SOFTWARE SHARKS

User Manual
for
Ninshiki

Version 0.1.0 - Demo #4 Draft

A detailed guide as to the use of this product

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For

Bramhope International School of Inovation

Department of Computer Science, University of Pretoria

https://github.com/OrishaOrrie/SoftwareSharks

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1 Introduction

This is the user manual for setting up and installing the system for the Ninshiki app. This manual contains instructions on how to download and install the server and dependencies. This manual will also give the user a basic understanding of the mobile app as well as the website works.

1.1 System Overview

The BISI Image APP system provides a means for users to identify and possibly count specialised Personal Protection Equipment (PPE) by allowing them to capture and upload an image of an item in question.

The user will then receive information regarding either the identification of the item (A match) or the request for another image (A failed match).

In the event of a match the information will contain the five top potential matches according to percentage. Along with information as to where to potentially buy the item from and whether or not the item is in stock.

In the event of a failed match the information will contain instructions on how to modify the image in order to re-upload and increase the chances of potential success.

A user can gain access to the system either via a website or on an android device.

1.2 System Configuration

Ninshiki operates on mobile devices with Android operating system as well as any device with a web browser. It is compatible with Android 5.1 and higher. The application requires connection to Internet in order to upload the image to the server where the image will be compared, internal GPS receiver in order to obtain coordinates automatically as well as internal camera. After installation on the device, Ninshiki can be used immediately without any further configuration.

Figure 1: Graphic deployment diagram.

2 Getting Started

2.1 Minimum Requirements

2.2 Installation

2.2.1 Website

The user will be required to have a web browser. Most computers come with a web browser already installed such as Internet Explorer or Microsoft Edge for Windows users or Safari for Mac users. Other browsers such as Google Chrome or Mozilla Firefox can also be downloaded and used. Once the user has located the browser, they will be required to navigate to the site which will be found at www.ninshiki.co.za. The user can exit the system by either closing the browser or closing the tab in

which Ninshiki is open
Since our system is prealpha, we do not currently have a working website and are running the site locally

2.2.2 Mobile

During development: The application must be loaded onto an android device via the accompanying .apk file. Simply enable developer mode in settings and locate the file and run it.

Post development: The application can be found on the Google Play store and downloaded via its official name: BISI Image APP.

The system can be exited by closing the app or pressing the back button on the users phone

