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Chatbot Automation for Student Educational Purpose

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Abstract: ***Chat bots are gradually becoming more sophisticated as they are now adapting to new AI features with ease. We can also expect them for recognizing user intent efficiently, decode mood of end users instantly, and then drive flow of conversations in tune with end user's emotions. Also, sentiment analysis is one of such features that make bots even powerful in terms of understanding emotions in end user messages. In fact, 65% of businesses believe that the chat bots could help them providing more customized support experiences for their users. We can always leverage chat bot sentiment analysis feature for easily knowing if users are having a good experience with chat bots.***

This is how AI - powered bots help us engage users better and improve experience with our brand. Sentiment analysis is a sub field in machine-learning (ML) and natural-language-processing (NLP) that help chat bots determine emotions from the textual data. It's one of the important chat bot features that are used to analyze end user data using mining opinions, thoughts, or sentiments. In this study project, a chat bot is developed as the academic assistant for institutions. Here the entire details regarding course, department, fees structure, hostel and placement are obtained from the chat bot assistance for the query given by the users. Chat bots are increasingly finding the way into e -commerce and services, as their implementation opens up promising opportunities for improving user service. This paper examines chat bots in this scenario, and elaborating on the functional aspects that are rapidly leading for significant improvement in service quality.

First, based on the literature review of recent publications in this area, overview of the key features as well as functionalities underlining relevance of chat bots for user educational service is provided. Then, a further contribution is being made in introducing 2 categories of chat bots' objectives which are based on their functional dedication, i.e. i) "improvement in the service performance" and ii) "fulfillment of the end user's expectations". The considered chat bots' user-related functions are entertainment, interaction, trendiness, problem-solving, and customization.

The chat bot categories are discussed in detail further. Their positive influences on service quality, constituting chat bots' functional goal, and also the potential of chat bots in user services are then pointed out. Nowadays, Internet has become an essential tool in every aspect of the daily lives.

I. INTRODUCTION

In order to contribute to existing research in this area, the aim of this paper is to examine chat bots in the user service contexts'; pointing out to what extent they have an influence in service quality. In the second section the chat bots' relevance for e-business context is defined based on their key characteristics. Then, five chat bots' marketing efforts identified by [2] Chung et al. which is interpreted as chat bots user-related functions, are presented in the 3rd section. These are divided by authors of present work into two presented categories which are based on their qualities: a) "improvement in the service performance" and b) "fulfillment in end user's expectations", denoting the chat bot's objective categories.

So, as a consequence, this resulted in significant impact on the way end users do their business aspects today, expanding increasingly what is today called as electronic commerce, or commonly e-commerce. With an annual growth rate of 21 to 25% in online sales, e-commerce economy is sparking off literally. The reason is very simple: In the consumer eyes [1], trading services or products via the Internet is synonymous with efficiency, speed and a wide range of the offers, inevitably translates into convenience in end users daily lives.

This is increasingly close confrontation with digital world that had led to a shift in their needs/expectations, and must not go unheeded. So, i.e. in order to sort out these new market requirements, companies are becoming more forced to apply their strategies to conditions of Internet, and offer a broader service to their users through extension of primary services through digital ones [1-3]. This is exactly where artificial intelligence implementations come in. Machine learning, natural language processing and e-service agents along with robotics, also commonly referred to as chat bots, are termed as the best known applications in artificial intelligence till date (cf. e.g. [2, 4-5]).

Especially the incorporation of chat bots in e-services is gaining momentum nowadays, representing a promising new way to improve user service [2,6]. In fact, they were supposed to act as company representatives for assisting consumers online in solving the problems, thereby providing information and providing advice, regardless of the long call-centre queues, reason for which end users are often dissatisfied [7,8]. In summary, the goal in their usage is to best meet users' needs, since when these are fulfilled, the result is likely to be a positive attitude, favorable purchase intention and loyalty, in a word: user satisfaction [8, 9].
These are then examined from a user care perspective, by highlighting their impact on service quality. Finally, the central findings of this paper are summarized in a concluding discussion in section 4, where implications for research and practice are pointed out.

