



# User Guide

## Smart Night Safari Chatbot

25/08/2019 | v1.0

**Team name: NUS-ISS F4**

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CA project for Cognitive System Course in NUS-ISS Intelligent System

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# Our Approach

We implement our chatbot upon DialogFlow and we extended a fulfillment in python. After the dialogflow agent recognizes the intent and entities from frontend query, it sends a request to our backend fulfillment. The fulfillment is divided into 2 modules, 1 of them deals with json data, we implemented a fuzzy matching method using synonym library in nltk wordnet, this increase the recall of the successful retrieval while not hurting the accuracy; the other module uses TF-IDF method and cosine similarity to match fallback intents with FAQ data from Night safari website.

## Requirements

1. **Dialogflow:** API to retrieve a set of trained intents and entities from user's continuous queries.
2. **Google actions:** API to deploy our project on google assistant interface, enabling rich and pure text response.
3. **Ngrok:** Expose local server address to a remotely accessible Internet url.

## Dependencies

4. Dialogflow
5. Anaconda3
6. Python frameworks: flask, nltk, ...
7. Ngrok

## Supported User Interfaces

1. Google Assistant mobile app (Recommended), on IOS 9.0+ iPhones/ Android 5.0+ phones, etc.;
2. Actions console simulator;
3. Web demo, viewing on Google Chrome version 74 and above.

# Deployment

## Prerequisites

1. Install anaconda3 from <https://www.anaconda.com/distribution/> correspond to your OS version;
2. Download ngrok binary from <https://ngrok.com/download> correspond to your OS version;
3. Both installations above should be added to your environment before starting our product.
4. Install google assistant app on your mobile device. (optional)

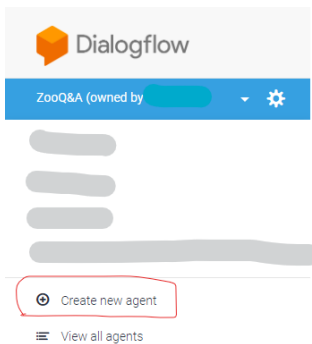
## Configure Dialogflow

1. Git clone our project repository to your local machine, by either run:  

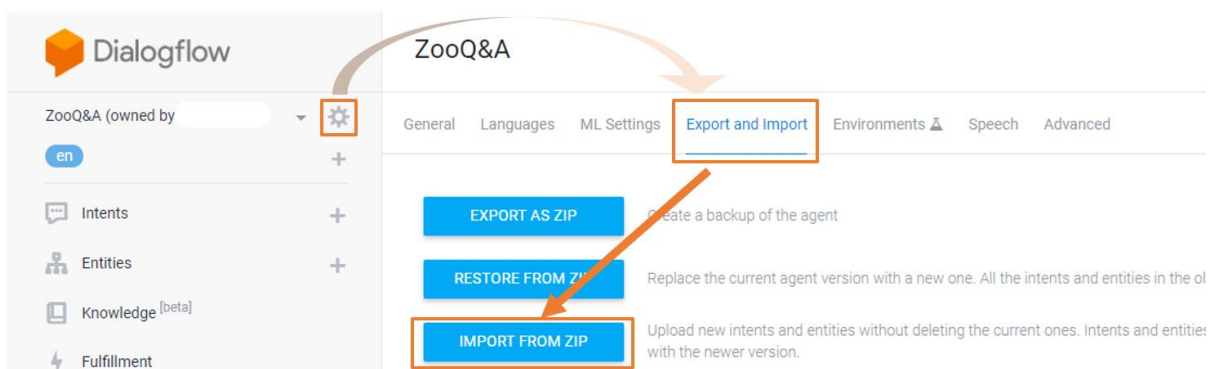
```
git clone https://github.com/harry0916/NUS_Chatbot_F4.git
```

or simply direct to our git repo and download it as a zip.
2. [Optional], if you don't have a google account, please create one here:  
<https://dialogflow.com/d/signin?continue=https%3A%2F%2Fdialogflow.com%2F>. skip this step if you have signed up already;

