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Preventing Diabetes: Substituting Processed Foods and Nutritional Chatbot Assistance

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[Pablo Solano](#), [V́ctor Herrera](#), [Victoria Abril-Ulloa](#) & [Mauricio Espinoza-Mejía](#)

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Abstract

Type 2 Diabetes Mellitus (T2DM) is one of the biggest threats to Ecuador's health. The intake of processed foods has been linked to a higher risk of T2DM. This paper proposes FoodSub, a mobile application to recommend substitutes for processed foods using the

NOVA Classification. Nutrient-based food clustering is used to identify substitute pairs between processed and unprocessed foods. The recommendations are supported and personalized using a knowledge graph that contains foods, dietary guidelines, and user information. In addition, a chatbot is implemented to answer simple questions about foods. This chatbot is developed using a Large Language Model (LLM) to query the knowledge graph. The mobile application and the chatbot are evaluated in terms of usability; both perform well, but there is room for improvement. Additionally, the recommendations' performance is evaluated through expert verification. The recommendations perform well when issues like food transformation processes, flavor, context, or meal time are not relevant. Future work will consider the enhancement of the chatbot and the improvement of substitute recommendations for the relevant cases.

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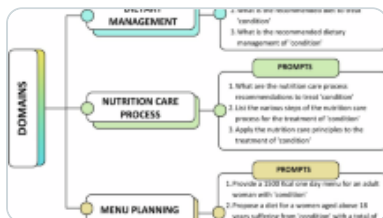
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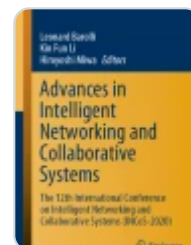
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A Personalized Food Recommendation Chatbot System for Diabetes Patients

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C'Meal! the ChatBot for Food Information

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Notes

1. <https://diabetes.org/>.
2. <https://platform.openai.com/docs/models/gpt-3-5>.
3. <https://neo4j.com/docs/cypher-manual/current/indexes-for-full-text-search/>.