II. THEORETICAL FRAMEWORK

As already mentioned in introduction, the purpose of this study is to examine the chatbots and emphasize the crucial terms which have made them; so relevant to improve user service quality. The decision for adopting the term "chatbot" as the one to be addressed in this work is the result of the careful reviews and comparisons of the found literature.
A meticulous search by authors found an unclear denomination of the terms and ambiguous delineation among various concepts. For instance, it is observed that the notion "e-service agent" does not seem to be classified with any of the clear boundaries. In fact in [2], Chung et al. equated the latter with term "virtual agent", referring as synonyms.
Relevant works on the virtual agents are consulted, yet no overarching classification is being identified, as in several papers "virtual agent" is used in the association with term "chatbot", either to define its synonym or as a meaning [5, 10, 11]. Moreover in [12], Chattaraman et al. divided virtual service agents into 3 categories, namely i) presentation agents, ii) recommendation agents and iii) user service representatives. So, future research would reveal that numerous papers associated these 3 notions not with virtual agents but again with chat bots, as the latter is able to completely fulfill information presentation task, recommendation work and user service process [8,10,13,14,15]. In summary, scientific literature suggested various contradictions and inconsistencies presence which make it tough to determine the clear distinction and the relation between expressions in this area. On the other hand, it can be noted that in the majority of works, the term "chatbot" is repeatedly inferred or even used almost exclusively. So for these reasons, targeted literature search on chatbots is being conducted which is based on various related economic data sources. This chat bot helps to reduce the man power requirements for all type of queries. These queries are raised from the end user. These queries are related to educational purpose. The end users can clarify all the doubts about the institution and its accommodations through this char bot. So that which will helpful for all the educational institutes.

III. CHATBOTS - USER-RELATED FUNCTIONS AND THEIR INFLUENCE ON SERVICE QUALITY

Recognition in chatbots is an emerging digital marketing strategy in which companies are increasingly implementing to adapt to a growing digitally oriented service world wide. Focusing on this marketing sector, 5 chatbots' central functions are identified, i.e. interaction, trendiness, entertainment, customization and problem-solving, which are interpreted as chatbots' (user-related functions). Based at these, a take a look at was conducted, which reveals a fantastic correlation among those and chatbot`s communique accuracy and credibility, as among the latter (and person pleasure). Likewise, various research have likewise approached person pleasure because the situations in their research, but on subject of provider quality. Based at consequences in their investigations, a fantastic courting in the 2 variables are being set up right here as well [10, 21, 22]. Based on the researches, it will keep in mind the 5 above-noted chatbots` capabilities from a person care perspective, tricky and enlighten how they affect provider quality. As an end result of an intensity literature review, up to this point, undetected commonalities in the five person-associated capabilities are being exposed through the authors of this and because of this, later divided into categories: "development of provider performance" and "success of persons' expectations". These are supposed for symbolizing the chatbots` objectives, which in flip serve to reap up the chatbots` very last practical intention to improve provider quality.

IV. METHODOLOGY

1) *Dataset Preparation:* In this section its must to collect the dataset as per the end user requirement**s.** This dataset helps to ignore the requirement of internet usage while running the application and increasing speed of response for query.
2) *GUI Design:* To make easier the process for end users we implemented this user interface. By using python GUI imports.
3) *Question and Answers Preparation:* In this section the developer must relate the answers with questions. The data set will helps to provide the answers for corresponding questions.
4) *Chat:* In this section the end user can starts the chat with this automation. It will reply the answer regarding the query raised by the end user.

V. SAMPLE SCREENS

The user interface of this chat bot is made using default controls available in python named label, text area and button. The action performs of each controls can be activated by writing manual python code.