2.3 Walkthrough of the website

2.3.1 Home page

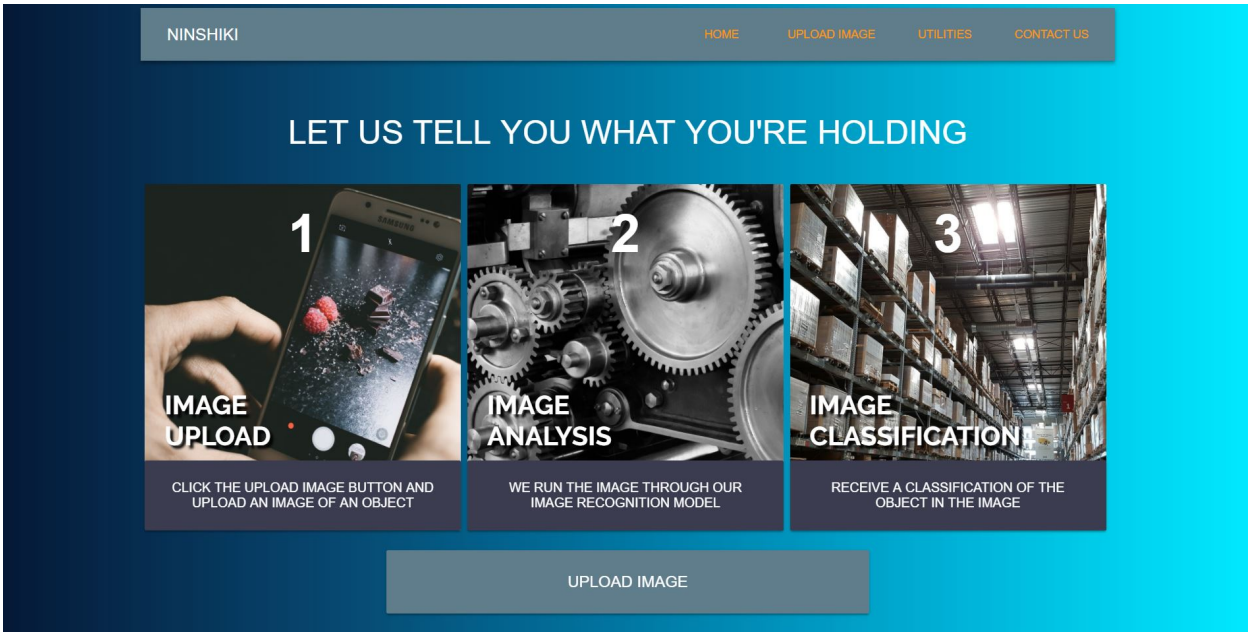

Figure 2: Screenshot of the homepage.

When browses to the Ninshiki website, they will be forwarded to the homepage. On the homepage there are the following buttons:

- Upload Image : The image to be recognise will be uploaded here
- Utilities: A function to count the number of items in a box
- Upload: The image to recognise will be uploaded here
- Contact Us: A way for a user to contact us for any struggles they are facing or any issues with the sit.

Each button will forward the user to a separate page and will be discussed in more detail.

2.3.2 Upload Image Page

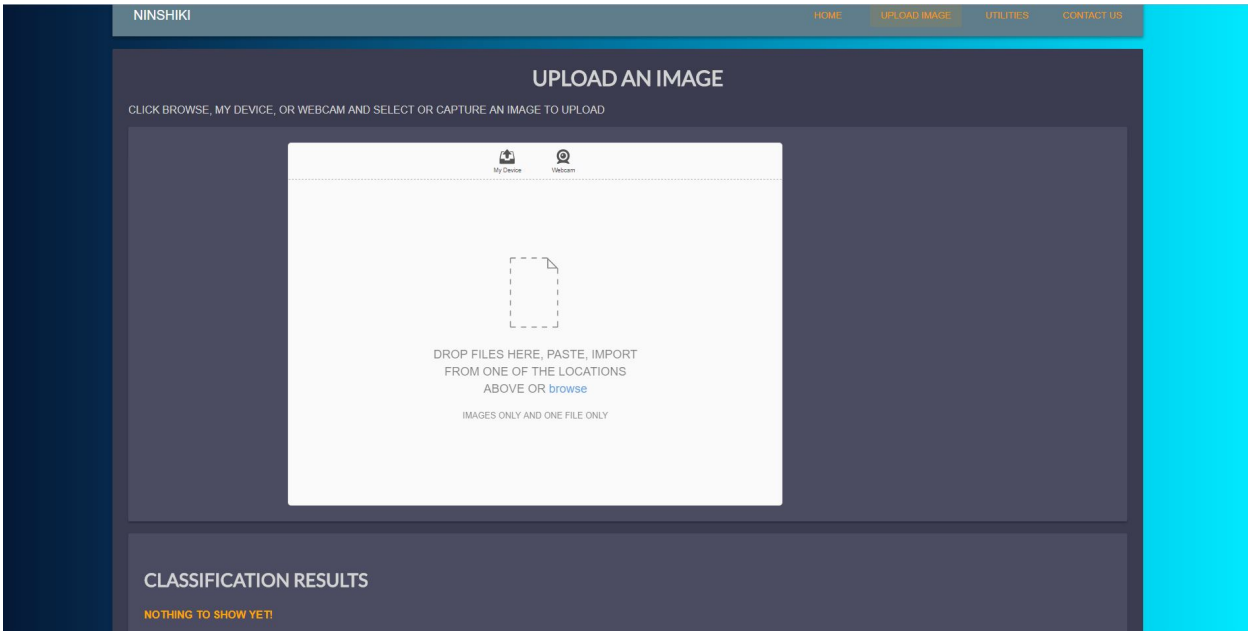

Figure 3: Upload image page

When the upload image button is selected, the user will be forwarded to this page. Here, the user will be able to upload an image that they would like to match against a catalog in order to know what product is in the image. The user can upload an image from their computer or they can take a picture using their computers camera (if their PC has camera capabilities). Uploading an image can either be accomplished by dragging an image into the allocated area or selecting an image from the users file system. One an image is selected, an upload image button will appear.

