



User Manual for Crowded AH Web App

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1 Introduction

1.1 Mission and Purpose

Our mission is to transform the daily commute for Singaporeans by providing real-time insights and predictive data on MRT station crowd levels and train arrivals. We aim to reduce stress and save time by empowering commuters with the information they need to make informed travel decisions. The idea for our app was born out of our own experiences as daily commuters in Singapore. We noticed that navigating the MRT system during peak hours can be overwhelming, with little information available about crowd levels until you're already on the platform. We wanted to create a solution that helps commuters plan their journeys better, avoiding overcrowded stations and trains whenever possible.

Our team is made up of passionate web app developers - all with a deep connection to Singapore. Led by our group leader Charlton, we're committed to making public transportation more efficient and accessible for everyone.

1.2 Key Features

- Real-Time Crowd Levels: Know how crowded your MRT station is before you arrive.
- Forecasted Crowd Levels: Plan ahead with predictions based on historical data and current trends.
- Train Arrival Timings: Never miss a train with up-to-the-minute arrival times.
- Get some insights about the top 10 most crowded stations across Singapore

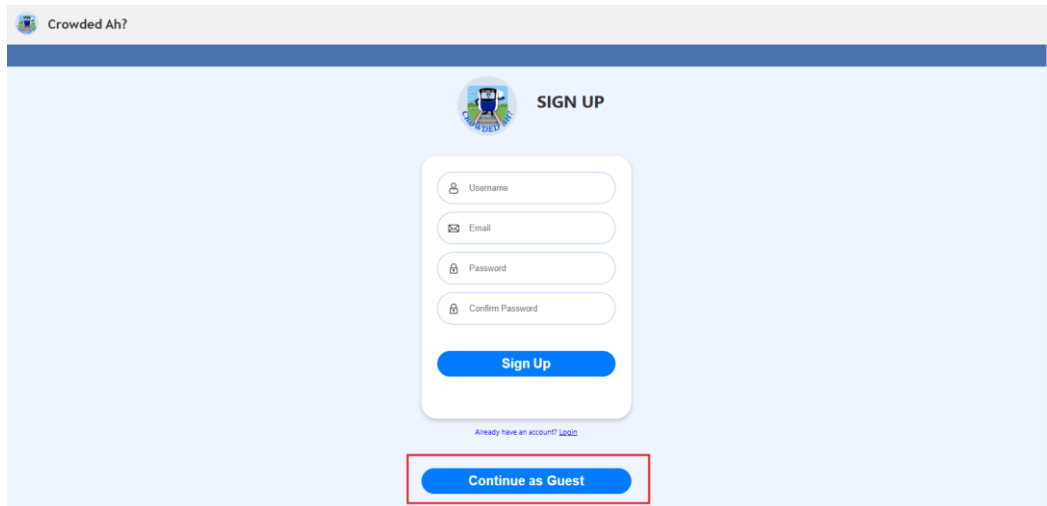
1.3 Vision

Looking ahead, we plan to expand our service to include bus interchange crowd levels and integrate with smart city initiatives. Our vision is to become a comprehensive platform that enhances urban mobility across Singapore, making public transport a more seamless and enjoyable experience.

2 User Authentication

2.1 Continue as Guest

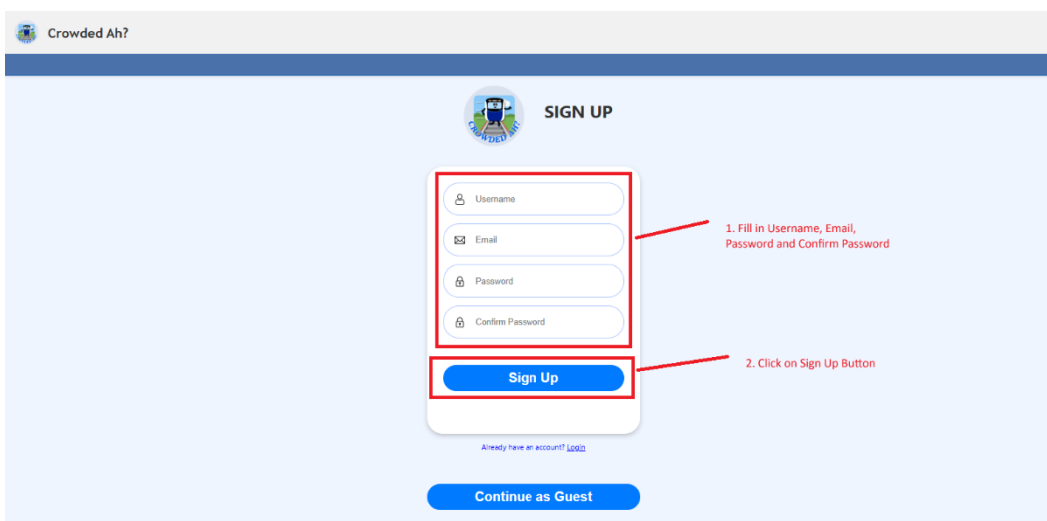
For users who wanted to view the Crowd Density Levels for stations but thinking that creating or signing up for an account would be a hassle, fear not, we have you covered! Just simple click on Continue as Guest Button Below and you will be redirected to Home Page immediately.



2.2 Sign Up for an account

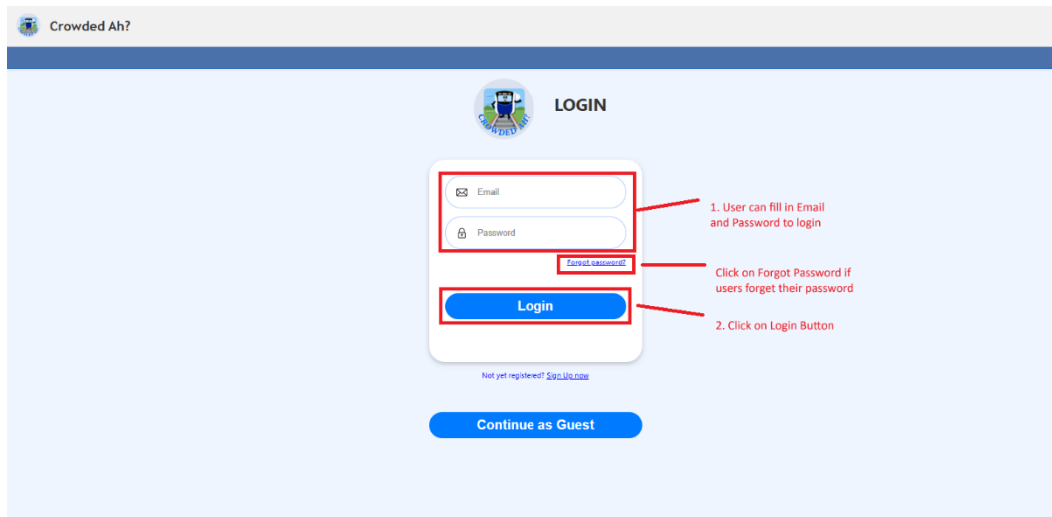
Users can sign up an account for free so that favourite stations can be bookmarked. To sign up for an account, the user must have a valid email address since CrowdedAh team will send a verification email over to your email address.

