Report

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1 Function

In this part we will introduce the main function of our app.

1.1 Visually browse previews of photos

The main function of our app implement is to help users pick photos that they like or want to edit and store them in the app's gallery, then display the thumbnails of the photos in the main interface. Here we draw on the sample code of the fourth week, using 'easyimage' to complete the image selection function and add several features.
Here we create a new folder in the phone gallery called 'EasyImageSample'. When we choose a photo in the phone gallery, a copy of this photo will be created in 'EasyImageSample' and the data will be saved into the database including the path, title, description, date and location. Because we use the async processes and save the path into the database when we choose photos, the app is able to deal with thousands of images at the same time.

1.2 Showing pictures on a map

In order to complete this function, we must obtain the latitude and longitude information of the photo. When selecting a photo, we will store the latitude and longitude of the photo in the database and use the information to locate the photo on Google Maps. Here we refer to the code of the eighth week.
When we click on a location of the image, the app will jump to the detail interface of this image. In addition, there are two buttons on the interface that allow us to return to the main interface or locate the user's current location.

1.3 Inspecting the details of a photo

When we tap on a photo in the main interface, we can see the entire photo enlarged. Click the button in the lower right corner to enter the image details interface, including the title, description, date and a picture shows the location of the image (Google Static Map API).
There are also two buttons in the interface, 'Edit' and 'Delete'. Click on the 'Edit', the app will jump to the editing interface. Click on the 'Delete' button, the photo will be deleted from our app's gallery. The database will no longer reserve the information of this photo.

1.4 Taking pictures

When the user uses this function, the camera of the system needs to be called. The captured photos will be saved directly to the app's gallery, and the app will record the time and location of the photo and save it to the database.

1.5 Saving metadata to a local database

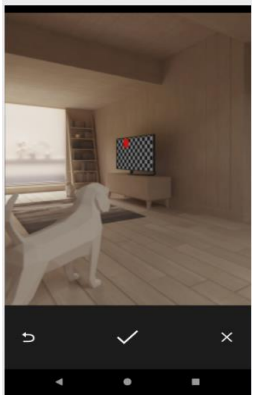
Information about all the above images will be saved in a local database implemented using Room. The information updated when editing the picture immediately replaces the original information in the database. In this app we only allow the user to edit the image title and description, the others are automatically provided by the system.
Therefore, through the database, we can implement the search function. There are three search information, title, description and date. By matching the strings entered by the user and the information in the database to find the photos that match the description and display the photos in the interface. Clicking on the image will directly enter the detail information interface of the image.

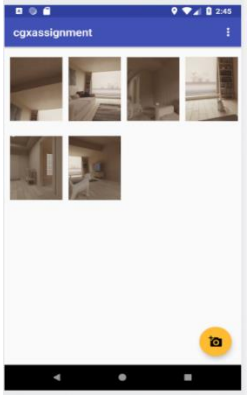
2 Layout design

1. Main layout

Our application is a picture management application, the main page shows all the pictures in the app gallery so that user can browse previews of photos.

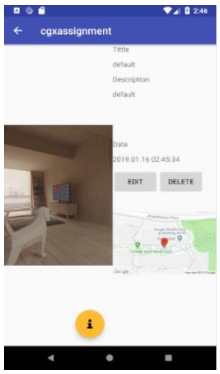
2. Take photos





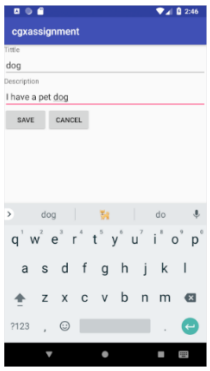
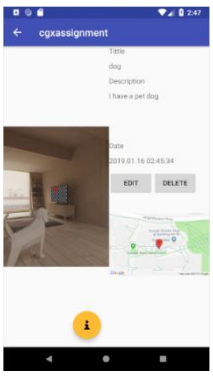
There is a taking photo button in the lower right corner, user can use camera to take photo after clicking it. Or we can choose pictures from system gallery. Then these pictures will be displayed on our main page and save into folder.

3. Show pictures' metadata

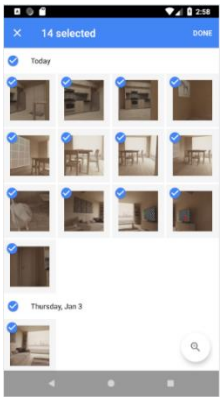
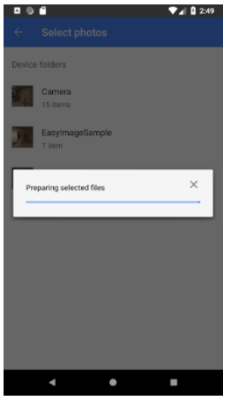
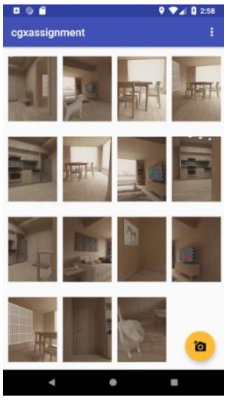
The picture would be bigger after clicking picture which user want to view, and there is an information button in the lower right corner, all the metadata will show after clicking it. The picture will be show bigger again after clicking information button again.