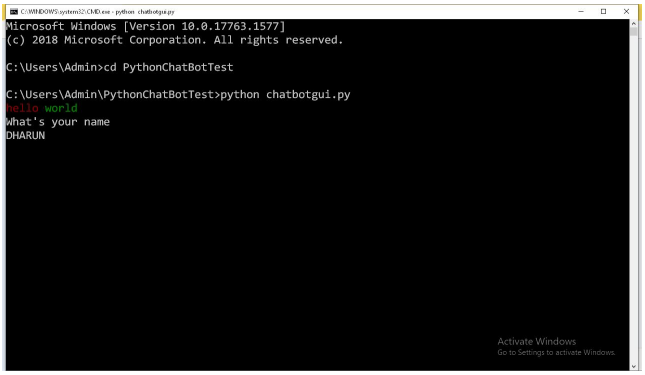

FIGURE 1

The chat bot starts with asking end user name. After asking for his/her name, the end user can continue with this chat bot. The end user can starts asking queries after filling his/her name. These activities are shown in Figure 1.

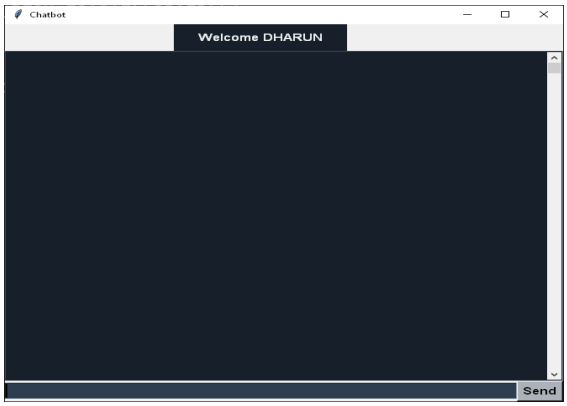

FIGURE 2

After entering name this chat bot will fix the title for this chat bot along with given name. The name of end user will be shown on top of this chat bot. After the end user can starts asking queries.

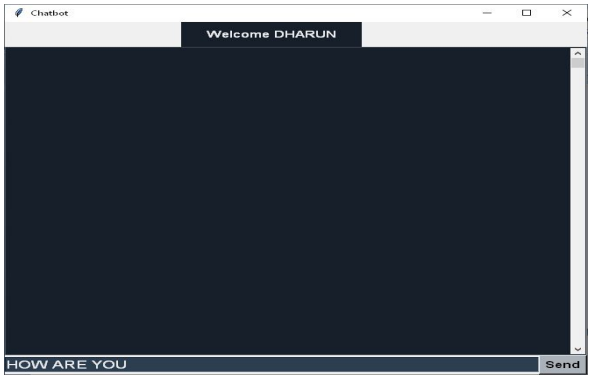

FIGURE 3

The above screen shows the initial communication made by end user. The text filed placed below the screen. The end user can type the queries through this field. After typing the question the user can click the send button. After clicking the action performing code of send button will be activated.

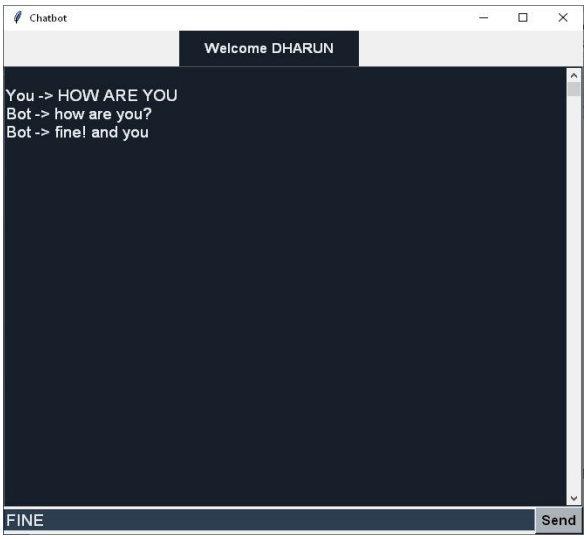

FIGURE 4

After clicking the send button the chat bot starts analyzing the query raised by the end user. It will process and reply the end user that related to the question. By continuing the chat the end user can come to know about the organizational details. This automation gets reduce the man power requirements.