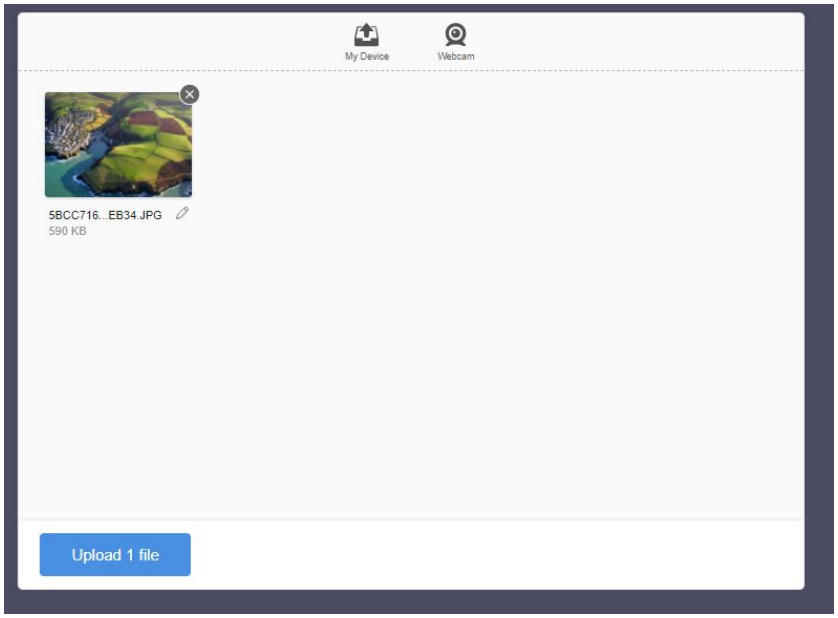

Figure 4: Image selection page

The user will then have to click on the Upload file button. After this, the image will be classified and return results as to what the image is. **Since this is the prealfa phase, the image is not compared to images of products in the warehouse and therefore an exact classification is not returned.**

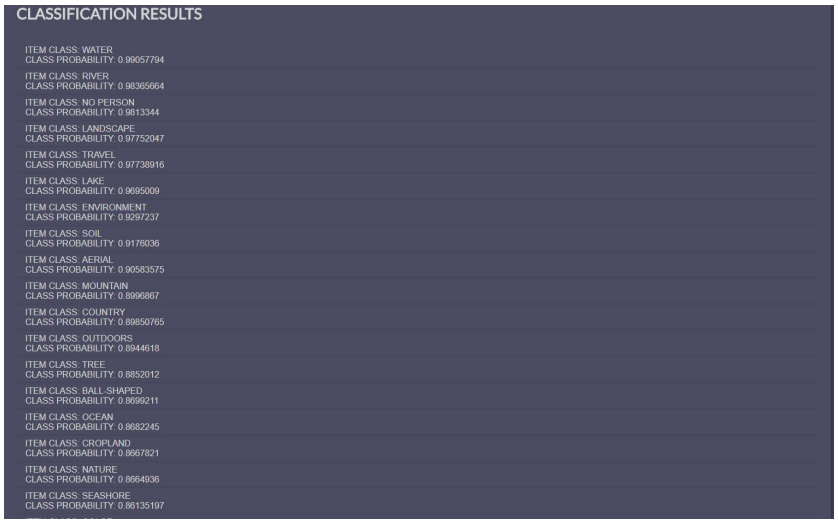

Figure 5: Classification Results

2.3.3 Utilities

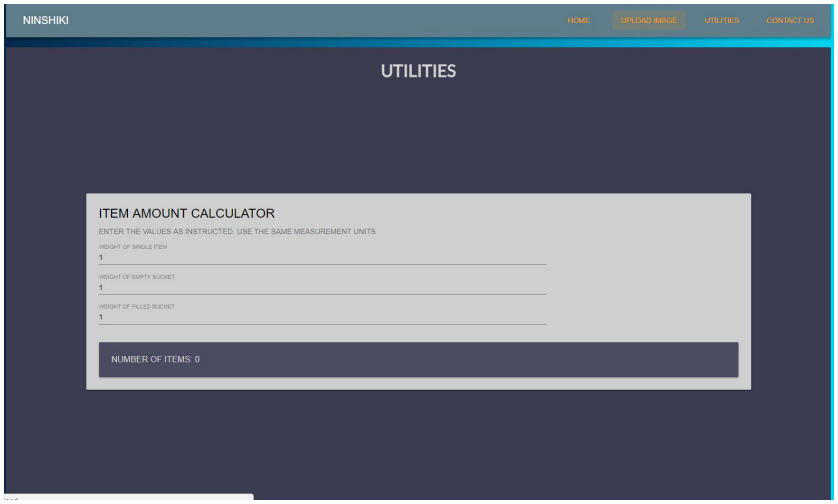

Figure 6: Utilities page

The utilities page is used for calculating how many items in a box. The user will have to weigh the box and weigh one of the items from the box. The user will then insert the values into the relevant fields and the calculator will then calculate how many objects are in the box. **If possible, there will be an automatic function to connect a scale to the app and then the app will calculate the weight from the information it received from the scale.**

