SOFTWARE SHARKS

User Manual
for
Ninshiki
Version 1.0.0 - Demo #5 Final

A detailed guide as to the use of this product

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For

Bramhope International School of Innovation

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 use the Web app and the Mobile app. This manual will also give the user a basic understanding of the mobile app as well as how the web app works.

1.1 System Overview

The Ninshiki system provides a means for users to identify and possibly count specialized Maintenance, Repair, and Operation (MRO) items (Engineering Consumables) by allowing them to capture and submit an image of an item they want to identify.

After a successful selection and submission of an item's image,the image classifier then makes a prediction on the item's class.

The user then receives a list of the most likely class of the item, sorted in decreasing order. Classes with a likeliness of below 0.001% are not displayed. The user is able to access the Bramhope online store for each item.

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 6.0 (with capabilities of running Artificial intelligence computations) and higher . The application does not require connection to Internet in order to upload the image. Computations are done locally on the android phone system. An internal GPS receiver in order to obtain coordinates automatically and an internal camera are required to capture images of the items. After installation on the device, Ninshiki can be used immediately without any further configuration.

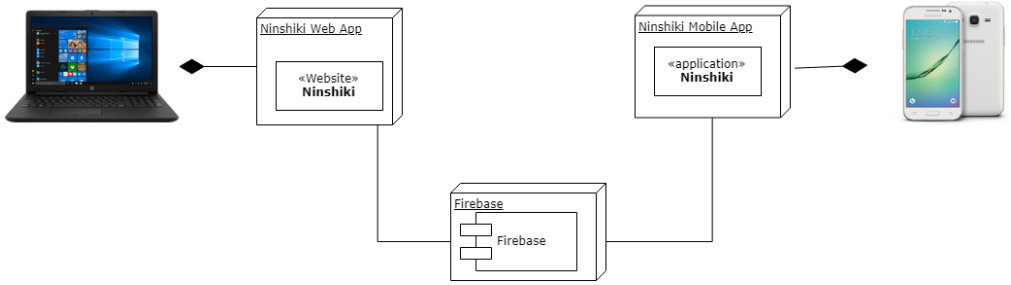

Figure 1: Graphic deployment diagram.

1.3 Installation

1.3.1 Website

The user will be required to have a web browser that can support WebGL. 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 `https://testproject-ee885.firebaseapp.com/`.
The user can exit the system by either closing the browser or closing the tab in which Ninshiki is open

1.3.2 Mobile

On Google Playstore: The application can be found on the Google Play store and downloaded by searching its official name: Ninshiki.
Google Playstore link: `https://play.google.com/store/apps/details?id=com.softwaresharks.ninshiki`

