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## THE 11TH INTERNATIONAL INNOVATION, INVENTION & DESIGN COMPETITION INDES 2022

# **EXTENDED ABSTRACTS BOOK**



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## The 11th International Innovation, Invention and Design Competition 2022

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### MEDIRE: MEDICATION REMINDER MOBILE APPLICATION WITH OPTICAL CHARACTER RECOGNITION (OCR)

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#### ABSTRACT

Medicine is the science of healing, which includes diagnosis, treatment, and the promotion of health. In addition to treating and preventing various diseases, it also refers to substances derived from plants, medications, and therapies. The correct medication can vastly improve a patient's quality of life by reducing or eliminating symptoms. However, there are issues with people's medication intake. According to a preliminary study and a survey, people are so busy dealing with their daily lives that they forget important details, including their medication intake. Aside from that, they struggle to read the information on medications. This project aims to develop Medire: Medication Reminder Mobile Application with Optical Character Recognition (OCR) to address the issue. The Mobile Application Development Life Cycle methodology is used for this project. The modified methodology consists of four phases: identification, design, development, and prototyping. In the identification and design phases, all requirements to develop the mobile application were gathered. While in the development phase, the application included Pill Reminder, Medication Cabinet, and Health Care. Pill Reminder helps users track, plan, and be reminded to take their medications on time, while Medication Cabinet uses OCR and a search function to identify each medicine's purpose. The Health Care module locates pharmacies and clinics within 10 km. Finally, all of the modules were integrated to form a prototype. In conclusion, the purpose and objectives of this project have been accomplished. It is hoped that users will benefit from using this application in the future.

Keyword: reminder, application, OCR, medicine.

#### **1. INTRODUCTION**

Medications are important in the treatment of a variety of health conditions. The correct drug can drastically improve a patient's quality of life by reducing or eliminating symptoms. But it is important to be aware that medications can also cause harm to people. Some antibiotics can cause allergic reactions such as skin rashes. Interaction with other medicines that an individual is taking might also be a problem for allergic reactions. Hence, remembering to take a daily prescription might be the difference between life and death for many people. However, people always forget all the time due to the busyness in their life (North Carolina State University, 2010).

Moreover, there are issues with the packaging of pharmaceuticals. Factors including tiny text size and style, insufficient spacing between words, and font color without a contrasting backdrop can make it difficult for users to read and interpret prescription labels, preventing



users from correctly identifying crucial information needed for safe medication use. This can trigger medication errors such as duplication and drug interactions. In Malaysia, despite considerable subsidization of the cost of medications in public health care settings, the prevalence of poor adherence is still high (Hatah et al., 2020). Hence, if they take medication without first recognizing it, they will have negative consequences. Thus, this project has been initiated to help people who have problems with remembering medication intake and reading prescriptions on medicine by developing a mobile application using push notification and optical character recognition (OCR). In short, a combination of current technologies can create a helpful application for people who need it.

#### 2. METHODOLOGY

Mobile Application Development Life Cycle has been chosen for this project. The steps of this approach consist of identification, design, development, prototyping, testing, deployment, and maintenance phases (Fadzil et al., 2020). However, this project stopped at prototyping. The project started with preliminary study and conducting a survey, gathering information from the literature, and analysing the gathered information requirement. Next, there were several activities in the design phase which were designing the application architecture, application database, user interface and documenting the design. Then, the user interface (UI) must be based on the properties found in the database or NoSQL database schemas. After that, Human-Computer Interaction (HCI) may be used to assist with the interface, leading to a positive user experience (UX). Lastly, the prototype was developed according to three modules; Pill Reminder module, geolocation module to keep track nearby healthcare, and OCR module to scan the medicine information.

#### **3. FINDINGS**

In Pill Reminder module, users can view the dependent list and create new dependents by pressing the "+" button to access the create a dependent interface. Following that, a form for entering dependent data, including name, age, and relationship, will be displayed by the application. Then, pill reminder interface is shown to add medicine reminder and it will display input forms such as medicine name, times per day for medicine intake, time, and number of capsules. The repeated time when to take the medicine is calculated automatically.



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Figure 1 Pill Reminder Module

The application will remind users to take their medications on auto calculated time. The name of the medication and the number of capsules will be displayed in the notification. Users can search for medicine names by typing or using text recognition by clicking the camera icon button based on Figure 2. The indication of medicine will be displayed after users click the search icon button. The information regarding the indications is derived from a medicine collection that is kept in a Firebase database.



Figure 2 Medicine Search Function

Users can browse pharmacies or clinics within 10 kilometres of their location, and it will provide a list of every pharmacy or clinic in the area.

#### 4. CONCLUSION

In conclusion, the project's objectives and goals were accomplished. This project can assist people in taking their medications on time and identifying their prescriptions. Additionally, this project will assist people in locating nearby clinics and pharmacies.



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