VI. LITERATURE SURVEY

[1] The use of chatbots is changing the way health consumers and healthcare professionals interact with each other. Chatbots are systems that rely on algorithms to simulate a conversation with users through a variety of written, spoken, facial and/or body expressions. The chatbot understands the user's query and triggers an accurate response. Chatbot based systems promise to increase adherence to electronically delivered treatment and disease management programmes. In this chapter, we provide an overview of chatbot systems for mental health. Artificial intelligence is exploited in such systems for natural language understanding, to create a human-like conversation and to make appropriate recommendations given a specific user utterance and mental state. Potential benefits of chatbots have been shown with respect to psychoeducation and adherence. However, there are also limitations and ethical issues to be considered including the impact on the patient-therapist relationship, the risk of over-reliance or the limited skills and emotional intelligence of chatbots that might limit their applicability.

A chatbot is a system that interacts with users using natural language through a variety of ways that include written, spoken, facial and/or body expressions[1]. Other terms used for a chatbot include: machine conversation system, virtual agent, dialogue system, conversational user interface (CUI), and chatterbot. The purpose of a chatbot system is to simulate a human conversation. Chatbots are usually text-driven, with images and unified widgets, which make it easy to start interacting with a bot. There are two types of chatbots: unintelligent (rule-based) chatbots which generate their dialogue based on some predefined rules or decision trees, and intelligent chatbots which use Artificial Intelligence (AI) to understand the context and intent of a
user utterance and respond to it [2].

Healthcare has witnessed an increase in chatbot use over the past few years. Healthcare chatbots support patients, families of patients or healthcare teams [3] by providing specific knowledge, therapy support and behavioral change (e.g. Wysa which provides cognitive behavioral therapy [4]) or help in managing diseases (e.g. Babylon health which provides digital health consults) [5]).

Within the healthcare domain, there has been an increase in the number of chatbots for the support of mental health. Mental health disorders may influence 29% of people in their lifetime [6] and may affect 25% of adults and 10% of children in a year [7]. Mental health disorders can cause disability which also leads to a decrease in the quality of life measures[8]. Economic estimates show that mental health disorders will cost the world economy approximately $16 trillion from 2011 to 2030 due to lost labour and capital output [9].

Mental health diseases are typically treated by pharmacotherapy or psychotherapy(10). still, there's a global deficit of internal health professionals with demand out- stripping service provision. World estimates show that there are nine psychiatrists per,000 people available in advanced countries(11) and one psychiatrist for every ten million people in developing countries(12).

According to the WHO, about 45 of individualities in developed and 15 of individualities in developing countries have access to internal health services(13). Not furnishing treatment to individualities with internal health diseases can lead to an increase in suicidal tendencies and mortality(14).To address this matter of limited coffers for treating persons with internal health diseases, conversational agents have gained further interest in the once five times in the areas of psychoeducation, geste change and tone-help(15). This chapter provides an overview of the characteristics of internal health chatbots and discusses the benefits and challenges of similar systems.

According to a review conducted by Abd- alrazaq etal.(16), there were 41 different chatbots for internal health reported by 53 studies. The Chatbots were developed for different purposes, videlicet remedy(e.g. Woebot), training(e.g. LISSA), and webbing(e.g. SimSensei) with a specific focus on depression and autism. The maturity of chatbots(70) were enforced as stage-alone software and a nonage of the chatbots were enforced as web- grounded platforms. roughly 89 of the linked chatbots used predefined rules or decision trees to induce chatbot responses, also appertained to as rule- grounded chatbots. The remaining chatbots utilized AI to induce responses. In 87 of the studies, the discourses were controlled and led by the chatbots, whereas the dialogue was controlled by both chatbots and druggies in 13 of studies. The maturity of chatbots had personification on their defenses similar as an icon or virtual mortal.

Two popular chatbot platforms used moment are Wysa and SERMO. Wysa is an emotional and intelligent chatbot(4). It integrates a mood shamus that can descry negative moods. Depending on the mood of the customer, it suggests a depression webbing test and recommends for the stoner to seek professional help depending on the outgrowth of the test. For supporting the relief of anxiety, depression and stress, there are awareness contemplation exercises integrated within the app. The chatbot was tested in a study with a aggregate of 129 actors divided into two groups frequent and occasional druggies(4). Study results reported that that frequent druggies of Wysa had a advanced enhancement in their mood than the group of occasional druggies(P>0.03)(4). The study also showed that that party commerce with Wysa was helpful and stimulating(4).

