

Optimizing Conversational Agent Architectures for Health Empowerment: A Component-Based Mapping Approach

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Abstract

Empowerment in health refers to an individual's capacity to make decisions about health through access to information, self-awareness, and effective health goal management. Conversational agents seem an ideal solution for personal health empowerment; however, utilizing conversational agents for health empowerment presents several challenges: the inability to dynamically adapt to user queries, limited support for personalized health management, and a lack of continuous motivational support. These issues hinder user satisfaction and negatively impact positive health outcomes. Addressing these limitations is essential to optimizing health empowerment through a whole methodological framework that highlights the less considered health empowerment elements and improved conversational agent architectures.

This research aims to identify key health empowerment elements, including health knowledge, education, personalized recommendations, self-management, and motivational support, with a particular focus on crucial lifestyle factors such as physical activity, diet, and sleep, to enhance personal health and well-being. As this research is interconnected between health conversational agents and health empowerment, further, research explored the architectures and their components and their dependencies towards health empowerment elements. This research adopts the Design Science Research Methodology (DSRM) to address challenges in the health empowerment conversational agents.

Findings indicate that conversational agents hold significant potential for implementing these empowerment functions, yet current conversational agent architectures lack essential components directly responsible for empowering users in their health journeys. To address the above-mentioned gap, this research specifically examines health empowerment within conversational agents and the responsible components necessary for improved health. The study suggests a mapping framework that illustrates which aspects of health empowerment are correlated with conversational agent architectural elements.

The mapping framework will be a guideline in the future to develop a health empowerment framework that can improve the health management and motivational support of individuals and to take personalized recommendations for their health.