Password specifications: At least 6 characters containing an uppercase letter and a numeric letter

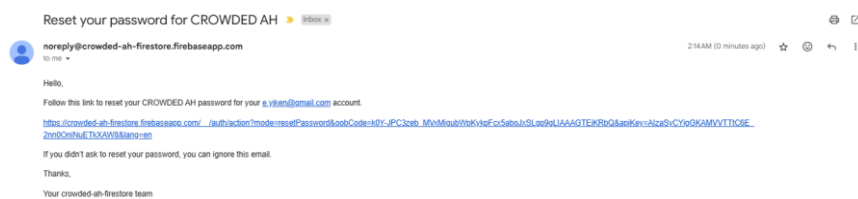


2.3 Login into an existing account

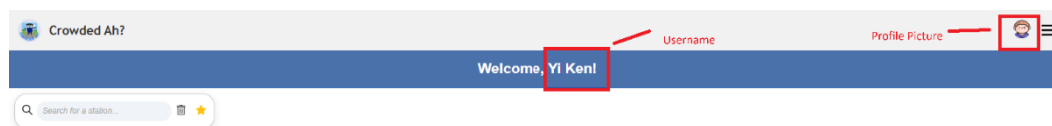
Users can login into an existing account that they created by inserting a correct password.



If user happen to forget their password, the user can change their password by clicking the forget password link and an email will be sent to the user's email address for him to change his password.

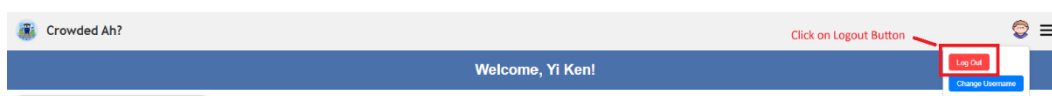


If login is successful, user will see their username on top of home page and their profile picture will be displayed



2.4 Logout from User Account

To logout from an existing account, user need to press the profile picture icon and a pop up will be displayed. User can click on Log Out to logout from the account and will be redirected to login page again



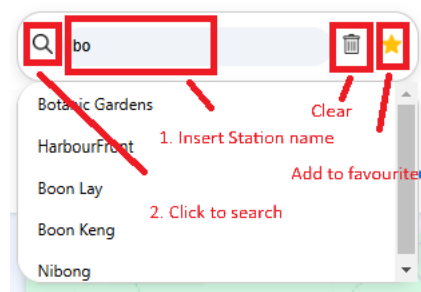
3 Home Page

3.1 Search for Stations

User can search for a MRT/LRT station at the search bar. Auto-complete is implemented for ease of users so they can select directly from the drop-down list. User will need to click on the Magnifying Glass icon to search for the stations and will be then redirected to the Stations Details Page

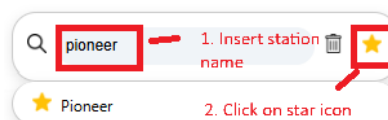
Search bar icons functionalities:

- Magnifying Glass: Search for a station
- Dustbin: Clear the search bar
- Star: Add a station to become favourite station



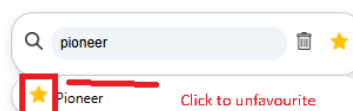
3.2 Add a station to favourite

User can add a station to favourite after logging into their account. The saved station will always be connected to the user. User first insert the station name and click on star icon to add to favourite. After a station is added to favourite, the station will always appear on the drop-down list



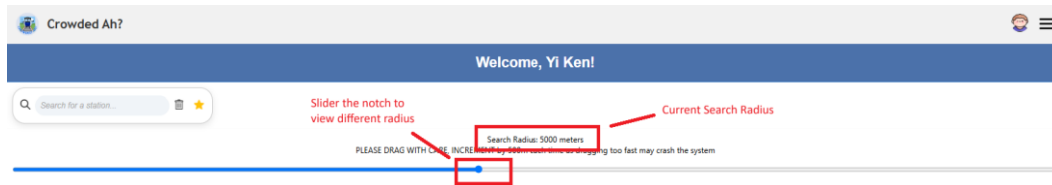
3.3 Unfavourite a station

User can unfavourite a station by clicking on the star icon beside the station name. Then, the station will not be displayed on the drop-down list anymore.



3.4 Search radius slider

User can change their search radius slider from 1 km to 10 km from them. Please teake note that the slider may crash the system when dragged too quickly as Google Maps API cannot be called too much in a given specific time interval. Thus, user should drag the slider bit by bit to prevent the system from crashing.

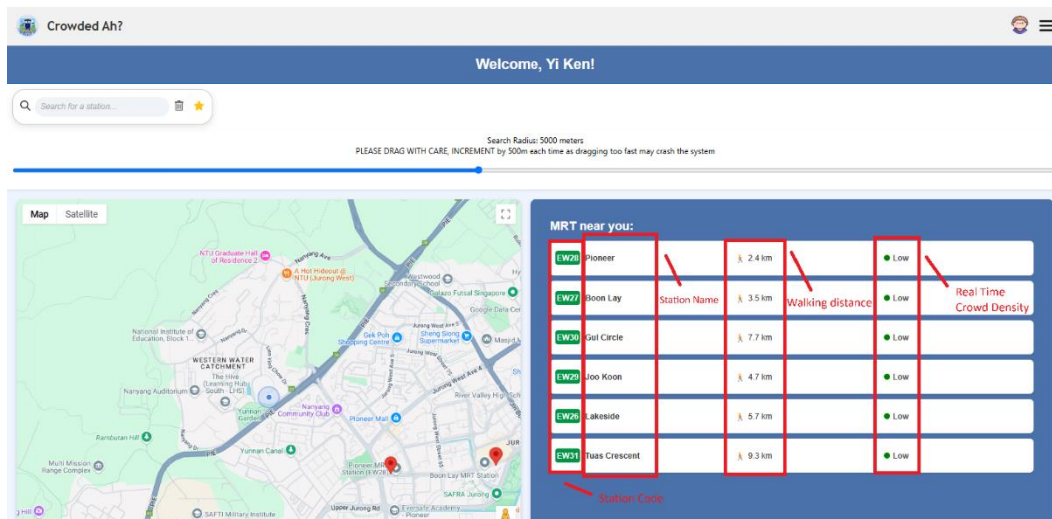


3.5 Display nearby stations

Stations nearby the user will be displayed in the MRT near you container.