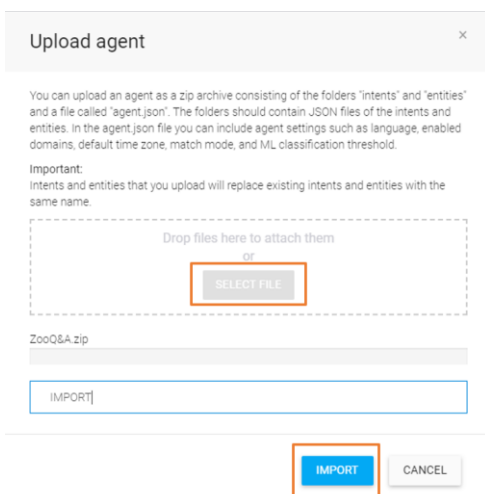
- Log in to the dialogflow console: <https://console.dialogflow.com/api-client/#/login>;
- Create a new agent on the up-left side panel, name it as whatever you like:



- Click gear button in new agent, select “Import From Zip” option under “Export and Import” panel:



- Click “Select File” and select “ZooQ&A.zip” file under [project root]/SystemCode/ directory. Then follow the displayed instructions to proceed importing:



## Run backend script

- Test anaconda binary is detectable by your cmd/shell: open your cmd/shell and run this command: `conda -version`, ensure it shows the right version you have installed;
- Start the server:
  - Win10 users: double click the “setup.bat” batch file under [project\_root]/SystemCode/intelligentchatrobot directory.
  - Linux users: navigate your terminal to the [project\_root]/SystemCode/intelligentchatrobot directory, and run: `bash setup.sh`

## Start a ngrok session

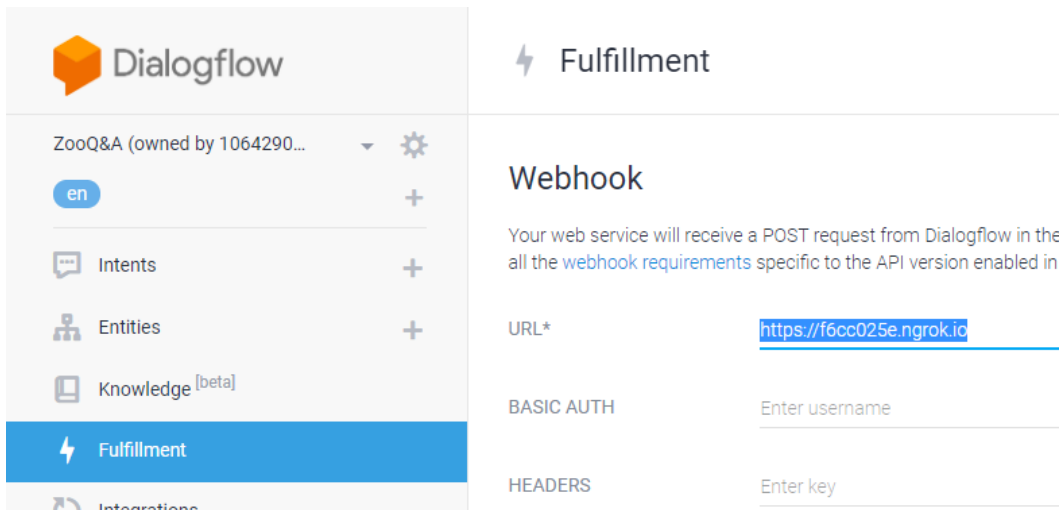
1. Open another terminal/command line tool;
2. Run `ngrok http 4300` to generate a random url;
3. Copy the highlighted url to your clipboard;

```
ngrok by @inconshreveable (Ctrl+C to quit)

Session Status      online
Session Expires     5 hours, 15 minutes
Version             2.3.34
Region              United States (us)
Web Interface        http://127.0.0.1:4040
Forwarding           http://f6cc025e.ngrok.io -> http://localhost:4300
Forwarding           https://f6cc025e.ngrok.io -> http://localhost:4300

Connections
  ttl    opn    rt1    rt5    p50    p90
    1      0     0.00   0.00   1.30   1.30
```