SERMO is a mobile operation for individualities displaying slight cerebral impairment(17). It implements styles from cognitive geste remedy(CBT) and supports emotional regulation. The operation is comprised of a conversational agent that asks the stoner to enter their studies and passions relating to diurnal events which are grounded on the ABC proposition(situation, studies, feelings) developed by Albert Ellis. The proposition follows the approach that purposely or unconsciously perceived stimulants are estimated and similar evaluations lead to certain passions and behaviors (18). From the collected information, SERMO automatically determines the introductory emotion of a stoner using natural language commerce. So far, five feelings can be honored fear, wrathfulness, grief, sadness, and happiness. Depending on the emotion, an applicable dimension similar as conditioning or awareness exercises is suggested by the system. fresh functions are an emotional journal, a list of affable conditioning, awareness exercises and information on feelings and CBT ways. The chatbot has been enforced using the OSCOVA frame(http//oscova.com). For a prototype, 13 converses have been developed with OSCOVA.

They cover the colorful relations touched off by an emotion or mood expressed by the stoner. feelings are detected and classified using natural language processing styles and wordbook- grounded procedures. In this respect, SERMO is a mongrel approach of a chatbot, which integrates a rule- grounded discussion inflow with natural language understanding capabilities. SERMO was estimated with 21 druggies(individualities living with internal health conditions and psychologists) using the stoner Experience Questionnaire(UEQ). druggies reported high effectiveness, clarity and attractiveness of the app. The scales describing hedonic quality(i.e., fun of use), showed neutral evaluations by the druggies. The involved experts verified that the app was well suited for cases with problems in expressing themselves in a face- to- face hassle.

2) Chatbot use for internal health is adding given the deficit of internal health professionals in both the developed and developing world. moment, more chatbots are making use of AI algorithms to interact with druggies and these algorithms are getting a more integral part of chatbot development.

First approaches to chatbots needed the programmer to define a set of possible stoner inputs and corresponding replies for the chatbot(19). For this purpose, corresponding literature was reviewed in order to produce a chatbot that utilizes substantiation-grounded medical knowledge. For recapitulating this knowledge in the “ brain ” of the chatbot, scripting languages similar as Artificial Intelligence AI has been applied to make a chatbot discussion more mortal- like. More specifically, with the help of AI, the way humans are suitable to understand each other and give a response consequently, is fed into the chatbot systems. fabrics that support development of AI- grounded chatbots are for illustration OSCOVA(https//oscova.com), IBM Watson or RASA mound(https//rasa.com).

AI provides two important rudiments that enable chatbots to give an applicable response to a stoner statement machine literacy and natural language processing(NLP)(21). Machine literacy algorithms are used to learn from data, either from training data or from the former discussion with a bot that recognizes patterns or observers the once exchanges that help induce applicable responses(22). The beginning training data has to be comprehensive in order to cover a different admixture of discussion overflows and aspects as well as stoner statements. More lately, deep literacy algorithms are being used by chatbots when a predefined set of responses aren't desirable or workable(23). Deep literacy is a type of machine literacy that uses concentrated algorithms called an artificial neural network(24) which involve ways to discover representations in the data that allow it to make sense of raw data. Each sub-caste of algorithms, in turn, comprises connected artificial neurons. The connections between these neurons are ladened by the previous literacy patterns and events. The algorithms find patterns in vast amounts of data and infer how to respond to new data from these patterns.