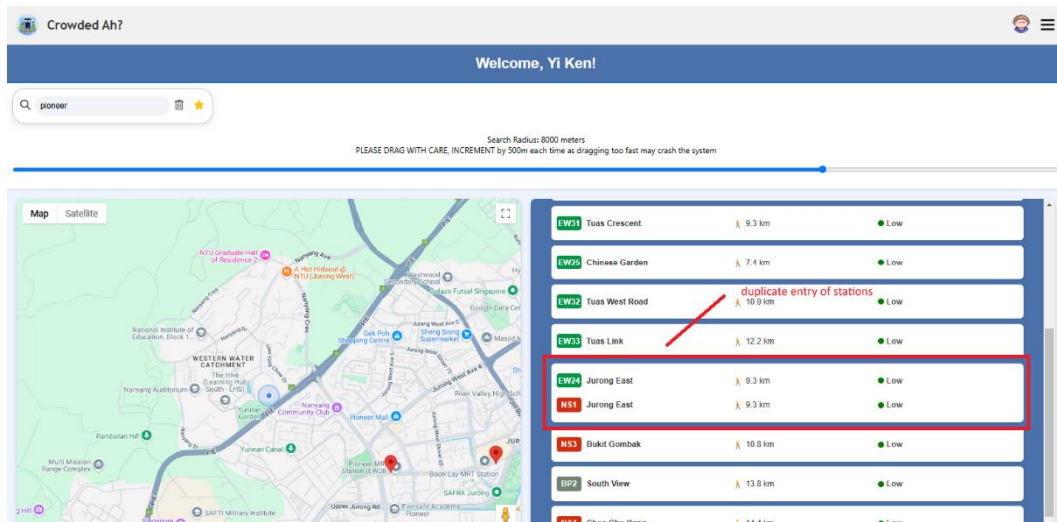
Other information will also be displayed including:

- Station Code of the station
- Station Name of the station
- Train Line of the station
- Walking distance to the station from current location
- The Real-Time Crowd Density of the station



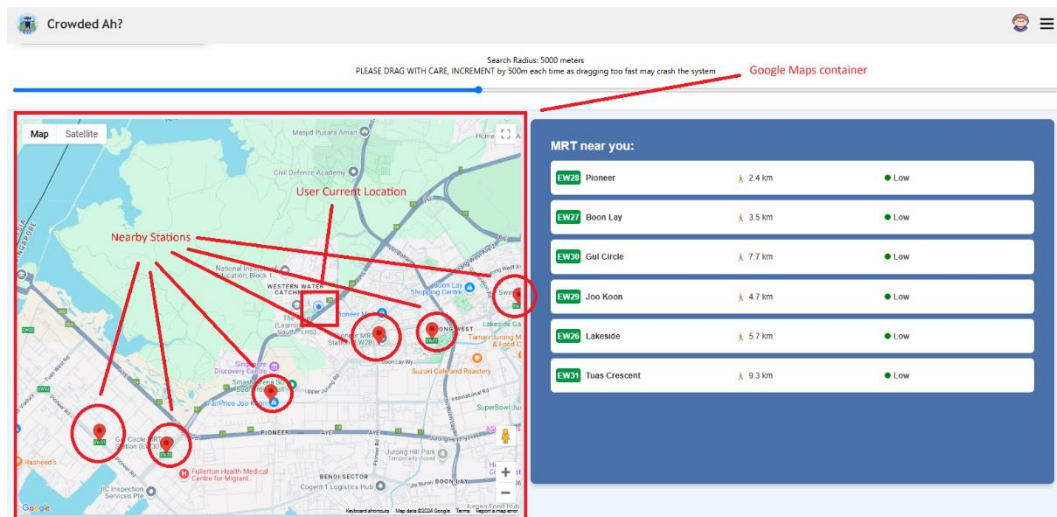
3.6 Display nearby stations (with multiple lines)

Stations that have multiple lines, for example: EW24/NS1 Jurong East, will have duplicate entry in the nearby stations container. The data presented are the same (Walking distance and Real Time Crowd Density Level)



3.7 Google Maps API

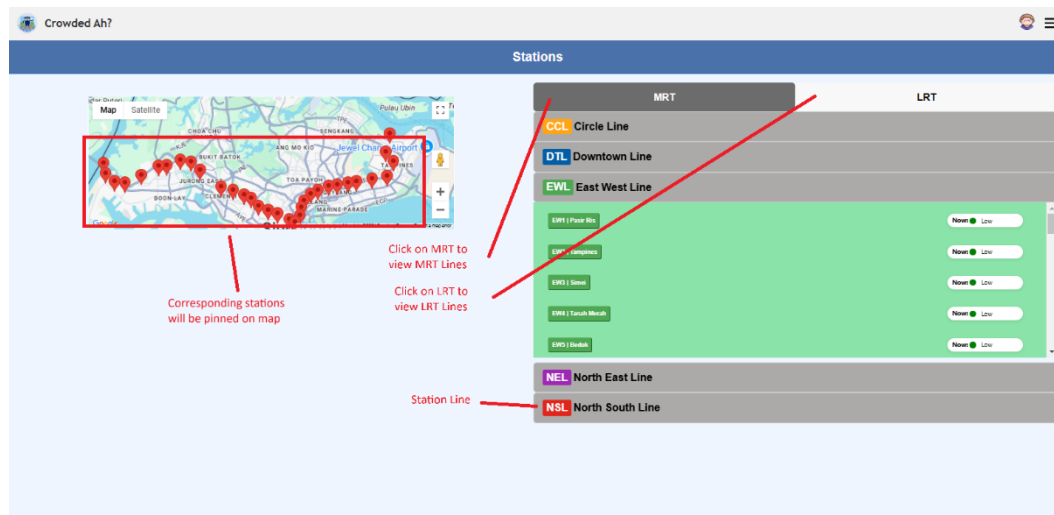
Nearby Stations are pinpointed using the red pin in Google Maps container. Also, the user current location is also shown on the map