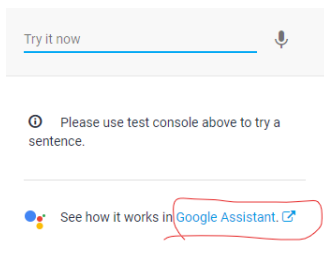
4. Open the Dialogflow console in your browser, paste the above url to “Fulfillment -> Webhook -> URL” column, REMEMBER TO SAVE before proceed.



5. Notice that every ngrok session is only valid for 8 hours if you downloaded the free version, beyond that, according to our observation, ngrok service can be unstable from time to time, so if anything works abnormally, consider repeating the step 2~4.

## Deploy Actions on google

1. Redirect to Actions on google through right side panel’s “google assistant” link:



2. Select the dialogflow project you just created:

## Welcome to Actions on Google

Actions on Google is the platform for developers to extend the Google Assistant. Join this emerging ecosystem by developing actions to engage users on Google Home, Pixel, and many other surfaces where the Google Assistant will be available.

[Documentation](#) <> [Sample code](#) ≡ [API reference](#) [Support](#)


Your projects

New project

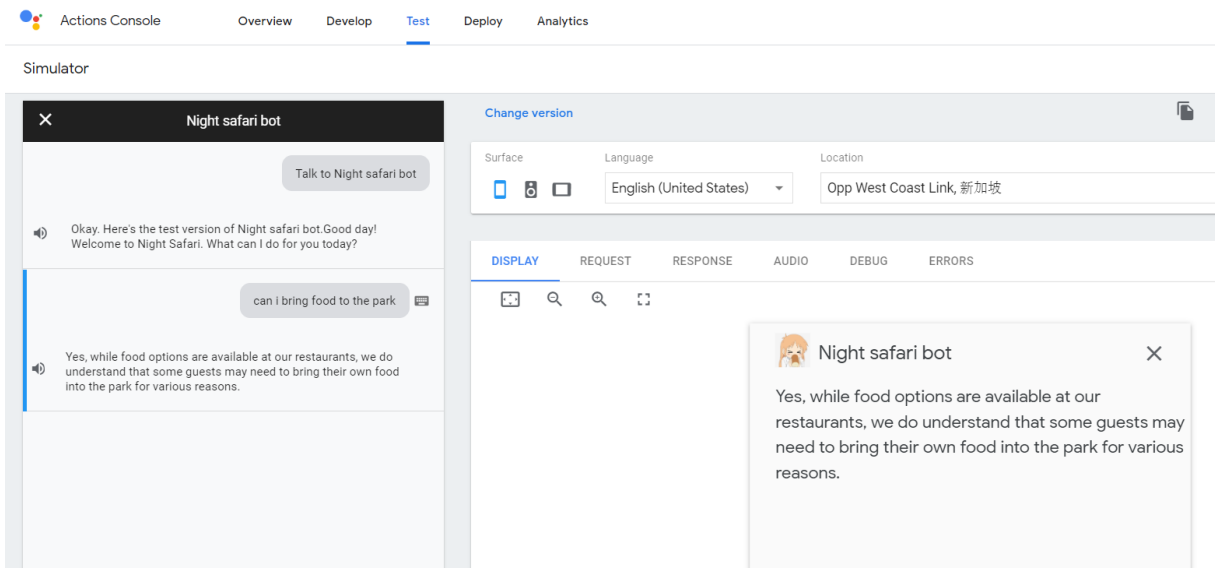
Recent projects

Deployed channels

Last modified date

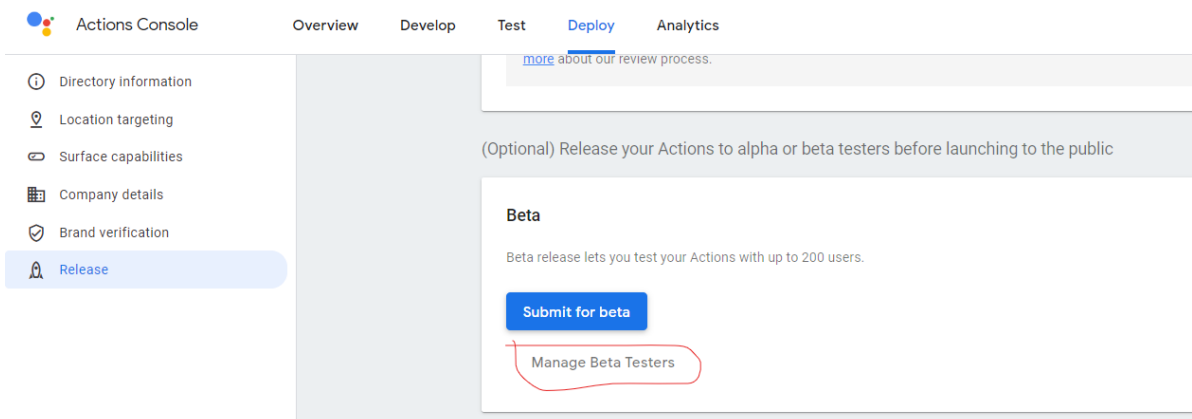
 ZooQ-A	—	Aug 25, 2019
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3. Follow the steps on <https://developers.google.com/actions/console/publishing>, fill in some information in order to release your project to Alpha/Beta Environments. Half-ways, you could test out your actions in simulator in “Test” panel:



The screenshot shows the 'Test' panel in the Actions Console. On the left, a chat window titled 'Night safari bot' shows a conversation: a user asks 'Talk to Night safari bot', the bot responds 'Okay. Here's the test version of Night safari bot. Good day! Welcome to Night Safari. What can I do for you today?', the user asks 'can I bring food to the park', and the bot responds 'Yes, while food options are available at our restaurants, we do understand that some guests may need to bring their own food into the park for various reasons.' On the right, there's a 'Change version' dropdown and a 'DISPLAY' tab. Below the chat, a preview of the bot's response is shown in a card format.

4. Finally, submit a beta/alpha release under Deploy -> Release -> Beta/alpha -> manage Beta/alpha testers. Then copy the opt-in link:



The screenshot shows the 'Deploy' panel in the Actions Console. On the left, a sidebar lists various settings: Directory information, Location targeting, Surface capabilities, Company details, Brand verification, and Release (which is highlighted). The main content area shows the 'Beta' release section. It includes a link to 'more about our review process.' and a heading '(Optional) Release your Actions to alpha or beta testers before launching to the public'. Below this, there's a 'Beta' section with the text 'Beta release lets you test your Actions with up to 200 users.' and two buttons: 'Submit for beta' and 'Manage Beta Testers' (which is circled in red).

Manage releases

← Whitelist beta testers

**Opt-in link**

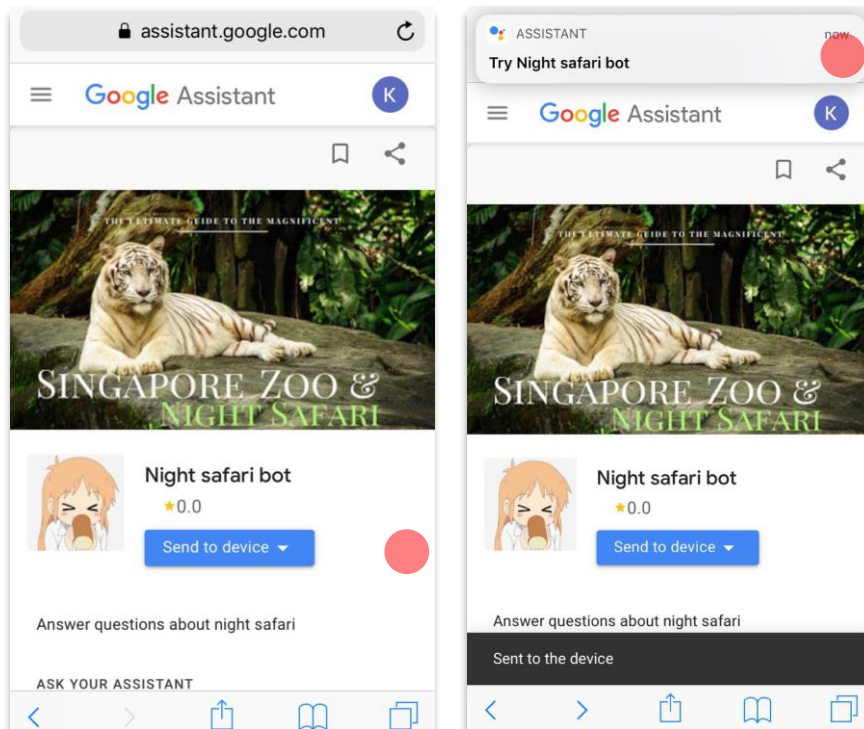
Share the opt-in link below with your tester