NLP is another AI system that analyses the natural language stoner input. NLP can help chatbots understand and interpret stoner input, descry patterns in a stoner statement, identify realities, co-occurrences, or determine relations in the stoner generated data. Tasks include sphere bracket of the stoner input that help determine the stoner intent and niche stuffing(25). The analysis of stoner input is needed to produce an applicable response to the stoner input since NLP attempts to determine intents, feelings and other semantics hidden in a stoner statement Natural language processing is applied in the analysis of stoner utterances, for recapitulating the utterances, for relating significant changes, for sentiment or emotion analysis, or reality recognition(17). Analyzed stoner input can be used with comprehensive machine learning algorithms to prognosticate issues or geste changes or to timely identify them(e.g. the threat for self-murder or tone- detriment determined grounded on the stoner commerce). AI in internal health chatbots is needed for generating applicable responses of the chatbots or opting acceptable dimension to be suggested to the stoner(26). Input to the AI algorithm are the results from the discussion analysis, but can be extended by data from other sources similar as detectors available in a mobile phone. Detector data similar as data from an exertion shamus provides fresh pointers for feting changes in geste or for prognosticating pitfalls(,28). By learning from the different data particulars, recommendations can be substantiated to a larger extent. structure AI- grounded chatbots requires training data, which is delicate to induce and it's more delicate to insure that AI- grounded chatbots induce acceptable responses or indeed to control their responses.

3) Given the deficit of internal health professionals available around the world, chatbots can help individualities gain access to internal health support nowhere(29) which can potentially ameliorate the vacuity and quality of internal healthcare at reduced charges. Chatbots are also suitable for furnishing internal health treatment for those who find it delicate to expose their internal health issues to a healthcare provider due to stigmatization. According to Lucas and associates, stagers bared more symptoms of posttraumatic stress complaint to a chatbot than anonymized and non-anonymized performances of a tone- conducted questionnaire(30). Given that chatbots are generally easy- to- use and interact with, they give an occasion for druggies with lower language, health knowledge and computer chops to interact in fairly simple manner with the chatbot. Embodied chatbots can interact with druggies in a simple manner using verbal and verbal behaviors and show empathy, attention, and close propinquity. This, in turn, enables them to establish a remedial alliance with patients. A study showed that a wide range of druggies, including those who have no-way used computers before set up chatbots easy to use(31).

Although usual motorized interventions can be effective in perfecting internal health, they're characterized by high powerhouse rates and poor adherence owing to the lack of quality mortal commerce that face- to- face hassles with healthcare providers offer(,33). Chatbots can come a promising volition to those interventions through their intuitive, mortal- like, and amusing commerce with druggies, thereby, they can ameliorate druggies ' adherence(33). former studies have reported on the implicit benefits of using chatbots for internal health. Specifically, chatbots are effective in perfecting several internal health issues. For illustration, studies showed that there's a statistically significant difference favoring chatbots over reading an eBook on the inflexibility of depression($P = 0.017$)(34) and anxiety($P = 0.02$)(35). Chatbots have the eventuality to educate individualities social chops(e.g. job canvassing chops) and allow them to exercise these chops in anon-judgmental terrain. For illustration, chatbot druggies in the study showed significantly advanced enhancement than the waiting- list group on job interview chops($P<0.05$) and tone- confidence($P<0.05$)(36). Chatbots have the eventuality to descry several internal health related issues. Ujiro and associates(37) developed a chatbot to descry cases with madness where they set up high performance of the chatbot in detecting madness(area under the wind(AUC) of 95).

Indeed though AI can realize and help in creating chatbots that pass the Turing test, there are still specialized limitations. Being systems are unfit to flash back what has been said in former exchanges, which might lead to unhappy responses(38). Knowledge on the stoner and his/ her internal state has to be collected and stored for unborn relations with the bot to address this issue. A chatbot reply might be frustrating or shy for a stoner due to a lack of understanding or missing emotional intelligence(38).

The chops of being internal health chatbots are general, frequently repetitious and the commerce is frequently analogous to a tone-help book(38). Altogether, this might beget annoyance and limits stoner adherence to similar operations.

4) Being internal health chatbots are frequently penned systems, guiding through a predefined discussion inflow. When internal health chatbots come tone- learning systems through integration with AI, the systems might develop their own rules and make their own opinions which are out of control of an substantiation- grounded commerce which may produce detriment in cases. For illustration, a microsoft chatbot started to affront people after some time, which it wasn't anticipated to do(39). The reason was that the system was tricked by druggies.

