SafeTraveller - A conversational assistant for BeNeLux travellers[*]

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Abstract. The artificial conversational assistant SafeTraveller helps people understand travel regulations related to COVID-19. The current implementation covers travel regulations for BeNeLux countries. It is implemented using RASA and works in Facebook Messenger. The heuristic-based evaluation of user experience shows performance above average.

Keywords: COVID-19 Travel Regulations · Conversational Assistant

1 Problem

COVID-19 pandemic caused various restrictions in mobility within and across European countries. It lead to a lot of uncertainty in regions close to borders with high number of work commuters. The regulations changed many times, and different rules were applied for transit and stays of different duration in countries, as well as for different travel purposes. People were overwhelmed with changing rules, actual information is sometimes difficult to find, and sometimes only available in one language not spoken by the concerned persons.

While many implementations address issues related to health questions and symptom checking, for example [2,4,3], topics of mobility under pandemic conditions did not receive much attention. We solve these problems with an artificial conversation assistant called SafeTraveller.

2 Solution

Our first prototype includes travel information within and across three countries: Luxembourg, Belgium and the Netherlands. The chatbot is provided with a knowledge base of travel regulations. The chatbot retrieves an answer depending on the travel characteristics: transit or stay, duration of stay (e.g. more or less than 48 h), purpose of stay (e.g. work or leisure). The chatbot also provides information about COVID-19 tests and informs about wearing masks. It also covers regulations related to vaccinations. The current implementation is based
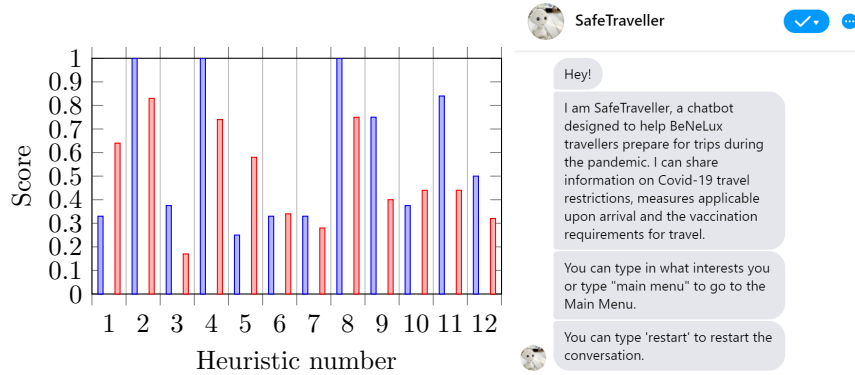
on RASA[1] and uses Facebook Messenger to connect with users. The knowledge based was populated with regulations related to travel and restrictions within the countries. The regulation texts were paraphrased to make them sound more conversational and accessible. The working of the system is illustrated in a video demonstration of the prototype[2].

3   Evaluation

The evaluation of the user experience in expert interviews based on 12 heuristics [3] shows that SafeTraveller outperforms the average results from [3] in heuristics 2,3,4,8,9,11,12, reaches approximately the same score in heuristics 6,7,10 and needs more attention in heuristics 1 and 5 (SafeTraveller in blue and the average bot in red in the plot below). The screenshot shows the start of the conversation.

4   Conclusions and Future Work

SafeTraveller as a proof-of-concept shows that the conversational assistants help to find the relevant information for the given use case faster. The dynamics of the pandemic (vaccinations, virus mutations and people's mobility) shows that this topic is still urgent.

In our next release of the SafeTraveller we plan to include information for all European countries in at least three languages. We plan to use the dataset collected by [1] to train the language understanding models in all languages of the Greater Region. In addition, we plan to include dynamic updates of the knowledge base in order to keep the information for all countries up to date. We will also integrate logic and reasoning to handle contradictions. However, several research challenges need to be solved such as automated translation of regulations and automated reasoning over a multilingual knowledge base.

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[1] https://rasa.com
[2] https://youtu.be/BKuH7lMw3PU

References

1. Chen, N., Zhong, Z., Pang, J.: An exploratory study of covid-19 information on twitter in the greater region. Big Data and Cognitive Computing **5**(1), 5 (2021)
2. Espinoza, J., Crown, K., Kulkarni, O.: A guide to chatbots for COVID-19 screening at pediatric health care facilities. JMIR public health and surveillance **6**(2) (2020)
3. Höhn, S., Bongard-Blanchy, K.: Heuristic evaluation of COVID-19 chatbots. In: Proceedings of CONVERSATIONS. pp. 131–144. Springer (2020)
4. Munsch, N., Martin, A., Gruarin, S., Nateqi, J., Abdarahmane, I., Weingartner-Ortner, R., Knapp, B.: Diagnostic accuracy of web-based COVID-19 symptom checkers: comparison study. Journal of medical Internet research **22**(10) (2020)