The Development of a Diabetes Health Management Chatbot

Student :Tai-Jung Chiang Advisor：Dr. Chieh-Yuan

Institute of Industrial Engineering and Management
Yuan-Ze University

ABSTRACT

Diabetes has a major impact on human health around the world. In Taiwan, the number of people suffering from diabetes exceeds one tenth of the total population. Diabetes patients need to self-manage their own health to maintain their health. Selfmanagement includes blood glucose monitoring, diet control, and exercise management. This study developed a chatbot that provides health management services for diabetes patients to assist users in self-management. The chatbot system can record the patient's blood glucose, exercise, and diet by having conversation with the user. Based on the exercise and diet guidelines provided by medical institutions, the proposed chatbot can provide dietary and exercise advice to users to learn how to eat and how to exercise to maintain and improve their health. The system consists of four main components, including a dialog controller that controls the dialogue and data flow in components, a neural network that recognizes the keywords in the user's utterances, a database that stores users' data, and a diabetic management rule base contains dietary and exercise guidelines provided by the medical institution. This study compares the performance of four neural networks on keywords identification, and found that Iterated Dilated Convolutional Neural Networks with Conditional Random Field (ID-CNN-CRF) is suitable for the proposed chatbot. This study also compares two word segmentation methods and two word2vector models. After the system is constructed, the caregivers of diabetes and diabetes patients are invited to conduct the usability test of the chatbot. According to the score and advice from the subjects, it is believed that the proposed chatbot can bring a better way to manage the health of the user.