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

2 Getting Started

2.1 Minimum Requirements

2.2 Walkthrough of the website

2.2.1 Home page

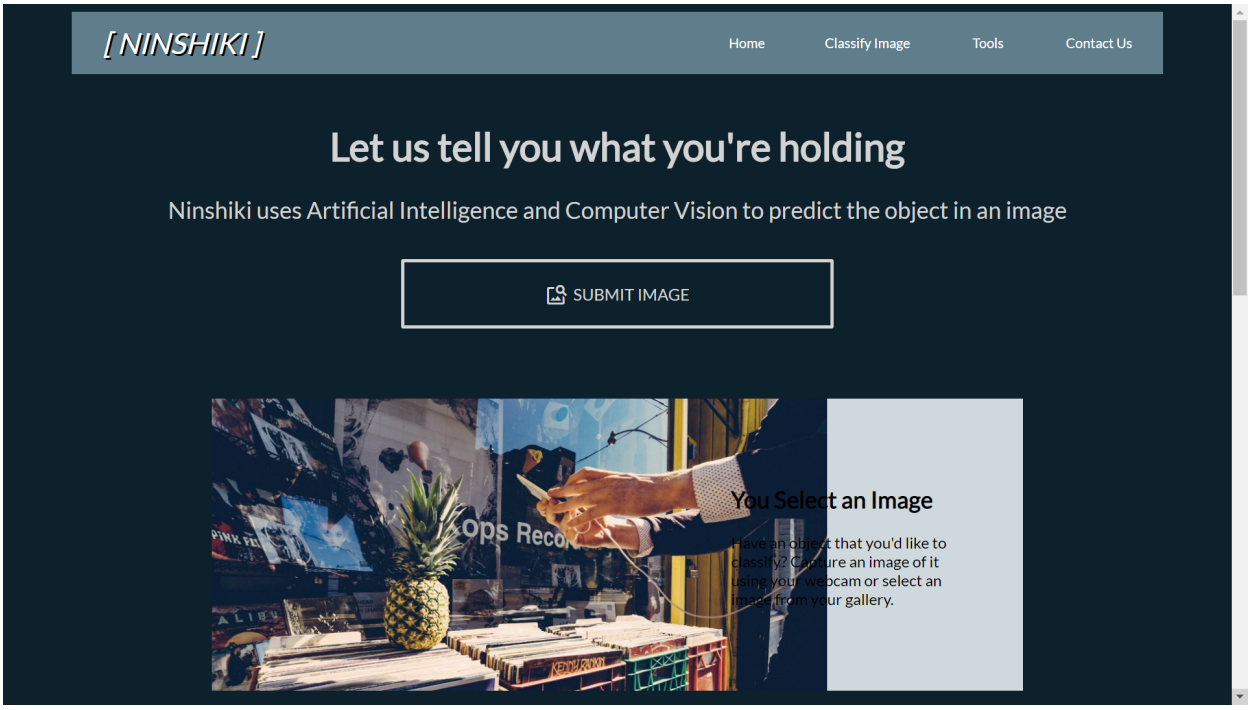

Figure 2: Screenshot of the homepage.

