Conversational Agent to Address COVID-19 Infodemic: A Design-Based Research Approach

Youness ZIDOUN[a,1], Sreelekshmi KALADHARA[a], Yehia KOTP[b], Leigh POWELL[a], Radwa NOUR[a], Hanan AL SUWAIDI[c] and Nabil ZARY[a]

[a] *IeHPE, MBRU, Dubai, UAE*
[b] *Smart Services, MBRU, Dubai, UAE*
[c] *College of Medicine, MBRU, Dubai, UAE*

Abstract. Since the beginning of the year 2020, we have been suffering from the COVID-19 pandemic and are daily exposed to misinformation, leading to myths around vaccination and COVID-19. This study focuses on creating and distributing a Conversational Agent (CA), named VWise, for a health intervention using Design-Based Research (DBR), to help profile, guide, and inform the public about COVID-19 and COVID-19 vaccination in the EMRO (Eastern Mediterranean Region of Operations) region.

Keywords. Conversational Agent, NLU, Design-Based Research, COVID-19 vaccination.

1. Introduction

Vaccine hesitancy is a global issue, described as the refusal or delay of vaccine uptake notwithstanding the availability of service [1]. To impact the public's behavior, health communication approaches should activate community participation and provide avenues for individuals to receive and communicate their needs [1]. This study aims on designing a Conversational Agent (CA) using Design-Based Research to help profile and inform the public about COVID-19 and COVID-19 vaccination in the EMR region.

2. Methods and Results

The purpose of the Design-Based Research (DBR) is to generate new theories and frameworks for conceptualizing learning, instruction, design processes, and educational reform [3]. This study focuses on the first iteration of the Vwise design, using the multiple cycles of the DBR approach - Design, Analyze and Review. After completing the first iteration of the design cycle with the initial NLU model derived from the WHO FAQ (Frequently Asked Questions), an improved model will be obtained to inform the next phase, using Conversation Driven Development (CDD) process.

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[1] Corresponding Author, Youness ZIDOUN; E-mail: youness.zidoun@mbru.ac.ae

VWise integration architecture as per figure 1, has a training model, distribution channel, separate database to store conversations, finally the collected data analyzed, to draw conclusions out of it. The entire navigation flow is set up in two separate Virtual Machines, one hosts the web pages, and the other hosts the CA GUI which is the Rasa X instance.
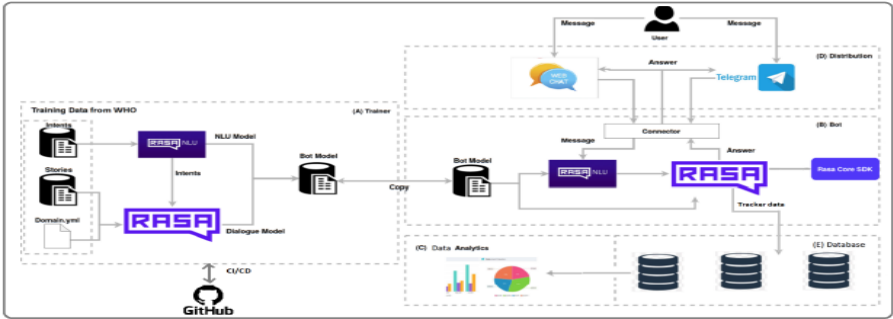

Figure 1. The VWise integration architecture

3. Discussion and Conclusions

Even though using DBR is quite appealing in linking development and research as closely as possible, evidence suggests that significant and transferable results can only be achieved if numerous iterations are executed. Owing to the project's timeline, we propose that the necessary phases of DBR will be followed even in this short time frame with limited number of iterations, to generate acceptable and practical recommendations for designing a contextualized CA, which addresses vaccine hesitancy. The current stage consists of the first iteration of the design, having covered the two cycles of analysis and design. The evaluation and reflection phase will take place right after the end of the last CDD process. As a pragmatic methodology, DBR can represent a holistic approach to inform such innovative projects considering its iterative principles.

4. Acknowledgement

References

[1]   '1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf'.Accessed:Jan.16,2022.[Online]. Available:https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GR OUP_vaccine_hesitancy_final.pdf

[2]   Walwema J. The WHO Health Alert: Communicating a Global Pandemic with WhatsApp, Journal of Business and Technical Communication. 2021 Jan; 35(1), 35–40, doi: 10.1177/1050651920958507

[3]   Johnson C, et al. Using design-based research to develop meaningful online discussions in undergraduate field experience courses. International Review of Research in Open and Distributed Learning. 2017; 18(6). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/2901/4373