

Impact and Challenges of Coronavirus on Daily Life and Living: A Cloud Based Communication Assistant during the COVID-19 Pandemic

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ABSTRACT

Introduction: The COVID-19, Coronavirus Disease 2019, emerged as a hazardous disease that led many causalities across the world. Maintaining physical distancing, a critical task with minimum trips has become a hot trend nowadays. To keep up with patient care amidst an international crisis that is exhausting online

healthcare resources, physical distancing during the Covid-19 pandemic has brought telemonitoring to the forefront. Physical distancing measures are of utmost importance for understanding and managing health-related concerns resulting.

Objectives: To describe and analyze the impact, challenges, and solutions of Coronavirus on daily life and living associated with cloud based telemonitoring during the Covid-19 pandemic.

Methods: We presented a cloud-based communication assistant for the treatment of any customers with recommender systems. Proposed Cloud-Based Communication Assistant (CBCA) aims first to identify the customer's query and then based on his/her need to provide better assistant at home. It categorized the customer's query based on questionnaires. As customer register themselves online on the CBCA in real time, it creates the database for the same.

Results: This database helps to improve communication accuracy as it contains latest updates from real world cases data. A team of shopkeepers, vendors, consultants are integrated with the CBCA for better consultation and prevention.

Conclusion: The ultimate aim of this proposed theory of CBCA is to take a control over unnecessary trips and decelerate its rate of transmission among the society. Widespread adoption of telemonitoring-favoring policies are necessary and mostly needed to address mental health problems that may arise in areas of high infection and death rates.

KEYWORDS: Cloud Computing, Telemonitoring, Fuzzy Set Theory, Communication Medium, COVID-19

I. INTRODUCTION

The COVID-19 formerly known as 2019-nCoV, severe acute respiratory syndrome coronavirus 2, was first found in Wuhan in late 2019 as a case of untraceable pneumonia [1,2]. The World Health Organization named 2019-nCoV as COVID-19 (Coronavirus disease 2019) on February 11, 2020 [6]. COVID-19 was neither detected nor reported in humans before [3,4]. The reported cases of COVID-19 reached 27,296,207 as on September 07, 2020 [5]. COVID-19 is a communicable disease which transmitted through close contact with the infected person or even with the infected surface. As per the reports, it is highly contagious and period of its incubation can be 2 weeks or more than that [6]. It infects the lung. Severely infected patients faced problem in respiration which leads to acute respiratory distress syndrome and finally caused death [7,8]. Hence it is necessary to detect this problem at the early stages so that its expansion can be controlled. Current viral nucleic testing of COVID-19 is having only 30% - 50% of accuracy. Due to this fact, many suspected or suspicious cases got unnoticed and undetectable which are left out from treatment [9]. Initially, "Diagnosis and Treatment Scheme for Pneumonia of COVID-19 (Interim Version 5)" [10], was adopted by National Health Commission of China, which was based on the chest imaging while proposing Version 6 [11]. Despite of adopting the aforesaid proposed Version 6, few cases still remains untouched or misdiagnosed due to different level of diagnosis through different doctors in different regions. Also, the detection of COVID-19 goes untraceable in its initial stage. Bernheim A et al. [12] revealed that detection of nucleic acid test can be done by observing the changes in computed tomography (CT). It is much more important to diagnose the suspects and isolate them to prevent the further dispersion of the infection among the society. For this reason, we are proposing CBCA for unnecessary visits to shopping, working, transport, restaurant, and hospital. The CBCA will identify the customer's query and then based on his/her need to provide better assistant at home. This will be really helpful for the customers who are not able to visit any such places. It also prevents unnecessary visits to needy places in such hazardous scenario. With the help of the proposed method customers will be able to recommend themselves, because all the relevant consultation will be easily identified by the proposed system.

Rest of the parts of this paper are as follows: Section II gives overview of cloud computing, Section III explains Fuzzy Set Theory, Proposed methodology is given by Section IV and finally, Section V will have conclusions and research directions.

