CSCI4100U - Mobile Devices Assignment 3

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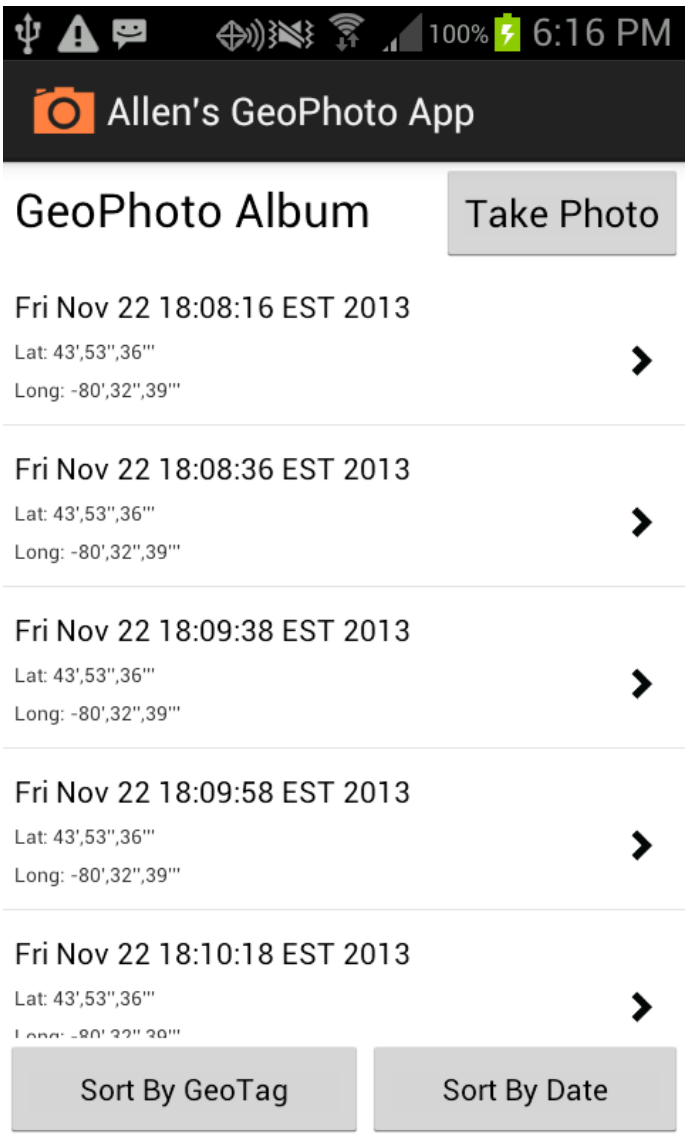


Allen's GeoPhoto App is a simple application that uses the Android Camera in order to take a picture, obtain geographical location and embed the GeoTag into the taken photograph.

The application requires several extra permissions in order for our application to have access to the mobile devices hardware or other services. These include the camera itself, access to writing to the devices storage, and the network location of the device.

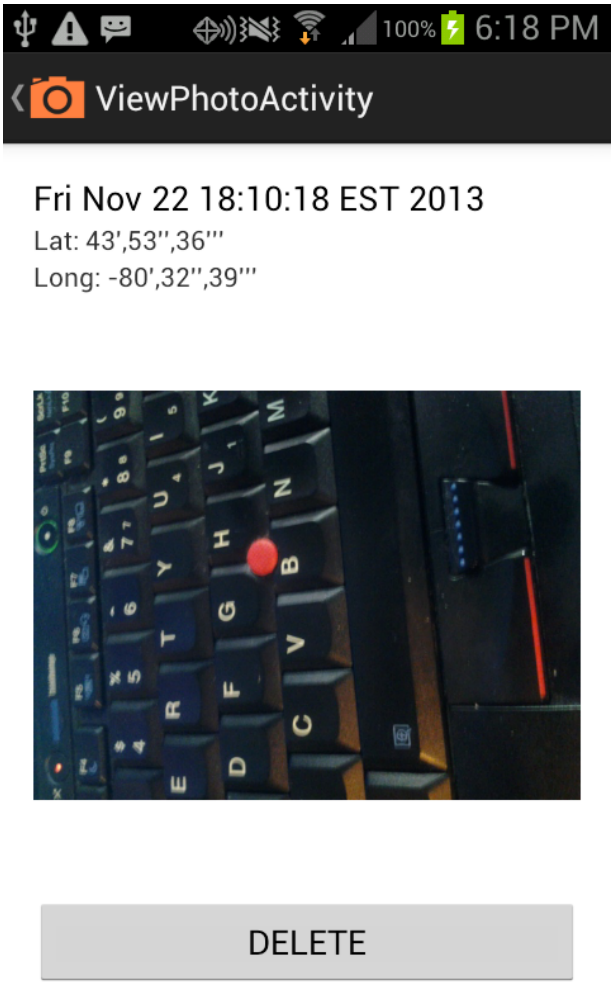
```
<uses-permission android:name="android.permission.CAMERA" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-feature android:name="android.hardware.camera" />
```