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

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

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

2.2.2 Classify Image Page

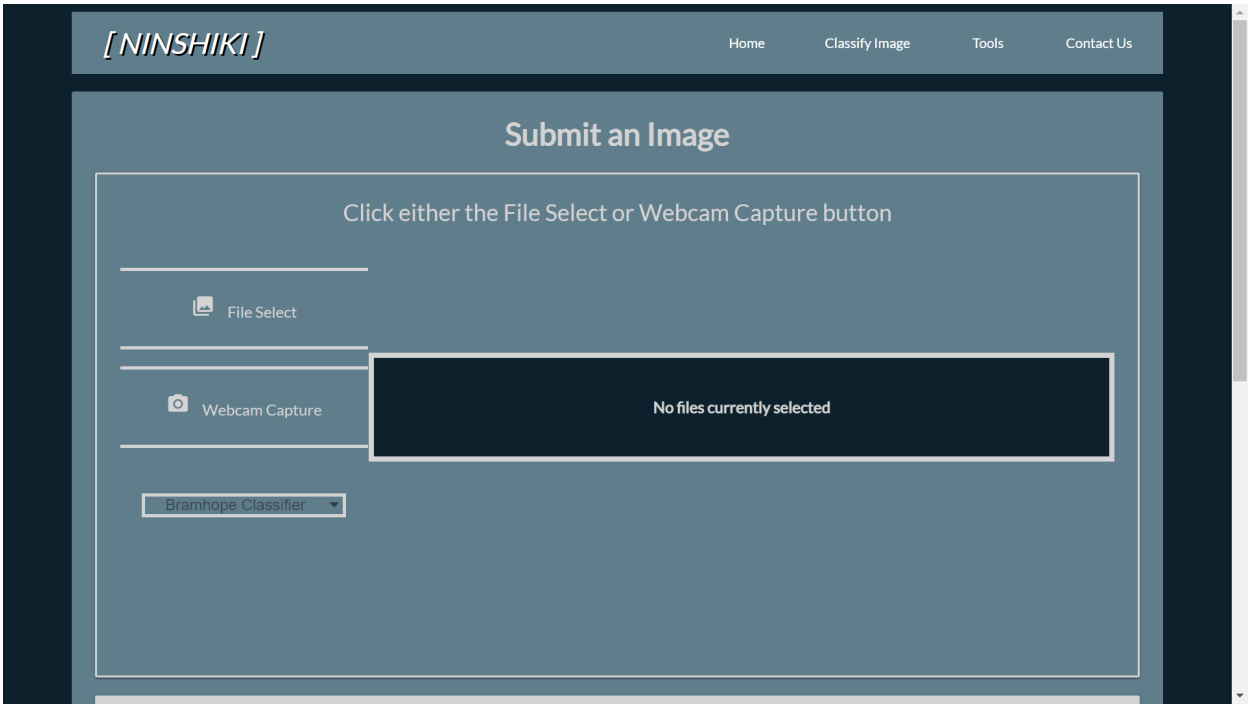

Figure 3: classify image page

When the classify image or submit image button is clicked, the user will be directed to this page. Here, the user will be able to submit an image that they would like to match against a catalog in order to know what product is in the image. The user can submit an image from their computer files or they can take a picture using their computers camera (if their PC has camera capabilities). submitting an image can either be accomplished by dragging an image into the allocated area or selecting an image from the users file system. The user has an option to choose the Bramhope classifier(searches for items that are available within the Bramhope catalog) or the general classifier. Once an image is selected, a submit button will appear.

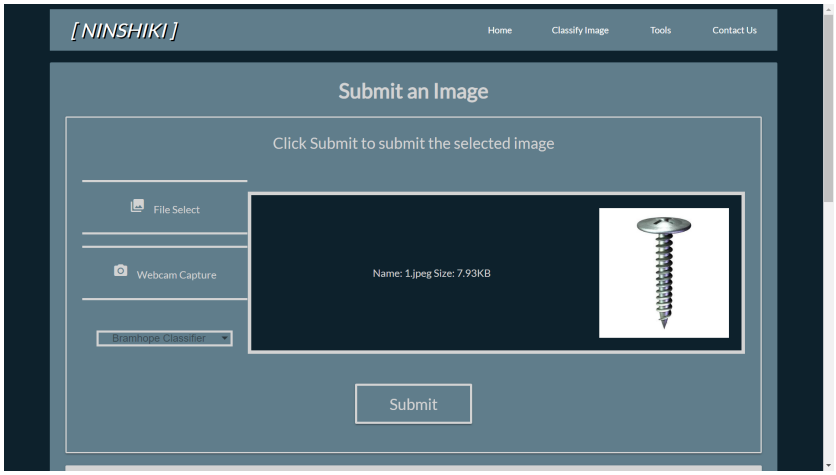

Figure 4: Image selection page

The user will then have to click on the submit button. After this, the image will be classified and return results as to what the image is and an option to go to the store to purchase the item.

