entrepreneurs is to raise the dose of their recent products

#### **IV. CONCLUSION**

The insurance industry has long been bogged down by outdated practices. However, the combination of a new wave of thinking and newly developed artificial intelligence technology has the potential to completely change the customer experience to provide great service in a way that resonates with modern customers. This study presents sequential attention mechanism in deep recurrent neural networks, an architecture for the development of AI chatbot system with self-learning capabilities. The main aim is to fill in a gap in this research area and providing a flexible chat interface for question answering.

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