4 Stations Page

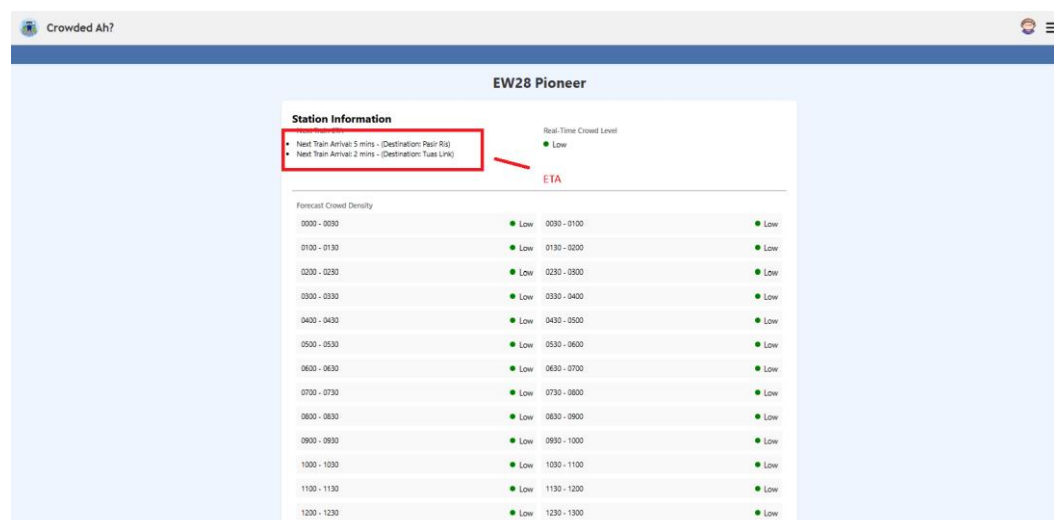
4.1 View MRT / LRT Station

At stations page, users can view MRT / LRT stations in Singapore. After selecting a line to view, the corresponding stations will be pinned on Google Maps on the left side of the screen. Upon selecting a line, a drop down menu containing list of stations will be shown, each station will also display its Real Time Crowd Density Level.



4.2 Check Real Time ETA

In Stations Details Page, user can check the Real Time ETA for both directions.



4.3 Check Real Time Crowd Density Level

In Stations Details Page, user can check the Real Time Crowd Density Level for a station. It is updated every 10 minutes.

The screenshot shows the 'EW28 Pioneer' station details page. Under the 'Station Information' section, the 'Real Time Crowd Level' is displayed as 'Low'. A red box highlights this status, with a red arrow pointing to the text 'Real Time Crowd Density Level'.

Below this, the 'Forecast Crowd Density' section displays a table of 48 time slots, each with a forecasted crowd density level (all 'Low').

Time Slot	Forecast Crowd Density
0000 - 0030	Low
0100 - 0130	Low
0200 - 0230	Low
0300 - 0330	Low
0400 - 0430	Low
0500 - 0530	Low
0600 - 0630	Low
0700 - 0730	Low
0800 - 0830	Low
0900 - 0930	Low
1000 - 1030	Low
1100 - 1130	Low
1200 - 1230	Low

4.4 Check Forecast Crowd Density Level

In Stations Details Page, user can check the Forecast Crowd Density Level for a station. Each time slot spans for 30 minutes, a total of 48 time slots with their corresponding forecasted crowd density level will be displayed. It is updated every 24 hours.

The screenshot shows the 'EW28 Pioneer' station details page. Under the 'Station Information' section, the 'Real Time Crowd Level' is displayed as 'Low'. A red box highlights this status, with a red arrow pointing to the text 'Real Time Crowd Density Level'.

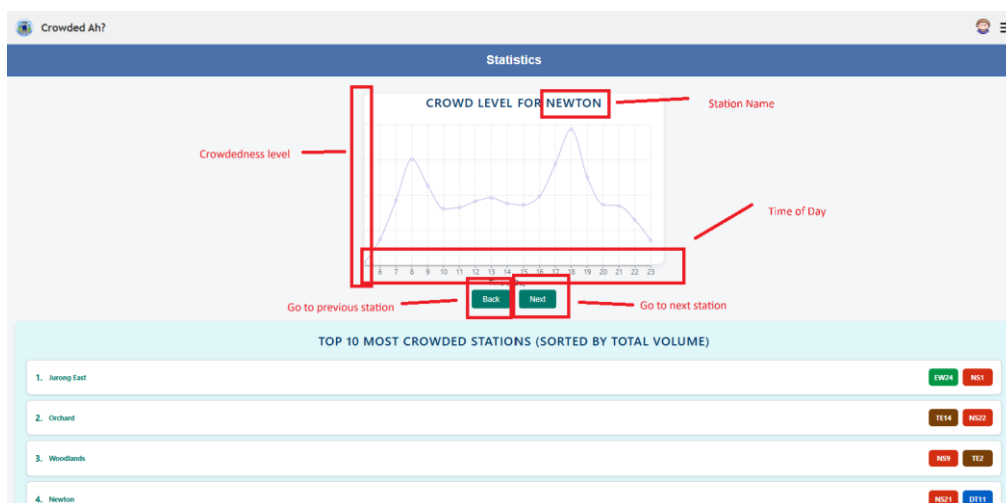
Below this, the 'Forecast Crowd Density' section displays a table of 48 time slots, each with a forecasted crowd density level (all 'Low'). Red boxes highlight the 'Time' column and the 'Forecast Crowd Density Level' column.