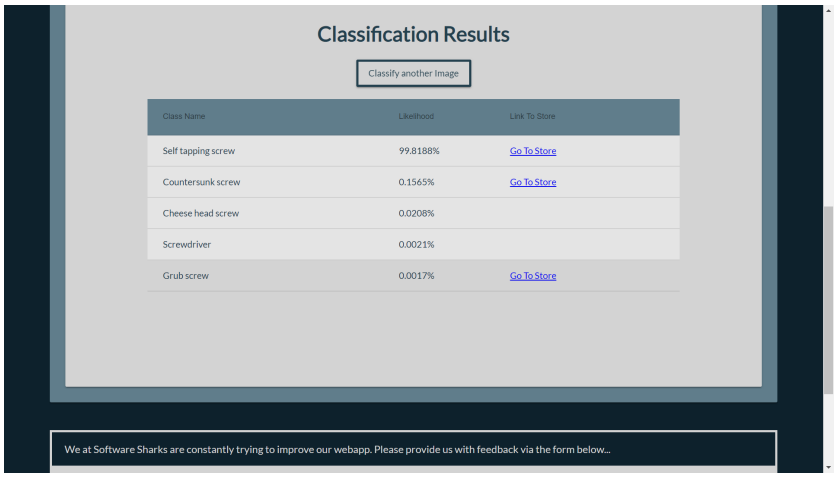

Figure 5: Classification Results

2.2.3 Tools

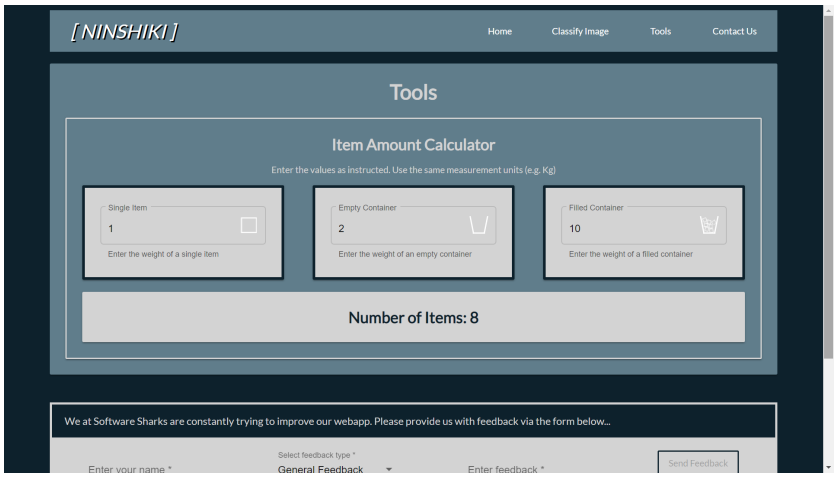

Figure 6: Tools page

The Tools page is used for calculating how many items are 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.

2.2.4 Contact Us

The contact us page is an easy way for users to get in touch with the SoftwareSharks team. The user will have to 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.

2.2.5 Feedback

This footer appears at the bottom of every page within the website.The user can use this to give feed back about the website to the software sharks team for development purposes.

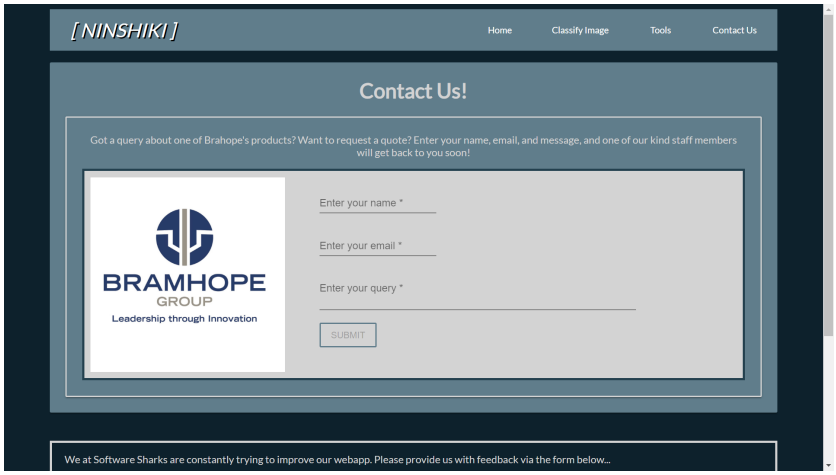

Figure 7: Contact Us page

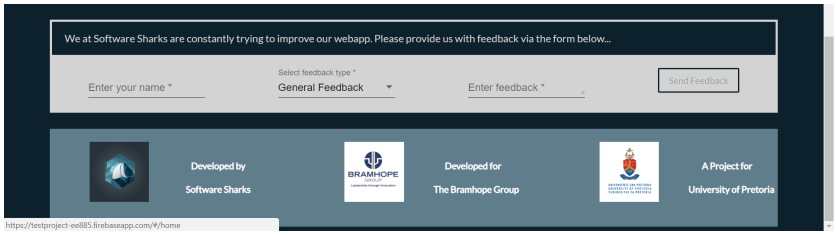

Figure 8: Feedback footer

2.3 Walk-through of the Mobile App

2.3.1 Home tab

When the user opens the app, the home tab will be displayed. The mobile app consists of four different tabs and one help icon button.

- Home tab: Navigates to the main home page.
- Predict tab: Navigates to a page where the image of interested will be selected and uploaded.
- Tools tab: Navigates to a page which has a function to count the number of items in a box.
- ContactUs tab: Navigates to a form where a user can use to contact us for any struggles they are facing or any issues with the app.

Each of these tabs will be discussed in detail in the section that follows.

Figure 9: Home tab

2.3.2 Predict Tab

If the predict tab is clicked, the user will be directed to this tab. From here, the user will be able to select an image from either their phones gallery or take a picture with their phones camera. Once this has been completed, the image will then have to be cropped. Once the image has been cropped.