4. Edit picture

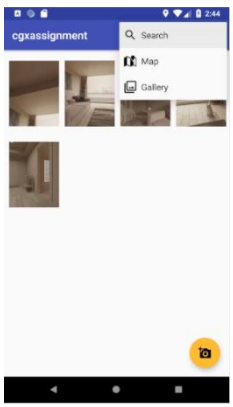
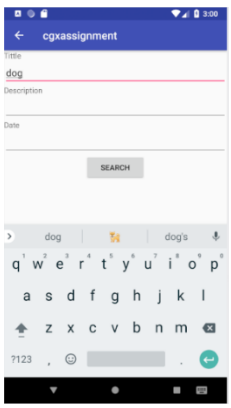
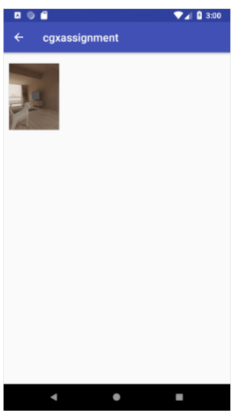
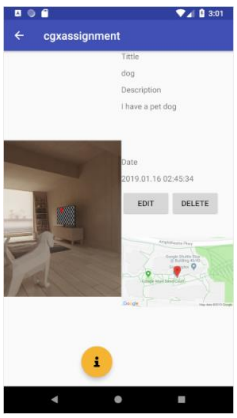
There are two button -- edit button and delete button below picture's information. Clicking edit button will jump to edit page, and user can modify it. Clicking save button can save modify. Clicking cancel button mean give up modify.

5. Add pictures from gallery

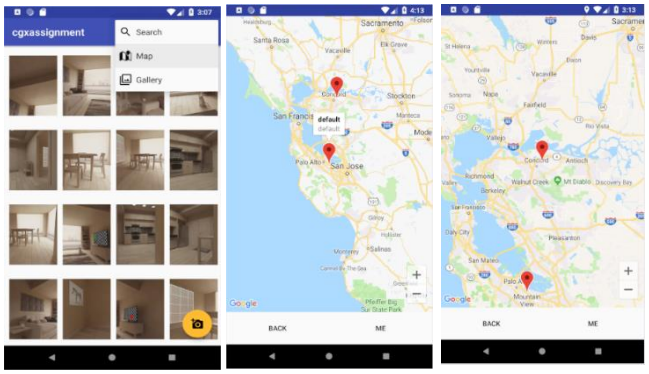
There is a menu in the upper right corner of the main page. Clicking it will show three more features -- search, map and gallery. User can select pictures to insert into our application which they want to browser by clicking gallery button. All the pictures which was selected from user can insert into our application. And user can't allow insert int twice, it means that the picture which is exist in our application will not be displayed twice even user select it twice from gallery.

6. Search

User can search specific picture which they want to browser by clicking search button. And they should provide some keywords to search pictures they want to view. The search result will be display after clicking search button. And user also can browser pictures' detail by clicking picture.

7. Map



User can view all the pictures' location from google map. Each marker of picture can be clicked, and it will show picture's detail page by clicking marker. There are two buttons below map -- back and me. Clicking back button can return the main page. And clicking me button can locate the user's location.

3 Advantages and weaknesses

Advantages:

1. Every interface has a back button except main interface, which is convenient for the mobile phone that does not bring its own return button to return to the previous level.
2. The app can read pictures faster and update the modified picture information in time.
3. Record the current time and location and save them to the database when calling the phone camera.
4. We can use incomplete keywords to search pictures.
5. Each interface has a return key which is friendly with the mobile phones without 'back' button, like full screen mobile phone.
6. We used another google map API named 'static maps' to show the location of pictures in the detail layout.

Disadvantages:

1. After taking pictures, we save these pictures into a new folder named 'EasyImageSample' rather than system gallery because we used 'easyimage' library.
2. The design of UI is simple, especially the layout which shows metadata of pictures.
3. After the first time we install the application, when we take the first picture, the system will create a new folder after 4-5 seconds.
4. If we take many pictures in the same location, many makers will overlap and we can only click on the first picture.

4 Division of work

Mengjie Gao: Map activity and Search activity.
Yiwei Xu: UI design and PicAdaptor.
Gang Chen: Database, MVVM, and transmit of data. In addition, as the team leader, Gang helped a lot in other members' work, so we decided to give him more marks.