Another important issue for the development of AI- grounded internal health chatbots is that AI algorithms are typically trained on large data sets. Other approaches that bear lower training data or use transfer literacy are under development, but again, training on data from other disciplines might introduce knowledge into the system that might risk patient detriment. Further, trained models can come prejudiced towards certain population groups when the beginning training data is rightly tried or data is unapproachable for some sub-groups. A challenge then that being exploration doesn't study in depth the specialized limitations of the developed internal health chatbots(,41). Evaluations principally assess usability and stoner experience(,41).

There are numerous internal health chatbots available in the app stores; still, numerous of them aren't substantiation- grounded or at least the beginning knowledge isn't undermined by applicable exploration(42). In order to be dependable and effective, internal health chatbots should calculate upon clinical substantiation, i.e. clinical approaches have to be integrated that are formerly in use in clinical practice and have shown effectiveness. Further, there's only limited substantiation on the remedial effect of internal health chatbots(,44). According to a methodical review, it's delicate to draw definitive conclusions regarding the effect of chatbots on several internal health issues due to a high threat of bias in the included studies, low quality of substantiation, lack of studies assessing each outgrowth, small sample size in the included studies, and contradictions in results of some included studies(45). similar limitations may harm druggies by unhappy recommendations or uncelebrated pitfalls(29).

Given the perceptivity of druggies ' data about their internal well- being, chatbots must keep them private and nonpublic(46). Unlike case- croaker hassles, where patient sequestration and confidentiality are defended, chatbots frequently don't consider these aspects. utmost chatbots, especially those available on social media platforms, don't allow druggies to converse anonymously(47). thus, exchanges can be linked to druggies. Several chatbots explicitly stated in their terms and conditions that they can exploit and partake their data for different purposes. still, druggies frequently accept similar terms and conditions presented in a thick and formal language without careful reading, thereby, they may not be apprehensive that their data won't be kept nonpublic. This means the data could be vended, traded or retailed by the distributor of a chatbot. The stylish illustration of this is the Facebook reproach, when Facebook participated data for millions of druggies with Cambridge Analytica without their concurrence. Cyber-attacks might come another issue that will make stoner's particular health data available for unknown purposes.

VII. CONCLUSION

This study examined chat bots in end user service context and substantiates the relevance for end user service quality. To achieve this goal, five essential chat bots' end user-related functions derived from literature are assigned with two distinct categories. Interaction, entertainment and problem- solving were assigned to the category "improvement of service performance", which contains customer-related functions that aim to increase service performance. It was shown that a chat bot's trustworthy personality, an empathetic and open manner, as well as a socially oriented interaction style increase the quality of the interaction and thus the service performance of the chat bot [24].

On the other hand, the perceived entertainment shall positively affect consumers' attitude towards chat bots, thus also promoting the chat bot's service performance [27]. Further, problem-solving, seems to be relevant for the evaluation of service performance by determining customer preference for either chat bots or human assistants [30]. The 2nd derived category "fulfilling customer's expectations" includes the customer-related functions trendiness as well as customization which focus on meeting end user expectations. Since consumers increasingly value a fancy lifestyle, trendiness is a determinant factor for chat bots, enabling these new customer expectations to be met [31]. Moreover, customization is also linked to the latter, as a personalized and unique way of being served corresponds to the new requirements [2,15].

The main contribution of this work might be particularly relevant for all industries with a high B2C communication frequency and where customer service is of great importance. The categorization of the customer- related functions may give software engineers an approach for identifying the key features a chat bot needs, in order to improve service performance and fulfill end user expectations, and thereby meet the ultimate goal of improving service quality.

Concerning the present state-of-the-art research domain, the implementation and use of such communication systems in the field of e-commerce suggest multiple opportunities for further study in this area. Further studies may explore the applications and/or sectors in which chat bots generate greater value, and which functionalities need to be implemented in order to make chat bots more effective for specific applications.