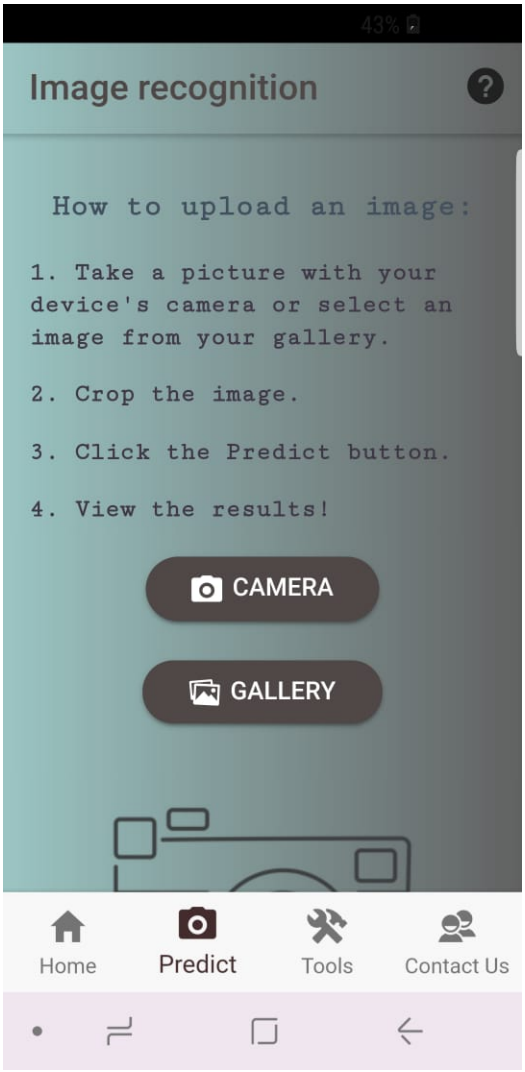

Figure 10: Predict tab

Once an image is selected and cropped,The predict button will appear and the selected picture will be displayed on the screen.

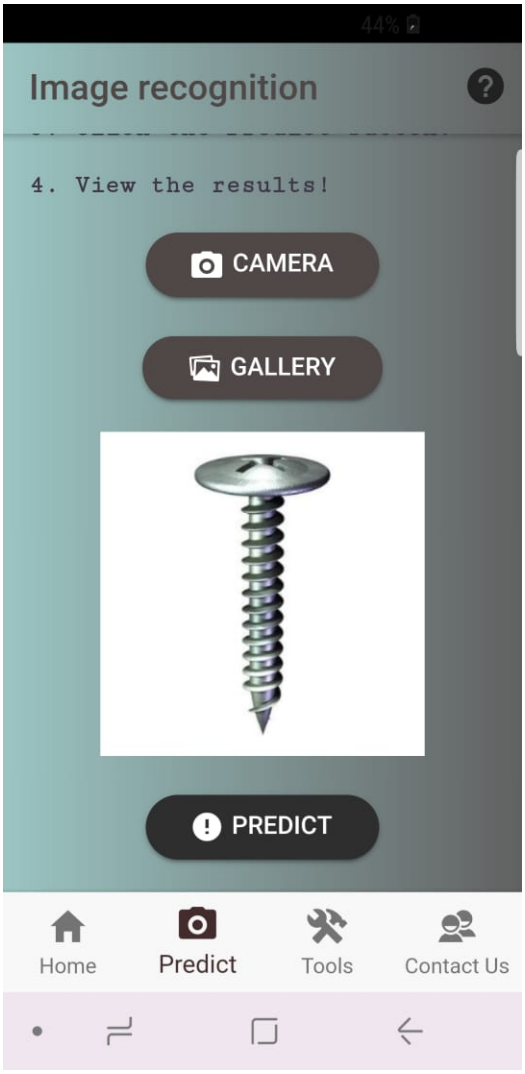

Figure 11: Image to be predicted

The user will have to click on the predict button to get the results of the classification of the item on the image. An option will also be shown next to the item's name if the item is available.The user can click that option to get more information on how to purchase the predicted item.