Time	Forecast Crowd Density Level
0000 - 0030	Low
0100 - 0130	Low
0200 - 0230	Low
0300 - 0330	Low
0400 - 0430	Low
0500 - 0530	Low
0600 - 0630	Low
0700 - 0730	Low
0800 - 0830	Low
0900 - 0930	Low
1000 - 1030	Low
1100 - 1130	Low
1200 - 1230	Low

5 Statistics Page

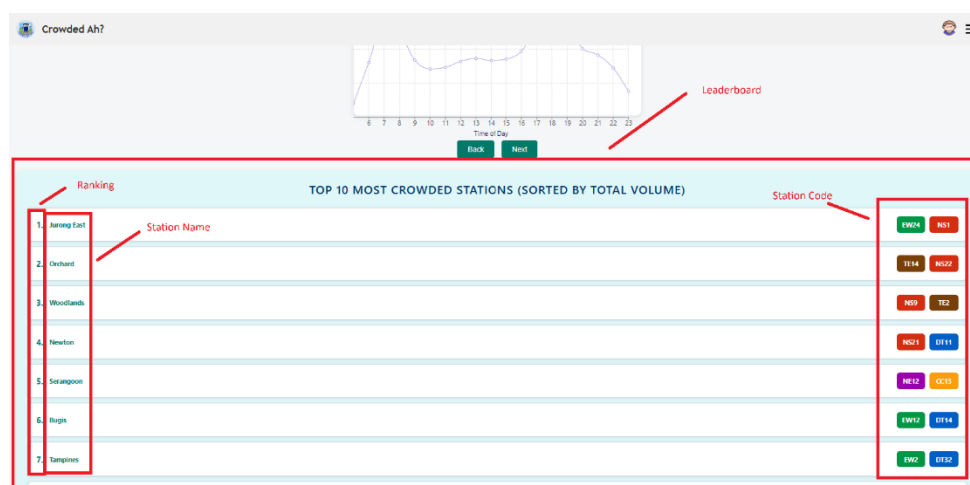
5.1 Crowd Level visualisation for Top 10 Most Crowded Stations

Top 10 Most Crowded Stations and their corresponding graphs are displayed in Statistics page. This is for users who want to have some insights for stations that are crowded for most of the time in Singapore. The y-axis of the graph is the crowded level (measured by total tap-in, tap-out), the x-axis of the graph is the time of day. Note that most Singaporean commute to work during 0600-0900 and return home about 1700-1900, so most of the graphs display high volume during those peak hours. User can click on Next and Back button to view other graphs for the stations



5.2 Leaderboard for Top 10 Most Crowded Stations

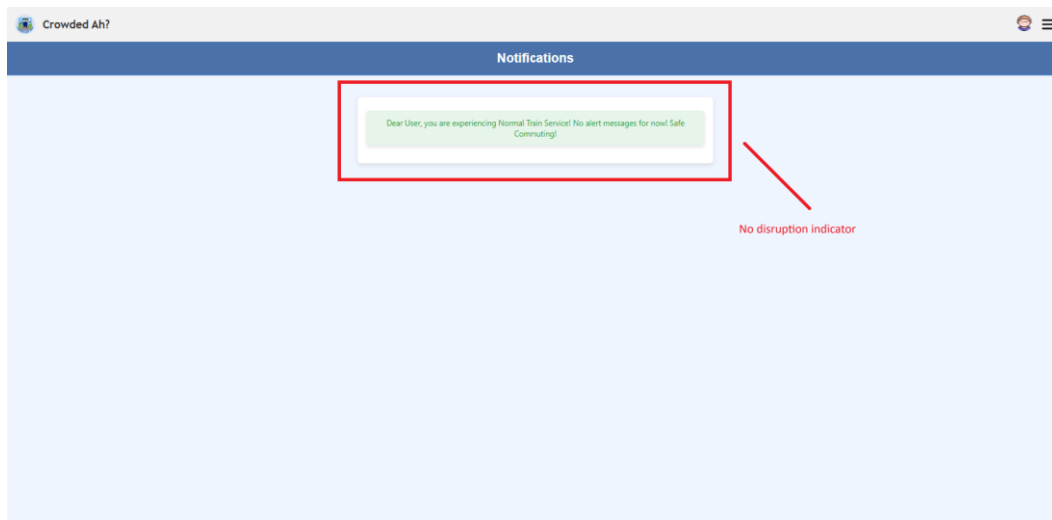
Top 10 Most Crowded Stations for the previous month is sorted according to crowdedness level and displayed in a leaderboard. User may want to avoid going to these stations since they are so crowded! Information displayed are: ranking of station, station name, station code, station line



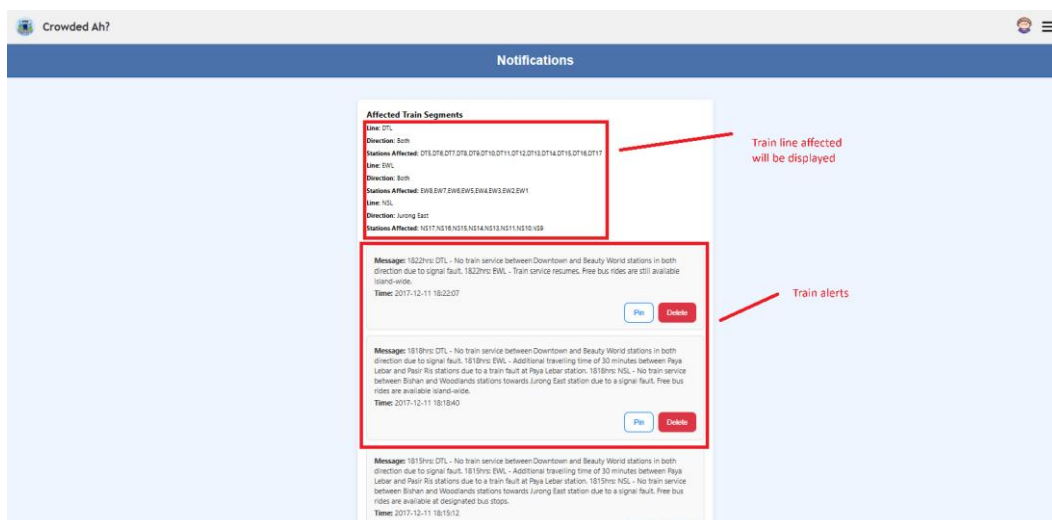
6 Notifications Page

6.1 Notifications display

If there is no disruption, user will see a green box with some message displayed, indicating that the user is currently experiencing Normal Train Service.