2.3.4 Contact Us

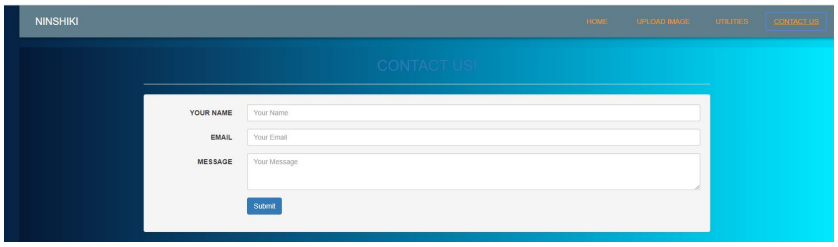

Figure 7: Contact Us page

The contact us page is an easy way for users to get in touch with the SoftwareSharks team. The user will have ti input their name, email address and problem area in order for the team to sort out any issues

that they are having with the app or if a user is having problems using the website.

2.4 Walkthrough of the Mobile App

2.4.1 Homepage

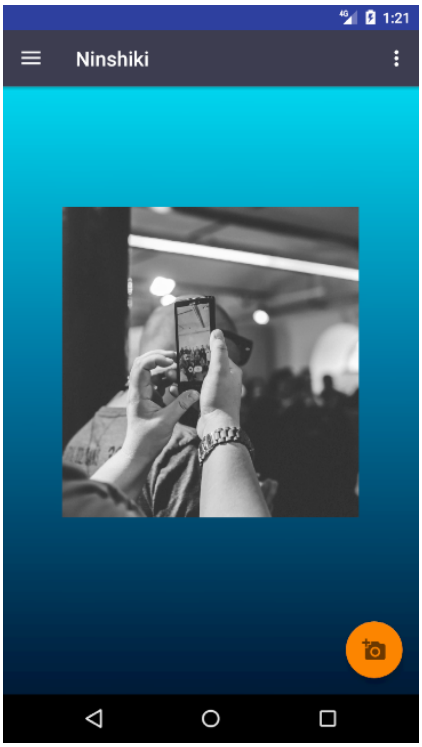

Figure 8: Screenshot of the homepage.

The homepage of the mobile app contains three different buttons.

- Top left menu button :

  Here the user can choose to import an image, upload an image from their phones gallery, change the app settings as well as send and share their images classification.

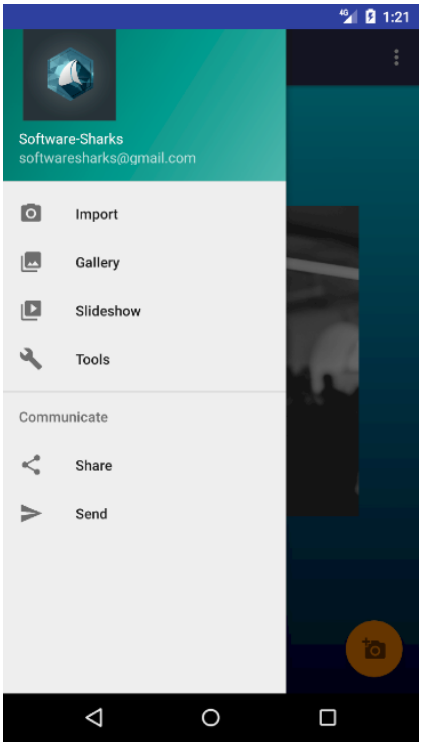

Figure 9: Screenshot of the Side Menu.

- Bottom Right button: When this button is selected, the user can choose to use their camera in order to take a picture of the object or upload a picture of the object that they need to classify from their mobiles storage.