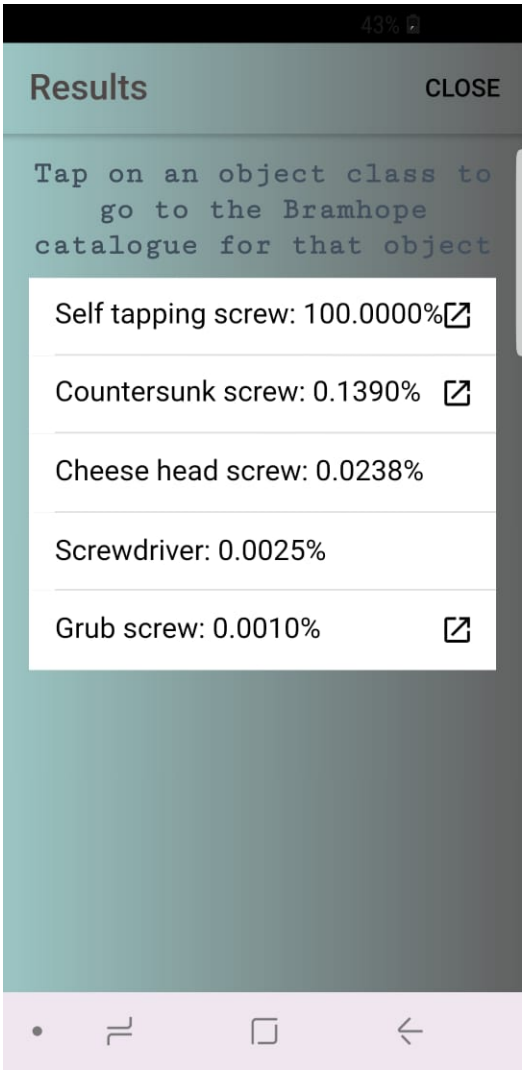

Figure 12: Prediction results

The user can click on "open icon" which is just located after the item's percentage to go to the Bramhope website store,to get more information about the item in the image.

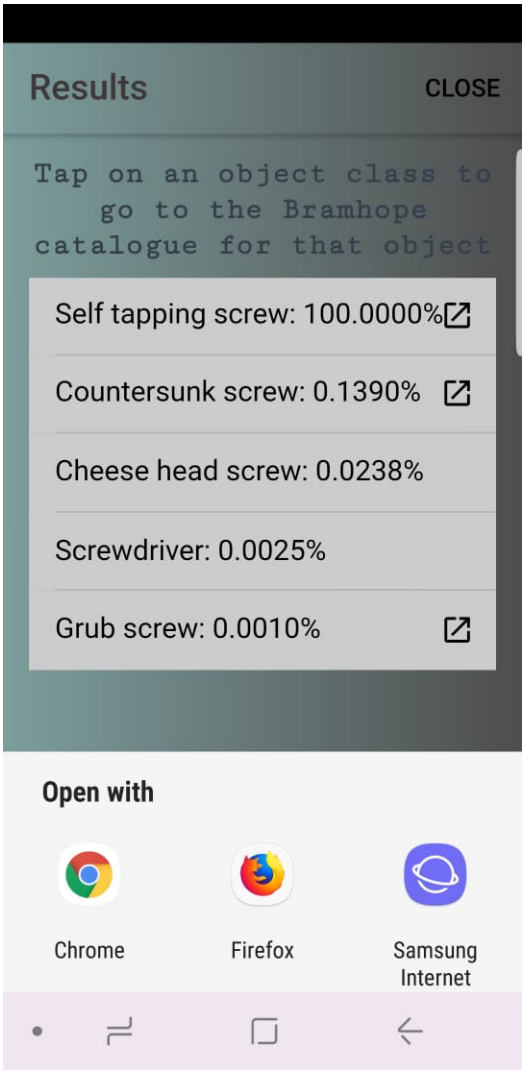

Figure 13: A screen shot showing after the user clicks the "open icon",the user will be requested to choose the browsers of their choice.

Figure 14: A screen shot showing the predicted item details in the Bramhope store website

2.3.3 Tools Tab

The Tools tab provides a function for calculating how many items are in a box.
There are three different fields that the user will have to complete. These are, the weight of the empty box, the weight of a single item as well as the weight of the filled bucket. From here, the number of items inside the box will be calculated and returned to the user.

Figure 15: A screen shot showing the Tools tab

2.3.4 Contact us Tab

This tab contains a form in which the users can fill in and send any queries or issues they have about the app.This can also be used by users to send a quotation request.The user must enter their name,email address and a query message as well as ticking the "Send location box" if the user would like to send their geo-location data.If the user would not like to send their location data, the user can deselect the send location box.