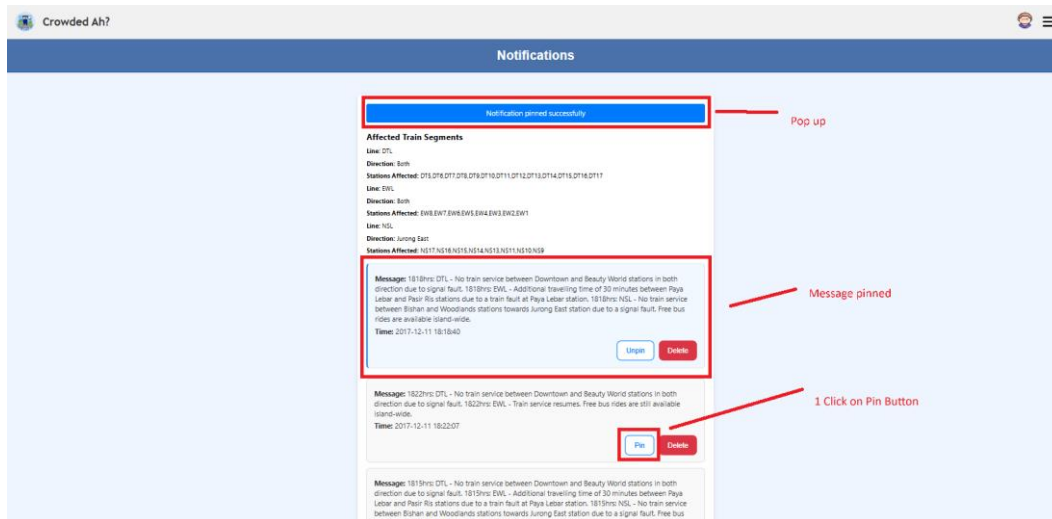


If there is disruption present, user will see a list of train alerts informing the user about the train lines affected and the content of the alert message. The messages are updated in real-time when there is ad-hoc messages coming from SMRT. User can choose to pin the message if they find it important or they can just delete it if they find it not useful.



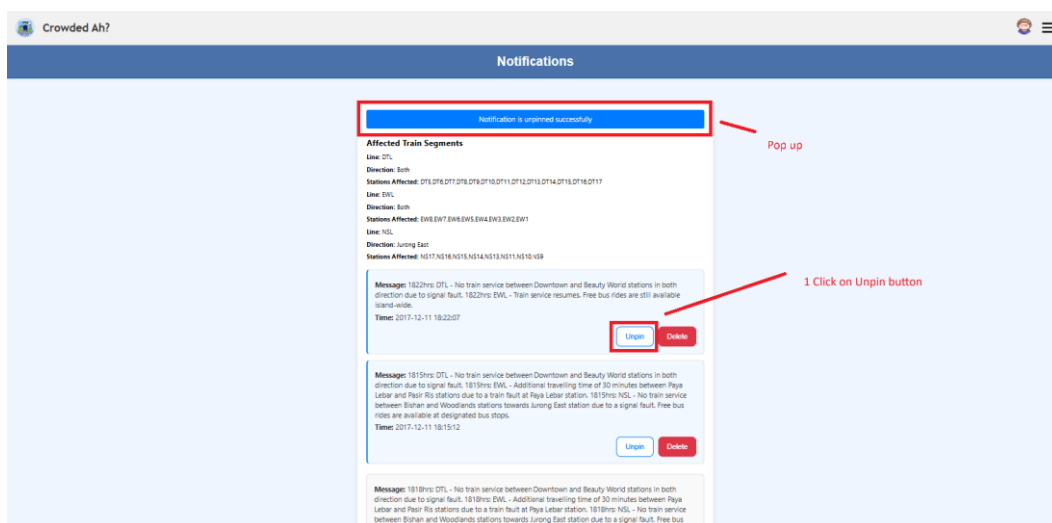
6.2 Pin a notification

To pin a notification, user can click on the pin button and the corresponding message will be displayed at the top of the notifications list with a blue background, indicating that the notification has been pinned by the user. A pop up at the top of notification list will also be shown when a notification has been successfully pinned.



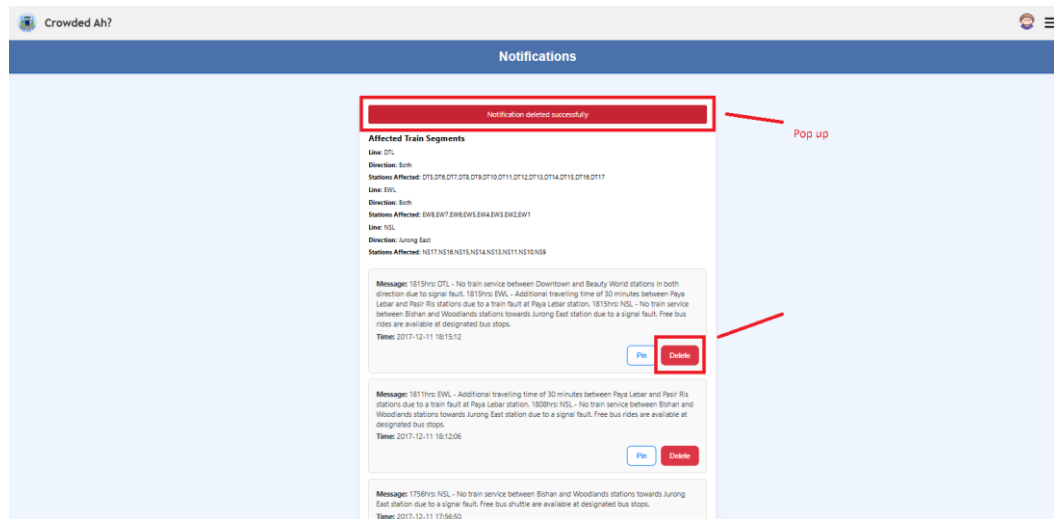
6.3 Unpin a notification

To unpin a notification, user can click on the unpin button and the corresponding message will return to its original position with original background, indicating that the notification has been unpinned by the user. A pop up at the top of notification list will also be shown when a notification has been successfully unpinned.



