Digital Photo Frame

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Objectives

- A digital photo frame with a user end app and a photo frame end web app
- To send and display photos on the digital photo frame using the apps
- To send reminders to the photo frame
- To build an automatic medicine dispenser that is connected to the photo frame
- To control the medicine dispenser using the same app

Introduction

The main aim of the project was to design a medicine dispenser attached to a digital photo frame. It was made to make it easier for old people to use. We used two apps to interact with the photo frame, one on the photo frame itself and one in the user's phone, to control the frame. For the user end app, we made an android app which connects with a database. We can upload pictures to the database, send messages and change settings of the photo frame. The photo frame end app is a web app that can run on a browser. It downloads pictures, messages and settings from the database. The medicine dispenser is controlled by an Arduino, which is connected to a Raspberry Pi.

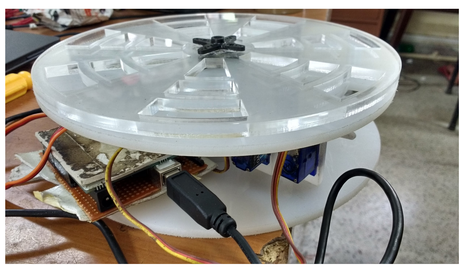


Figure 1: Figure caption

Software and Materials

The following materials were required to complete the research:

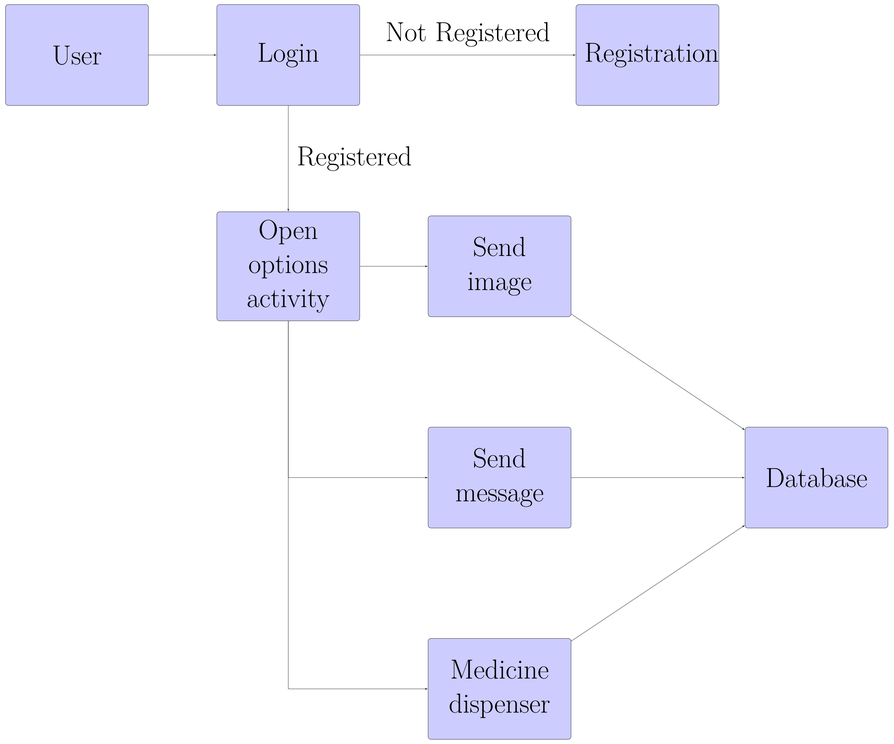
- PHP Server & MySQL Database
- Android Studio
- Raspberry Pi
- Arduino
- SolidWorks

Photo Frame End App

The photo frame end app is a web app that runs on a web browser. Originally the app was made to run on android, as we were planning on running android on the Raspberry Pi, but since the build was unstable, we switched to Raspian.
The app interfaces with the database using a PHP script, which reads the data and returns it in JSON format. The app displays the pictures uploaded to the database, and displays reminders from the database. It also shows weather info, which it gets from the Open Weather API.
It also controls the medicine dispenser.

User End App

The user end app was has the ability to send images, send messages and change slide show and medicine dispenser settings. All of these are sent to the database, where they are stored. We interact with the MySQL database using PHP files, called by the application. The data flow in the app is as follows:



Medicine dispenser

The medicine dispenser has 3 layers, top, middle and bottom layers.

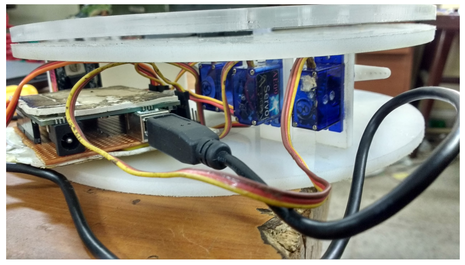


Figure 2: Medicine dispenser

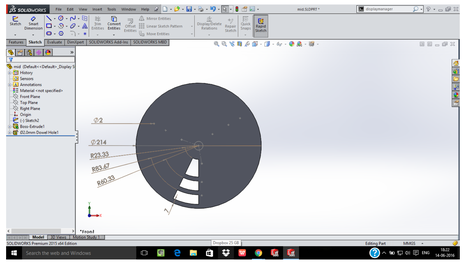


Figure 3: Layers

Future Plans

These are some improvements we can make to the project

- To install and use android on embedded processor such as Raspberry Pi, and use android for Photo Frame end.
- To remove some server security issues.
- To connect photo frame to multiple users.