Selected implementation examples and show cases may be subject of empirical studies to determine and evaluate the performance of the chat bots in terms of service quality, and then identifying the factors which are having particularly strong impacts on the latter.

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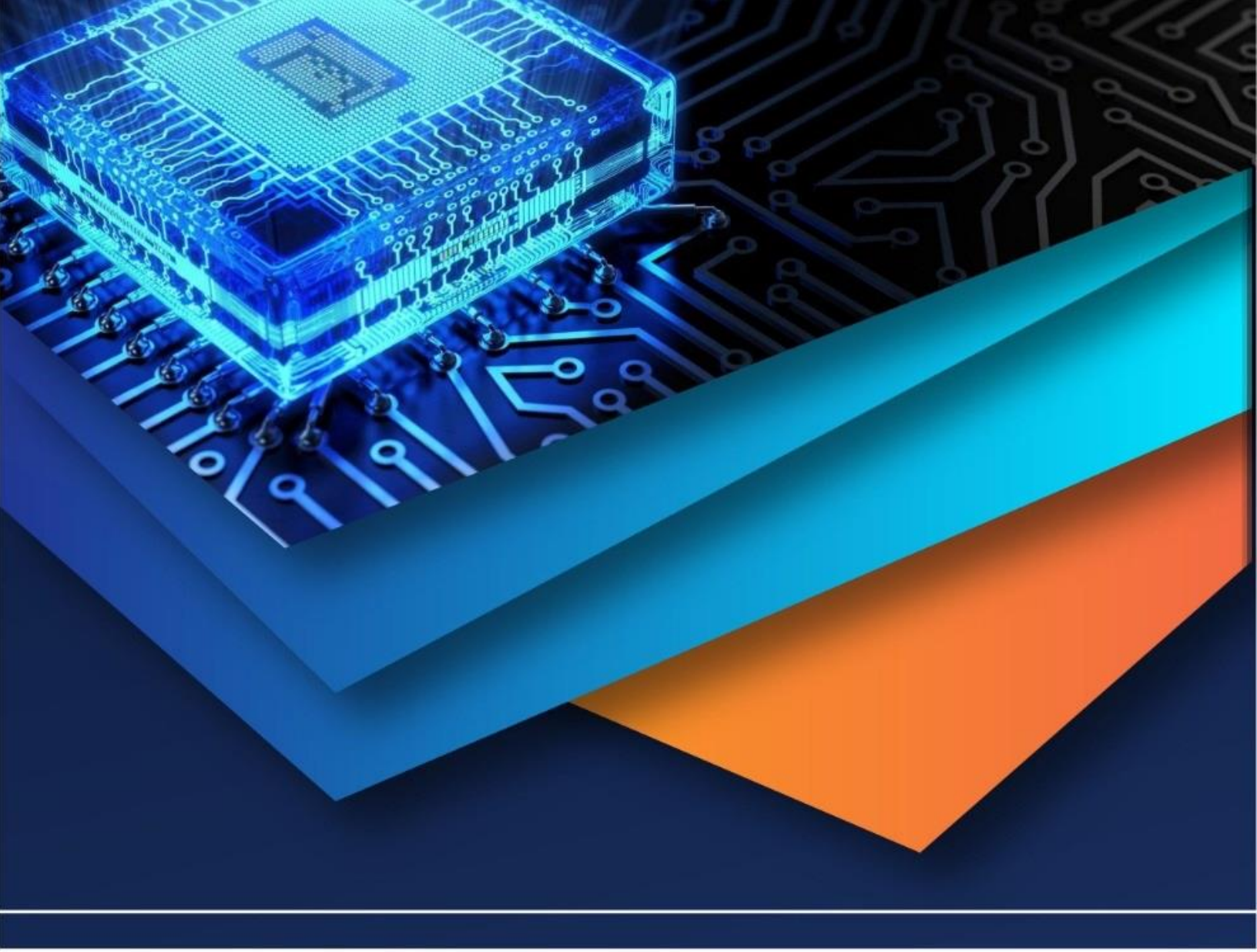

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