6.4 Delete a notification

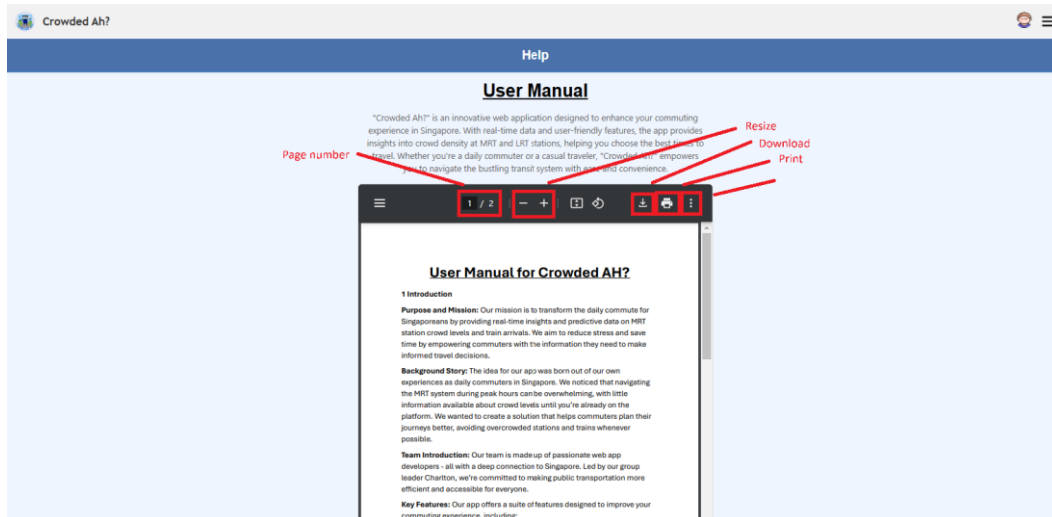
To delete a notification, user can click on the delete button and the corresponding message will be deleted. A pop up at the top of notification list will also be shown when a notification has been successfully unpinned.



7 Help Page

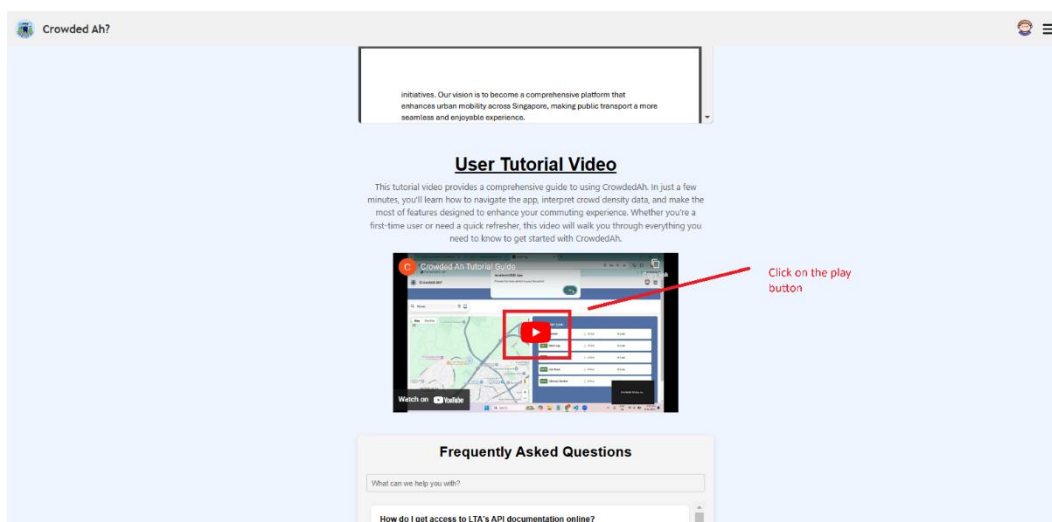
7.1 View User Manual

User can view the User Manual inside the app itself. User can choose to Download a softcopy or print a hardcopy, suiting to their preferences.



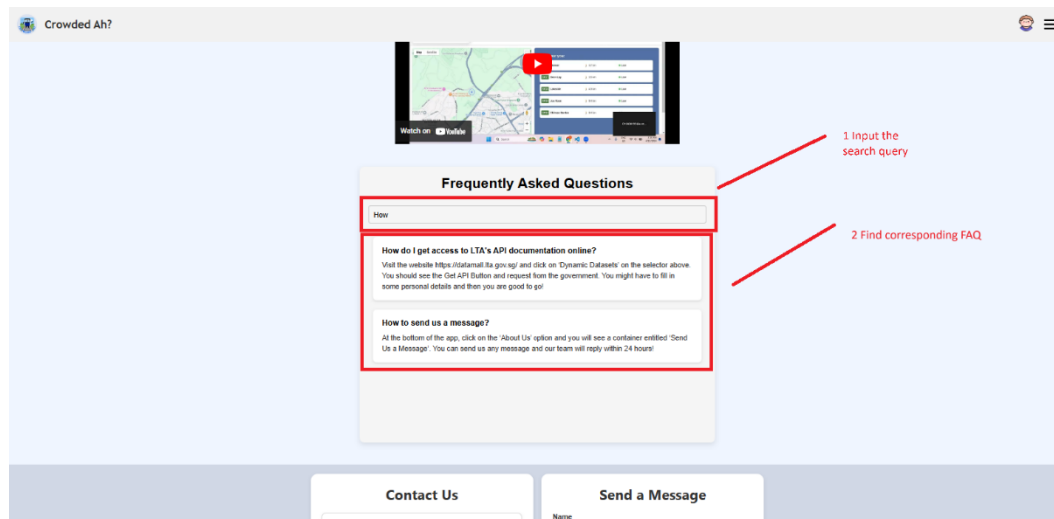
7.2 View User Tutorial Video

User can view a step-by-step tutorial guide to navigate CrowdedAh app. Simply click on the play button in the middle to view the animated guide.