II. CLOUD COMPUTING

"Cloud computing (CC) is the on-demand delivery of compute power, database, storage, and other IT resources through cloud computing services via internet with go as you pricing model". Technology Review followed the coinage of the term CC back two decades earlier, to November 14, 1996, and to an office park outside Houston by "George Favaloro" and "Sean O'Sullivan" [13]. Even though many people believe that CC is a quite newborn phenomenon, it has its roots in the ideas assumed in 1960s. J.C.R. Licklider of ARPANET is universally attributed as the first one to introduce the idea of "intergalactic computer network" in 1969, a machine which can be accessed from anywhere in the world. But even before him, in 1961, John McCarthy drifted the idea of computation being provided as public service just like any other service, a concept he named as "utility computing" [14], and in many ways, this is absolutely what CC is these days. Over the 1960's and 70's, large banks of computers added so-called "time-sharing" services to local and remote stakeholders. In the 1980's and early 90's, large scattered data centers became familiar place in large enterprises. There wasn't any momentous breakthrough until Internet became quite common and easily accessible. Salesforce.com in 1999 was the first company to provide enterprise level applications to their customers through web.

III. FUZZY SET THEORY

Fuzzy set theory is developed by Lutfi. A. Zadeh in the year 1965. In order to use vague values, we use fuzzy logic. The range lies in fuzzy logic is [0-1]. There are several types of fuzzy set theory like as trapezoidal fuzzy number, bell shaped fuzzy number, Gaussian fuzzy number, Triangular Fuzzy Number (TFN) [15, 16, 17]. In our proposed method we are using triangular fuzzy number to calculate the weight of questionnaires based on DM's. Our proposed method will provide the optimal treatment to the COVID-19 victim at home through fuzzy assessment calculation by TFN. In fuzzy system, we can only provide the linguistic values like (0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1) to

each question based on DM's expertise. Once we get the linguistic values from DM's, then we apply TFN to each DM's decision, and calculate the weight accordingly. MCDM (Multi-Criterion Decision Making) method could be a sub-discipline of operations investigate that unequivocally assesses numerous conflicting criteria in choice-making (both in existence and in settings such as commerce, government, and medication). In our proposed method, we are using fuzzy set theory for identifying the vague values from the questionnaires.

IV. PROPOSED METHODOLOGY

This section presents a Cloud-Based Shopping Communication Assistant for the treatment of any

customers with recommender systems. The proposed method is presented in the following (see Fig. 1)

- (a) Register into CBCA.
- (b) Consultation Based on Questionnaire by the Shopkeepers
- (c) Identify customer for different regions
- (d) Elicitation of customer's query
- (e) Identification of customer's query category wise
- (f) Assigning target to Customers according to questionnaires
- (g) Dispatched items to the concerned customers