<https://assistant.google.com/services/a/uid/00000085671fc57a?hl=en>

Please note that your Actions need to be approved before your testers can opt-in. It may take some time for this link to be active. Testers need to click the opt-in link on their mobile devices to accept your invitation. They can then use the Assistant app to interact with your bot.

Copy link to clipboard

5. Open the link in your mobile browser, log in to your google account.
6. Click “send to device”, select your current device, then redirect to google assistant app.



7. By now, you should be already inside the night safari bot, with the avatar and chatbot name you previously set in step 3. If not, check if you have signed in as the same account in dialogflow and invoke the google assistant with your invocation phrase you set in step 3, e.g. “talk to night safari bot”.



8. Enjoy your conversation on google assistant :)

## Business Scenarios



Although our intent and entities configuration combine all kinds of scenarios into one intent, for clarity, here we categorize the cases.

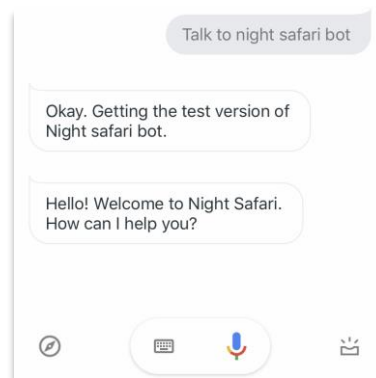
### Queries about listed information on Night Safari webpages:

Interrogative type	Zoo(general)	Program	Event	Activity	Animal	Zone	Show	Dine/shop
What	Description	Similar to “zoo” column						
When	Open/close time							
How much	Admission rate of price group							
Where	Location of the zoo							
Direction	Google map direction	Not available						