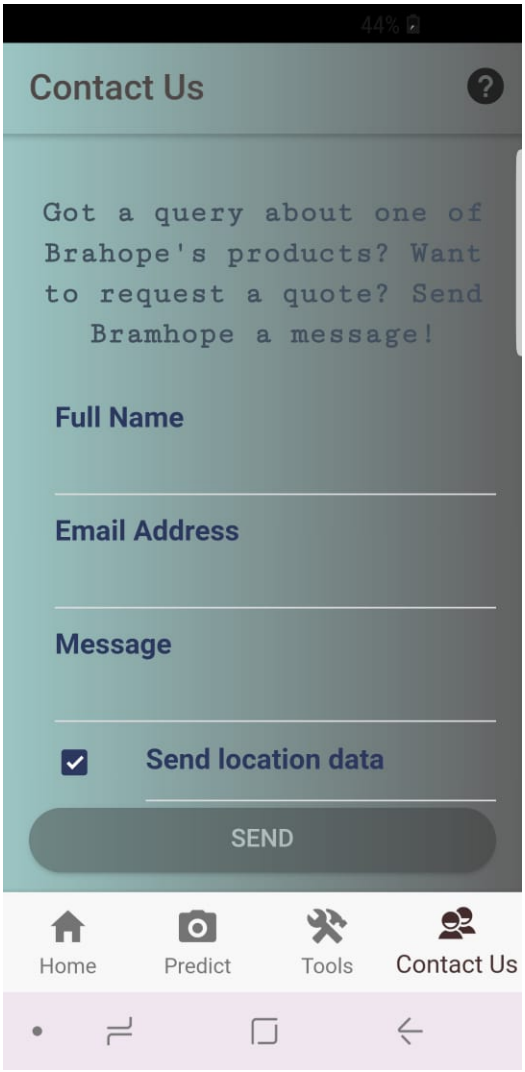

Figure 16: Contact Us Tab

2.3.5 Feedback page

This section shows information about the development team and can be used for sending feedback or reporting any issues about the app to the Software Sharks development team. Reports can be bugs,errors and even suggestions on how to improve the app as a whole.

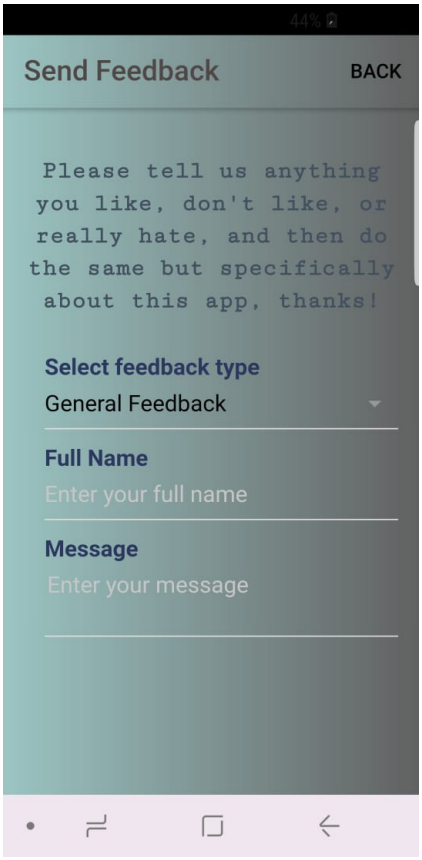

Figure 17: Feedback tab

3 Using the System

This section provides a detailed description of system functions.

3.1 Using the Mobile app

3.1.1 Home tab

This tab contains the main page of the mobile app. The page contains a carousel of images and information on how to use the app. On opening of the app, this is the page that the user will be lead to.

3.1.2 Submit an image

1. Select Predict tab on the bottom navigation bar.(The tab with a Camera icon).
2. There are two options to select an image, Camera and Gallery. Choose one of these options.
3. For the camera option,the user must capture an image using the camera app that opens after clicking the camera option, after that the user will be required to crop the image and save or discard it.
4. For the Gallery option, the Gallery app will open and the user can choose the picture they would like to identify, after that the user will be required to crop the image and save or discard it.
5. Once the user has selected an image, click on the predict button in order to push the image to the image classification model.

