Enhancing Ambiguity Resolution in GenAI-Powered Customer Support Agents Using Reflection and Few-Shot Learning

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Abstract:

Handling ambiguous prompts in GenAI-powered intelligent customer support agents remains a significant challenge. Ambiguity in user queries often results in lengthy or incorrect responses, leading to customer dissatisfaction. Previous studies have explored various techniques, such as generating multiple question variations with full context or presenting answer choices in different combinations, but these methods have shown limited effectiveness. This paper introduces a novel approach that combines the reflection pattern of Agentic AI with targeted user queries to enhance the user experience. The model, trained using a few-shot learning methodology, improves its ability to detect ambiguity by being specifically tailored to the context of the chatbot's application. The process involves reviewing the generated response for potential ambiguity and iteratively asking users additional questions to refine the answer, thus fostering a more interactive and conversational exchange. The study analysed 60 ambiguous questions from the FAQs of five different airline carriers, yielding promising results with an F1 score of 0.82. The blended approach of reflection, user feedback, and few-shot learning marks a significant advancement in automating ticket resolution for L1/L2 support agents. This results in increased precision and efficiency in user interactions, leading to reduced human effort and a lower total cost of operations.