The application begins by setting a path where the images will be read from and stored from the camera. The application first checks if this path exists, if it doesn't, then it is created. Previous images are read from this directory and stored as a GeoPhoto, where their image path, and geolocation can be decoded and stored into an array adapter. The time and date each photo was taken can be decoded simply from the name of each image.

As mentioned previously, each picture is saved into a public folder on the device and each picture is named as the time in milli seconds, encoding the time and date into the image name. This path and name can be sent to the Camera intent which simply enough saves a photograph if one is taken to that path with that name. The new photograph is added to the array adapter and the adapter is notified of a data change.

When the MainActivity is notified of a photograph being taken, and has been saved, a LocationManager object is used in conjunction with the ExifInterface in order to obtain the current phones location and embed the geotag location into the saved image.
The ExifInterface is also used to read this meta data embedded in each geo tagged imaged and displayed in the custom cell view called PhotoAdapter.

If any of the previously taken images are clicked on from the list view, a new activity is created to view the image and give the user an option to delete each image. A preview of this activity can be seen below.

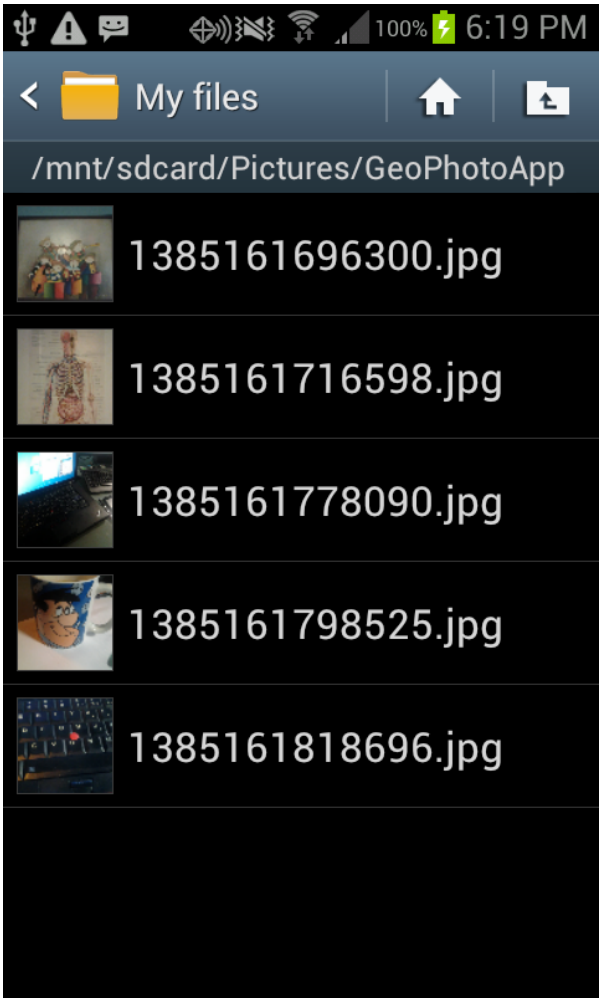


If the user is finished viewing the image and accompanying geotag and date information, they can click back within the action back which simply closes the view photo activity. The user can also choose to delete the current image.

When deleting an image, the application deletes the image defined by the image path, the entry is also removed from the array adapter giving an instant view update within the list view.

If the application is closed, the application begins by first reading the images found within the defined by the External public shared folder, and then by the app specific folder. From each image found, the application uses the ExifInterface to read the embedded Geotagging information.

We can see a sample of the stored images on the device itself using an external file browser application:



We can see that the application uses the sd card and reads/saves images from Pictures/GeoPhotoApp. Each image is date/time encoded within its file name and the geotagged information is embedded within each image.

Lastly there are two sorting methods that can be applied to the array adapter. The first is to sort by Date/time, this is simple enough as the array adapter can be sorted according to each GeoPhoto image name.

The second sorting method uses the images geo tagg location and sorts array adapter of images by latitude, although it would be nice to be able to sort them according to closest to current position, although my implementation for this did not work.