3.1.3 Classification results

1. Once the image has been pushed to the model, a prediction will be made and the results of this prediction will be displayed on the screen. The results will be displayed as a list with the name and accuracy percentage.
2. If the item is available in the Bramhope Catalogue, the user will be able to click the open icon on the side of the prediction name and result.This will send the user to an external website which has more information about how to purchase the item.

3.1.4 Tools tab

The Tools tab is used to calculate the amount of items in a bin.
N.B: The user has to use the same units (e.g grams) for each value for the function to output the correct results.

1. The user will have weigh a single item from the box and input the result into the single item field.
2. The user will then have to weigh the empty bucket and input the result into the empty bucket field.
3. The final step will be for the user to input the weight of the filled bucket
4. After entering the weights,the system will automatically calculate the result and display it at the bottom of the screen

3.1.5 Contact us Tab

The user can use this section to send quotes or any query of their choice (related to the products they would like to identify).

1. The user has to enter their name on the "Full name" field
2. The user has to enter their email address on the "Email address" field
3. The user has to enter their message on the "Message" field
4. The user can choose to tick the location box to send their location as well.This option is not required but rather recommended.
5. Once all the fields have been completed, the user will have to select the "Send" button and a message to say that the message has sent will appear.

3.1.6 About us page

This section displays information about the developers behind the mobile app and users can also send feedback or report issues to the Software Sharks Development team.

3.2 Using the Web app

3.2.1 Home tab

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

3.2.2 Submitting an image on the classify image page

1. To submit an image, The user must click on the classify image tab on the top navigation bar.
2. The user should now choose a method of selecting an image to be classified. The two options are taking a picture with the Webcam and File selection.
3. For the Webcam capture option, the user must capture an image using the Webcam on their computer (The user has to allow the browser use the Webcam).
4. If the user decides to choose the file select option,the file select interface will open and the user can choose the picture they would like to identify from their computer files.
5. The user can also choose to use a general classifier or a Bramhope classifier (this classifier consist only Bramhope products).
6. After a successful selection of a picture, the submit button will appear.The user should now click on the submit button to push the image to the image classification model.

3.2.3 Classification results

1. After submitting the image the results will be displayed, with the name of the item with the highest prediction percentage at the top.
2. The user can now click on the go to store link.(only if the item is available in the Bramhope Catalogue. This selection will send the user an external website which has more information about how to purchase the item.

3.2.4 Tools page

The Tools tab is used to calculate the amount of items in a bin.
N.B: The user has to use the same units (e.g grams) for each value for the function to get the correct results.

1. The user will have weigh a single item from the box and input the result into the single item field.
2. The user will then have to weigh the empty bucket and input the result into the empty bucket field.
3. The final step will be for the user to input the weight of the filled bucket
4. After entering the weights,the system will automatically calculate the result and display it at the bottom of the screen

3.2.5 Contact us Page

The user can use this section to send quotes or any query of their choice(related to the Bramhope products they want to identify).

1. The user has to enter their name on the "Enter your name" field
2. The user has to enter their email address on the "Enter your email address" field
3. The user has to enter their query on the "Enter your query" field
4. The user can now click submit to send the query to the Bramhope staff.

3.2.6 Feedback Footer

This footer appears at the bottom of every page of the web sites. Users can use it to send feedback or report issues to the Software Sharks Development team. Users can choose the type of feedback,the options can be chosen from a drop down menu,the options are General Feedback, Bug and Feature reports.

4 Troubleshooting

The following errors may occur:

4.1 GPS Coordinates not found

This error occurs when the user tries to send a query in the contact us tab(with the send location box ticked) while the GPS of the device is turned off.
To recover from this error the user must turn on the the GPS on their device settings and resend the query again.

4.2 AI computation Error

This Error happens to Mobile phones that do not support AI computations when the user try to click on the predict button to upload an image. The user must use an AI computation supporting device to prevent this error.

4.3 Error getting selected Image

This error Occurs when the user clicks on the camera/gallery button and selects back without choosing an image
To recover from this error,the user should press "Ok" and re-select the picture by pressing the camera or gallery button again.

4.4 Lagging/slow web app

Laggy/slow web app - This error occurs when the browser running the web app lacks the required WebGL version for image prediction calculations.The website will be very slow will not be usable.
This can be resolved by using a compatible browser and ensuring that the system is able to run WebGL such as Google Chrome, Firefox, Safari, and Opera.