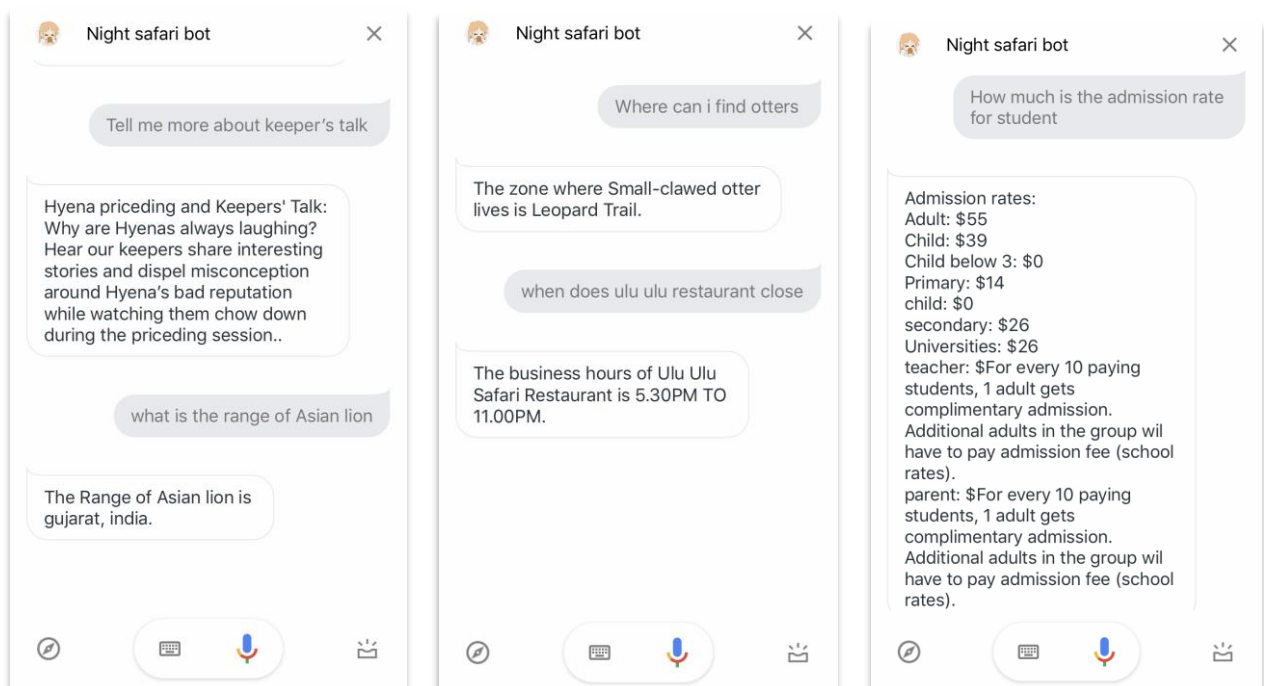
### Interaction demonstration (on Google Assistant app)

Facilitated by google action api, our users can not only read from our text responses, but also interact with some of them, enhancing user experience.

