Artificial Conversational Agent Based Tour Guide System

S.B.G.J.S.Bandara*, J. M. K. H Jayasundera, U. H. N Udayanga, P.A.A.Iloshini and K.P.P. S. Pathirana

Department of Computer Science and Technology, Uva Wellassa University, Badulla, Sri Lanka

The study designed to show that the tour guidance for tourists can be improved by incorporating all Artificial Conversational Agent (ACA). Although some of the aspects in Sri Lanka are well satisfied in the tourism industry, there is a lack of travel planning and collaborative interaction with the tourists. The implemented system is proposed to fulfil those solution gaps using a web portal with localized data and an ACA, who interacts with the user in natural language to provide information and trip planning functionalities. User expectations are identified by a statistical survey and the relevant dataset is based on localized destinations, intentions, locations, accommodations and route entities in Uva province of Sri Lanka for the Named Entity Recognition (NER) task. The ACA module is integrated with the web portal for users to interact using natural language. Dialogflow Natural Language Processing as a Service (NLPaaS) is used for Natural Language Processing (NLP) and Machine Learning (ML) tasks that are based on the custom entity model and an intents model, used for intent and entity extraction from user utterances. A web application implementing a webhook which is connected with dataset is used to query the data and an HTTP POST request is used to access the application endpoint and send relevant parameters. Optimized trip plan generation is implemented for certain user requirements and made it available to the user by sending an email. Training of ACA is done by Part Of Speech (POS) tagging for entities in potential user utterance corpus for each intent. For more user convenience the ACA is made available via social media channels and it is recommended to extend to the whole country. The effectiveness of the application is affirmed by the local and foreign tourists' feedback and MCQ answers, which are taken after using the application. It concludes that Sri Lankan tourism can be improved by efficient information delivering using emerging communication methods.

Keywords: Artificial Conversational Agent (ACA), Natural Language Processing as a Service (NLPaaS), Natural Language Processing (NLP), Machine Learning (ML)