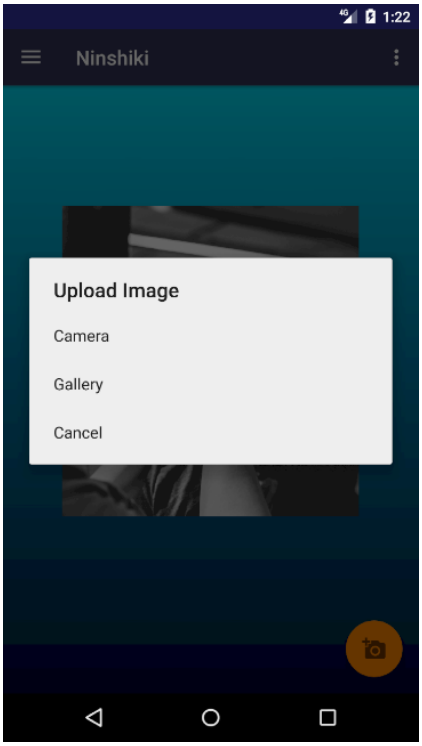

Figure 10: Screenshot of the Camera button's results on the bottom right corner of the home page.

2.4.2 Upload image

- If the user selects Gallery from the menu, the user will be lead to their gallery where they will have to select an image from their phones storage to upload.
- If the camera is selected, the user will have to capture an image using the phones camera.
- Once the image has been selected, the user will be required to crop the image.This is accomplished by moving the square so that the image that the user would like to be recognised is directly in the square. Then the user can either discard or save the image. If the image is discarded, a new image will have to be taken.

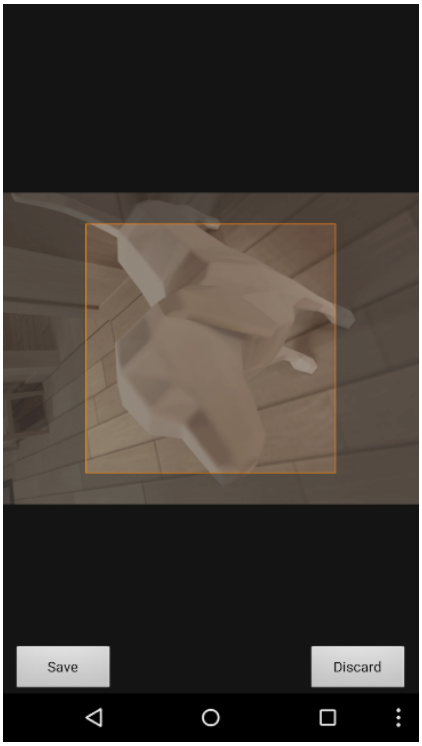

Figure 11: Screenshot of the cropping function

- The user will then select the upload button and the app will return the classification results.

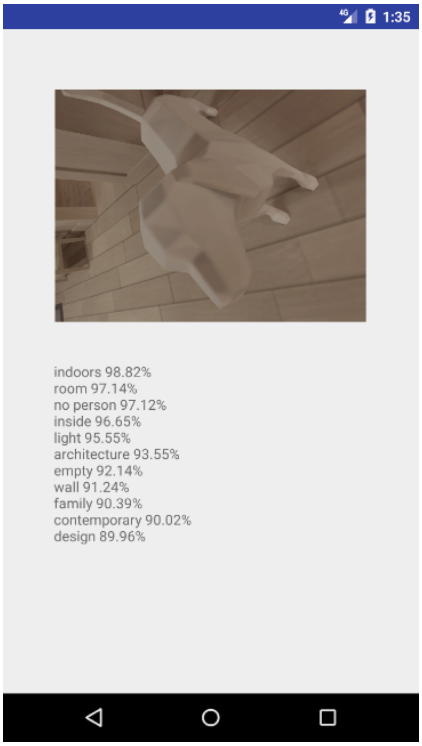

Figure 12: Screenshot of the classification function

Due to the software not being the final version, more functionality will be added to the app.

3 Using the System

This section provides a detailed description of system functions.

3.1 Home tab

This tab contains the main page of the website. This shows the user how our image classification works. This is the page that the user will be lead to when entering the site into a web browser search bar.