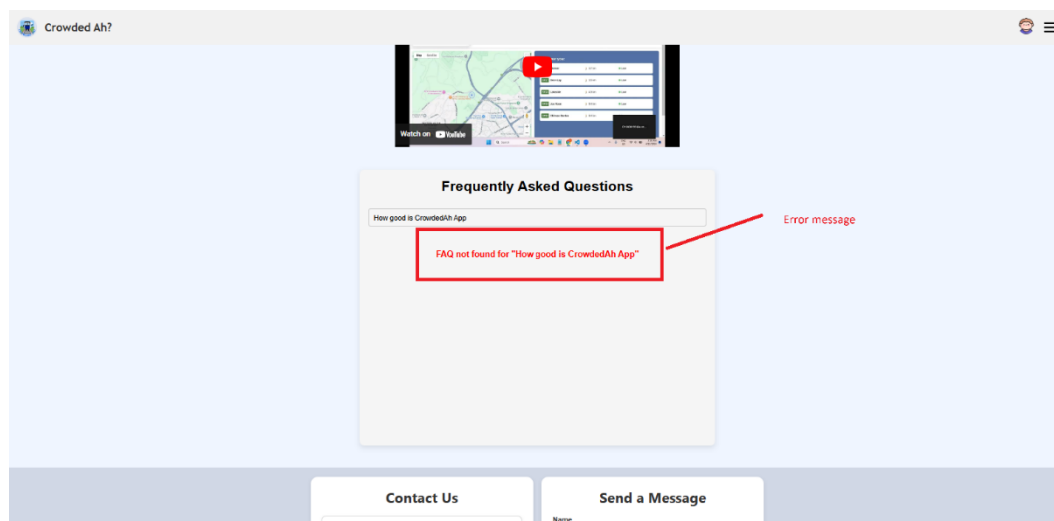


7.3 View FAQ

User can view FAQs by simply scrolling through the FAQ list. To search for a specific FAQ, user can input the keyword in the search box and if there is FAQ returned, it will be displayed in the box below. Take note that a search query will only return some result if the input keyword is part of the title of the list of FAQs, not including the content.



If a FAQ is not found, an error message in red will be displayed indicating that the input message is not found.



7.4 Other information + Contact Us

At the bottom of Help Page, there are Contact Information displayed and also user feedback option. Users must fill in their name, email address, subject and message to send to Crowded Ah team. User can choose to either send a General Enquiry, Support or Feedback to CrowdedAh team. Messages sent will be replied within 3 working days given a valid email address is provided.

The screenshot shows two side-by-side forms on a light blue background. The left form, titled 'Contact Us', contains contact details for CrowdedAh Team, including an email address, phone number, and physical address. The right form, titled 'Send a Message', has fields for Name, Email, Subject, and Message, followed by a 'Send' button. Red annotations with arrows point to specific parts: 'Contact details of CrowdedAh Team' points to the left form; '1 Fill in Name, valid email, subject and message' points to the input fields in the right form; and '2 Click on Send button' points to the 'Send' button in the right form.

If message is sent successfully, a pop up will be shown

This screenshot shows the same 'Send a Message' form as in the previous image, but with a white pop-up message box in the center that reads 'Your message has been successfully sent!' with a 'Close' button. The background is dimmed, and the 'Contact Us' form is visible on the left. The 'Send a Message' form fields are still visible but slightly faded.

8 About Us Page

8.1 Content Display

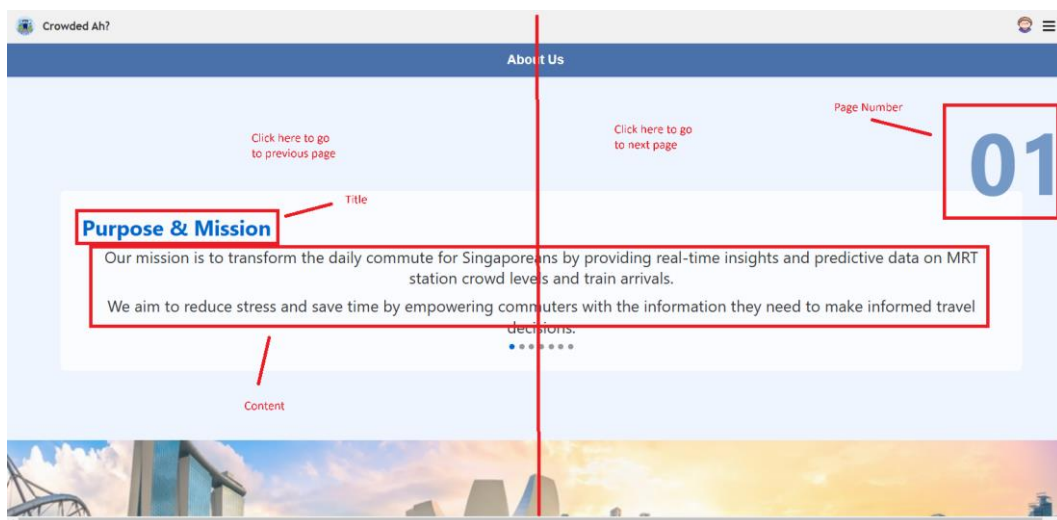
Content about information related to CrowdedAh team will be displayed in AboutUs Pages.

Content includes:

- Purpose & Mission
- Background Story
- Team Introduction
- Key Features
- Vision for the Future
- User-Centrix Force
- Call to Action

8.2 Swiping through page

To swipe through pages, user can simply click on left/right side of the screen or enter left/right key to swipe through the pages. To go to previous page, click left side of screen or hit left key on keyboard. To go to next page, click right side of screen or hit right key on keyboard



9 Update frequency and limit of API

9.1 Google Maps API

Update frequency: ad-hoc and triggered by users.

Limitation: unlimited since we are not utilising a lot of complex functions that is provided by Google.

9.2 LTA DataMall API

Passenger Volume by Train Stations

Update frequency: By 15th of every month, the passenger volume for previous month data will be generated

Limitation: Link for downloading the csv file will expire after 5 minutes

Train Service Alerts

Update frequency: Ad-hoc

Limitation: No limit

Platform Crowd Density Real Time

Update frequency: 10 minutes

Limitation: No limit

Platform Crowd Density Forecast

Update frequency: 24 hours

Limitation: No limit

10 Frequently Asked Questions

10.1 How do I get access to LTA's API documentation online?

Visit the website <https://datamall.lta.gov.sg/> and click on 'Dynamic Datasets' on the selector above. You should see the Get API Button and request from the government. You might have to fill in some personal details and then you are good to go!

10.2 How to send us a message?

At the top of the app, click on the Hamburger icon. Then, click on the 'About Us' option and you will see a container entitled 'Send Us a Message'. You can send us any message and our team will reply within 3 working days!

10.3 What your app has to offer in comparison with CityMapper or GoogleMaps?

For our web app, it provides real-time crowd density data which both CityMapper and GoogleMaps do not offer. Also, it provides you with accurate forecast about the crowd density at each station, which helps a lot when you want to plan your trip ahead of time.