

# Development of a Medication Information Generator System for Older Adults

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**Abstract**— We introduce a functional prototype that detects medication names in a text-based electronic document and generates a Hyper Text Markup Language (HTML) file that contains links to websites about information of medications. We used the website, HealthCentral (<http://www.healthcentral.com>), as a resource of medication names of diabetes, Alzheimer, depression, cancer, and heart attack. This website provides the following five categories for each medication: uses and how to use, precautions and side effects, medication interactions, dosage and storage, and medication images. We aim to deploy our system to improve the readability of eHealth resources for older adults by providing hyperlinks of the medication names on any text-based electronic documents automatically.

**Keywords**— *Text mining; eHealth literacy; Medication information; Older adults*

## I. INTRODUCTION

The number of older adults in the U.S. has increased and is expected to reach about 73 million by 2030. 77% of older adults have at least two chronic diseases [1]. It becomes important for older adults to manage multiple chronic diseases. eHealth resources can support older adults' tasks, such as accessing health information online and managing their health [2]. In particular, it is reported that 76% of older adults have difficulty understanding their drug information [3]. Nevertheless, little is known about systems for older adults to access to drug information online. To address this, we developed a functional prototype that detects medication names in a text-based electronic document and generates a Hyper Text Markup Language (HTML) file that contains links to websites about information of medications for five popular diseases, such as diabetes, heart disease, alzheimer, depression, and cancer, ranked top 10 among older adults in the U.S.

## II. EHEALTH RESOURCES

The following websites provide medication information: HealthCentral.com, Drug.com, MedicineNet.com, and Drubabuse.com. Among the websites, we chose HealthCentral as a resource because the URLs of the website were specified by diseases. It helped us to process the URLs when crawling medication names for each disease. For instance, the URL of the website displaying medication information for diabetes is: <http://www.healthcentral.com/diabetes/medications/>.

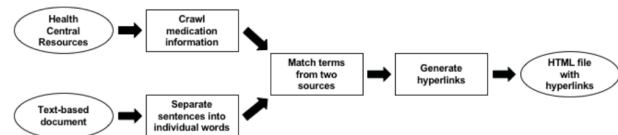


Fig. 1. Flow chart of the system.

## III. OVERVIEW OF THE SYSTEM

The first step is to crawl medication-related text from a resource on a website using a python language. Through the HTML source, we gather the medication's information in HealthCentral (<http://www.healthcentral.com/>). The output file is crawled texts that contain three columns: medication name, category of disease, and link to be linked. The kinds of diseases are diabetes, heart disease, alzheimer, depression, and cancer. The second step is to separate phrases and sentences into individual words. The purpose of this step is to improve accuracy by filtering. The third step is to match the terms from steps one and two. If the terms from the second step are the same as the crawling words, then they are matched. The fourth step is to hyperlink matched terms on the user's input document. People do not need to search the Internet by entering the medication. As for future work, we will evaluate the feasibility and usability of the system with older adults.

## IV. CONCLUSION AND FUTURE WORK

We presented a working prototype that imports any text-based files and generates hyperlinks to a website for medication information. The system crawled 149 medication names in cancer, 133 in heart attack, 118 in diabetes, 58 in depression, and 18 in alzheimer's disease from HealthCentral, one of the existing eHealth resources. As for future work, we plan on evaluating the feasibility and usability of the system.

## REFERENCES

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