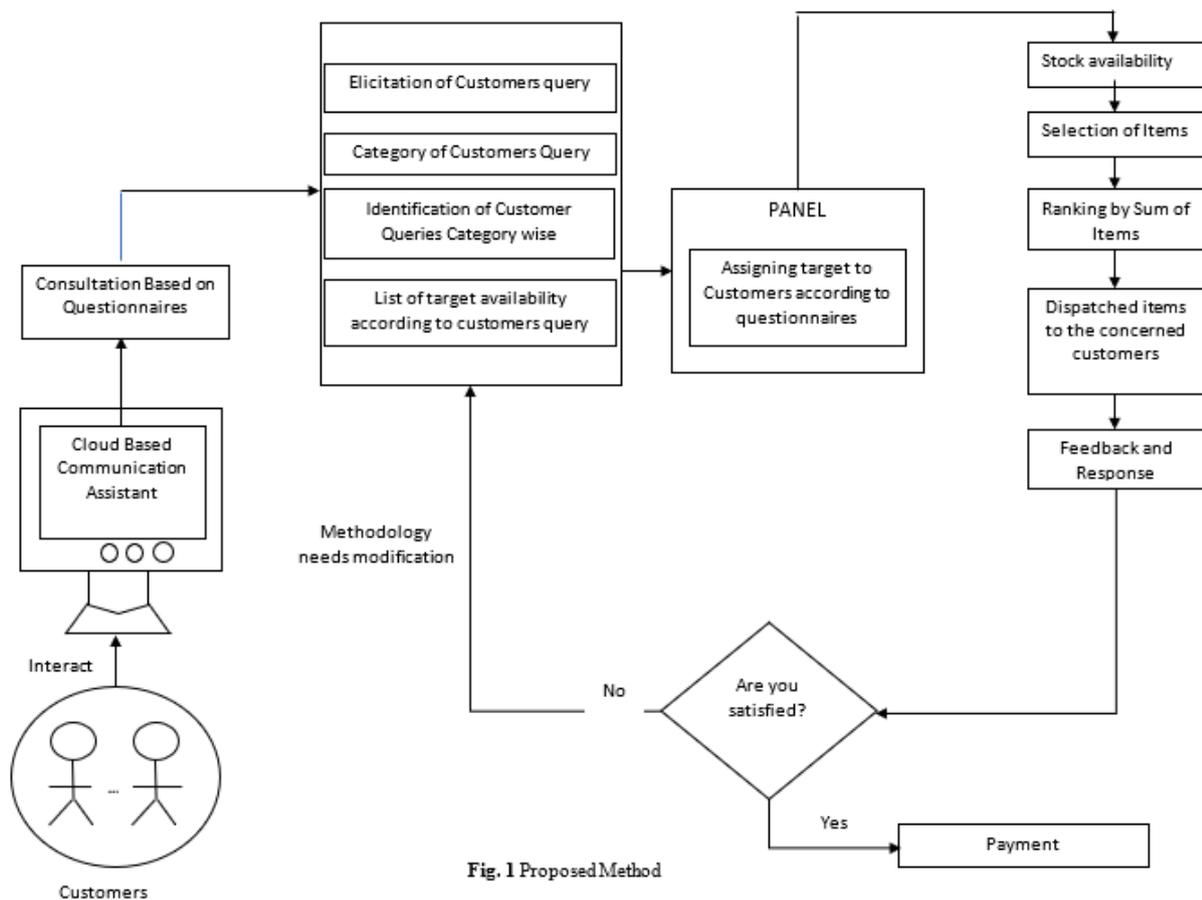


Fig. 1 Proposed Method

V. CONCLUSION

In this paper, we proposed a method based on CBCA. The proposed method includes the following steps: register into the proposed method, consultation based on questionnaires by the DM's, identify customers for different regions, elicitation of customers query, category wise query identification, assigning target to customers according to questionnaires, dispatched items to the concerned customers. CBCA helps in

distinguishing volunteer specialists for master discussion (help in checking the out customer time of interested vendors in each assistant center), online interview (master discussion of volunteers, as it were restricted to the questions of the specialists teaching), and address preparing, counting preparing direct agreement, conclusion and treatment innovation, science instruction, and master gathering. In our proposed method, we used MCDM method for the detection of COVID-19

target and also provide the best possible assistance to the customers based on his/her query. This will be really helpful for the suspects who are not able to visit any shopping, working, transport, restaurant, and hospital. It also prevents unnecessary visits to hospitals in such hazardous scenario. With the help of the proposed method customers will be able to assist themselves, because all the relevant consultation will be easily identified by the proposed system. Future research directions include the following:

1. To extend the proposed method by using Multi-Criteria Decision-Making methods like TOPSIS, AHP, MAUT, CBR, DEA, SMART, Goal Programming, ELECTRE, PROMETHEE, SAW etc.; and to design a hybrid system by using an efficient method for mining frequency item sets.
2. To present the comparative study between various diagnosis center for getting cure from COVID-19.

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