A Realtime Farmers' Advisory based on a ChatBot Approach in Moroccan Dialect

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1 Context

With the advent of artificial intelligence and proliferation in the demand for an online dialogue system, the popularity of chatbots is growing on various industrial applications. Their applications are getting widely noticed with intelligent tools as they are able to mimic human behavior in natural languages. Chatbots have been proven successful for many languages, such as English, Spanish, and French, over the years in varied fields like entertainment, medicine, education, and commerce. However, Arabic chatbots or Dialect chatbots are challenging and scarce [1]. More specifically, in the agriculture sector, farmers are facing lot of issues even in the era of Digital disruptions. Conversational AI bots powered by natural language processing have the potential to always assist farmers regarding all the intricacies involved in farming [2]. They can offer timely and accurate information in a language that farmers can understand. Chatbots can also be used to personalize advice to farmers based on their specific needs. This can help farmers to get the most out of their agricultural practices [3]. For example, a farmer could ask a chatbot about the best time to plant a certain crop. The chatbot could then provide the farmer with specific advice. Chatbots could also be used to provide personalized advice on pest management. The chatbot could ask the farmer about the crops they are growing, the location of their farm, and the type of pests they are experiencing. The chatbot could then provide the farmer with specific advice on how to manage the pests. Chatbots have the potential to be a valuable tool for farmers by providing farmers with timely and accurate information, personalized advice, and support, which can help farmers to improve their agricultural practices and increase their productivity.

2   Research Objectives

The main objective of this thesis is to develop a novel framework for a Moroccan Dialect advisory chatbot that supports farmers in their decisions and optimizing their practices. The framework addresses the difficulty of using the Moroccan Dialect language and the shortage of Dialect chatbot content. To be specific, we will first provide a realistic implementation of creating an Arabic corpus for the chatbot. The corpus will be developed relying on extracting agricultural challenges/solutions from multiple crops and reliable sources. Secondly, we investigate implementing chatbot based on the corpus developed. Third, we evaluate the chatbot performance in terms of accuracy and response time and asses the added value of the chatbot in enhancing farmers' accessibility to advisory services.

3   Admission Criteria

The PhD position is available at Ai movement, the International Center for Artificial Intelligence of Morocco of UM6P in collaboration with the AgriTech Center of Excellence of UM6P. Applicants with excellent academic credentials must be holders of a Master's, an engineering, or an equivalent recognized degree with good skills in applied mathematics, in relation to machine learning. Past experiences in relation with NLP are a bonus. The candidate should also be excellent in programming (Python, Java or C++), should have soft skills of problem solving, autonomy, and be fluent in English and French languages. Letters of recommendation are welcome.

References

[1] Alhassan, N. A., Saad Albarrak, A., Bhatia, S., & Agarwal, P. (2022). A novel framework for Arabic dialect chatbot using machine learning. Computational Intelligence and Neuroscience, 2022, 1844051. https://doi.org/10.1155/2022/1844051

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