3.2 Upload image

This tab contains the main functionality of the system. It is here where the user can upload an image to be recognised. The following steps will be followed in order to classify an image:

1. User will either select an image from their device or take a picture using the devices internal camera.
2. The user will then either choose to discard the image or upload the image. If the user chooses to discard the image then the user will have to go back to step 1. If they choose to upload the image, the user will click on the upload image button.
3. Once the image has uploaded, it will be sent to the server where the image will be classified.
4. The image will be compared to images saved on a database in order to get the correct classification. Tensor flow will be used to compare the images.
5. To increase the probability of the image being correctly classified, machine learning will be used in order to continuously train the system.
6. Once the image has been correctly classified, it will return a result to the user of what the image is.
7. The user will then use the result in order to ass the item into the correct bin if they are an employee of the company or if they are not, they will be able to order the item if the item is in the company's catalog.

3.3 Utilities tab

The utilities tab is used to correctly calculate the amount of items in a bin.
For this version of the software, the user will weigh the bin as well as one separate item from the bin. They will then insert the values into the software and the software will then return the amount of items in the bin.
For later versions of the software, a scale will be connected to the software via blue-tooth or WiFi if possible and the software will automatically enter values into the software.

3.4 Contact Us Tab

This tab has three different fields that a user will have to fill in in order to send an issue or complaint to the SoftwareSharks team. The user will have to enter their own name, email address as well as the complaint, issue or even positive feedback that the user is currently experiencing. This is a way for the user to have direct contact with the SoftwareSharks team.

3.5 Tools

This tab is only available on the mobile app. This tab will allow a user to personalize their settings on the app. The user can change the themes under this tab. More functionality will be added to the tools tab.

4 Troubleshooting

The following errors may occur:

4.1 GPS Coordinates not found

If an error message pops up that the GPS coordinates have not been found, the user will have to switch their location on. This is done on an android device by sliding the top tab down on their device and selecting the Location option.

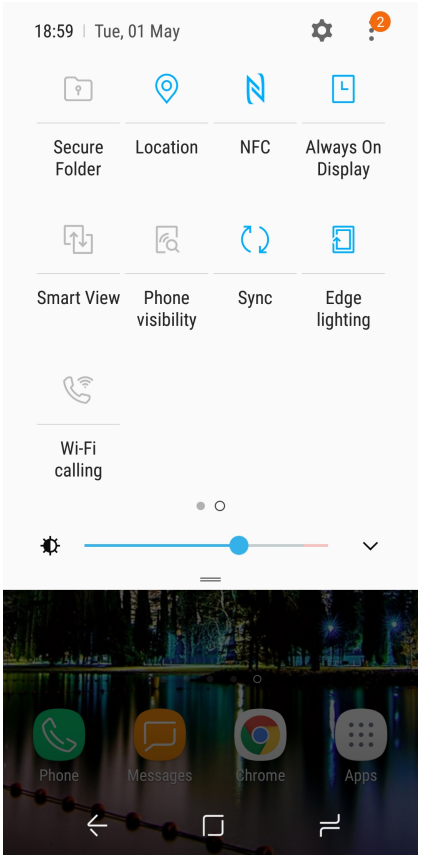

Figure 13: Screenshot of how to select the location option from the drop-down tab

The location option can also be found under settings>connections.

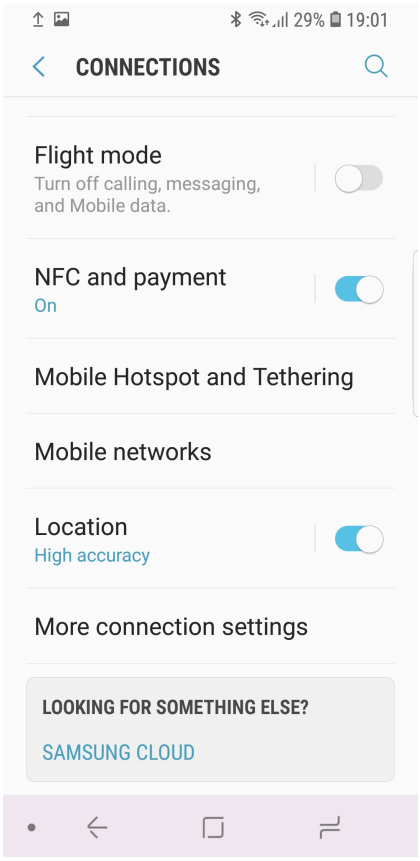

Figure 14: Screenshot of how to select the location option from settings

4.2 Image too large

If an image it too large, an error will occur. The user will have to retake the image or select a different image from their gallery