## Trigger the google assistant app

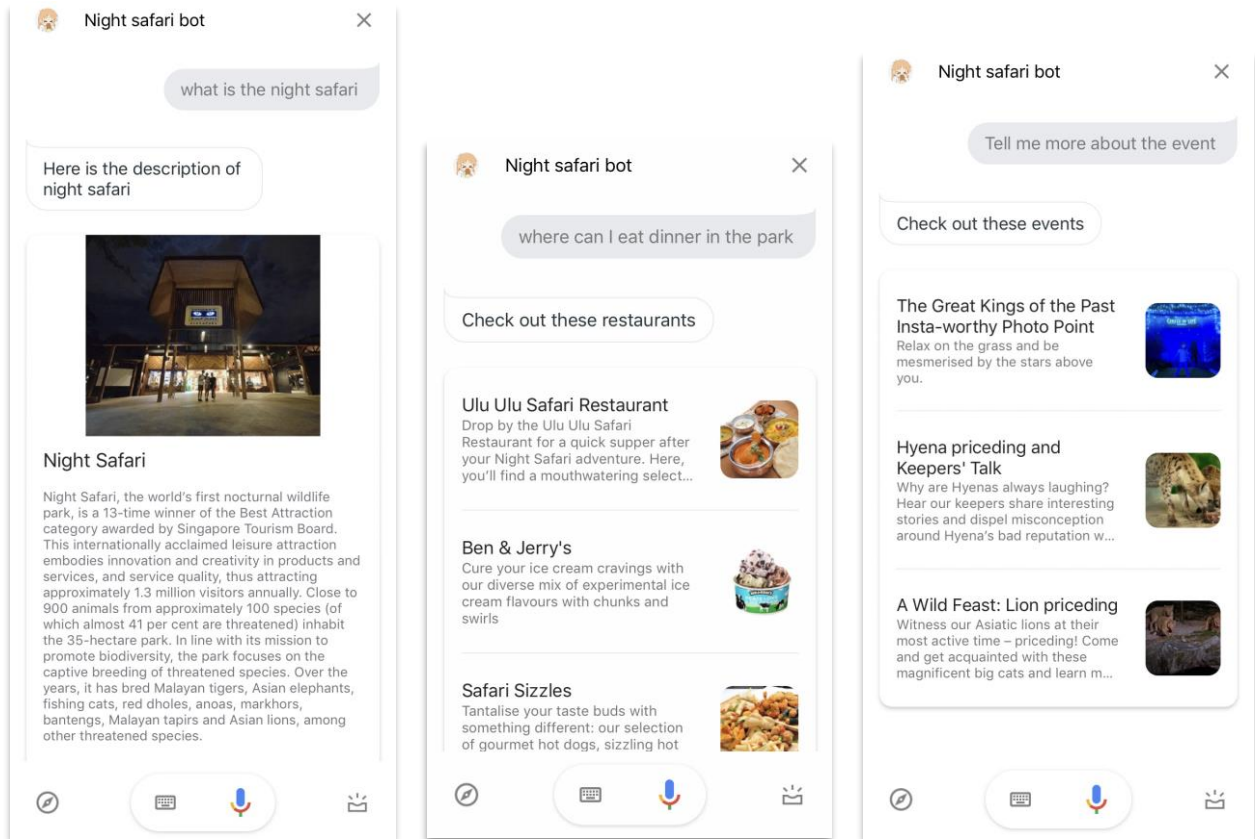


## Specific questions about event/animal, etc.

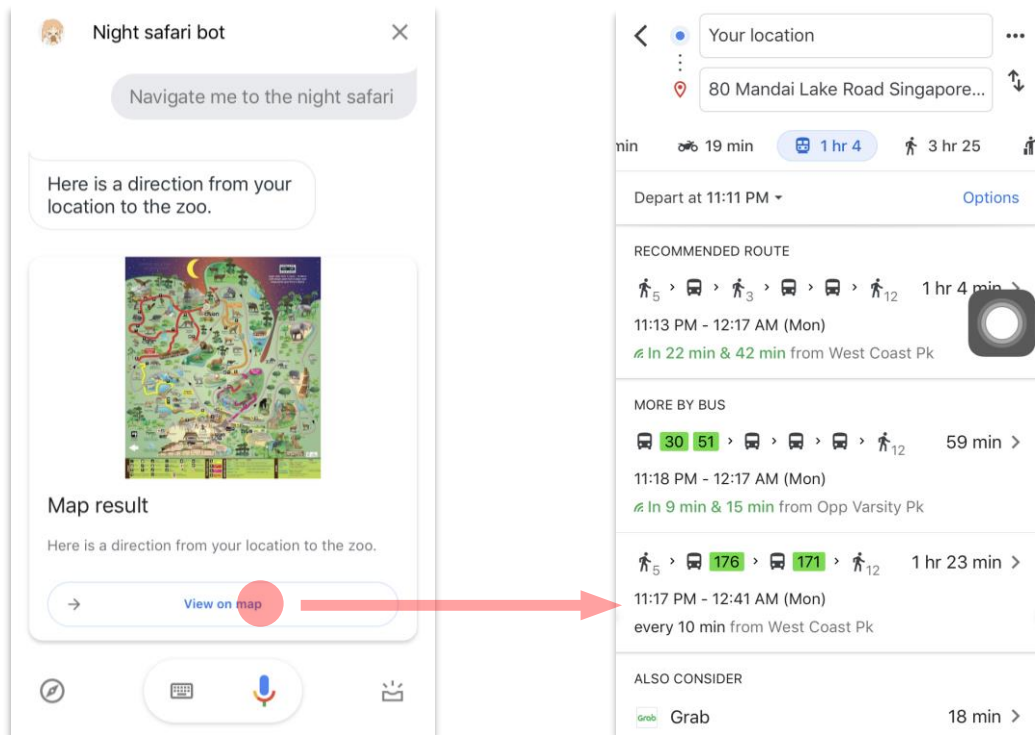




## General questions



## Navigation



\*If you wish to switch your frontend to web demo or other integrations that don't support card display of google actions, you don't have to modify any configuration or restart at all. Backend script can detect your request environment and decide the correct display format at runtime.