ReadMe – ZooTrek

What is Zootrek about?

ZooTrek is a mobile app that users can use when visiting the Zoo. ZooTrek efficiently utilizes AR to enhance users' experiences in the zoo. Some features this app contains are:

1. Scanning pictures to know more about animals
2. Interaction with AR
3. Interactive games
4. Location tracking with AR

The purpose of this app to encourage users to explore and cover more areas of the zoo, as well as educate users more about the animals we have in the Singapore Zoo.

Key Controls

Since this is a mobile app, navigation mainly uses fingers. In some AR Experiences, users are required to drag items around the screen. Users may also be required to use photos to view experiences.

Platforms and Hardware Used

In this demonstration, users are required to have the Unity APK Build installed in their phones to use the app.

Softwares Used to Create App

1. Unity 2022.3.11f1
2. Adobe Photoshop – to edit photos

3. Adobe Illustrator – to draw certain images
4. Adobe XD – to draw certain UI and retrieve icons from "Icons 4 Design" by Em Software.

Walkthrough

This is a set of instructions on how to use the app "ZooTrek"

Loading

When entering the app, a loading page will play before you see the home page.

Home Page

In the home page, you are able to scroll up and down to view the different App features, however they are not linked to any pages, it is there for illustration purposes. The search bar is not functional. Click on the "Click Application" at the bottom of the screen to quit.

Map Page

Tap on the map icon on the right. You will see a zoomed in version of Singapore Zoo map. You are unable to zoom in and out, but you are able to drag the map around to view the different parts of the map.

On the top right, you will see a button "View Map in AR". Tap on it to open the AR camera. Now, scan the map shown below.

You will see a red pin on the map in AR, which should show the user of their current location (in this case would be right around the rainforest walk area)

Tap on either the White Rhinoceros enclosure or Elephants of Asia area, you will see a red line that leads to that location, a model of the rhinoceros or elephant respectively, as well as a yellow pin which indicates its location.

Scan Page

The scan page enables the AR camera. The page will show a warning sign to warn users of their surroundings before using the feature.

To use the scan feature, users are to scan an AR implemented picture in any animal enclosure. Ideally, there would be an AR picture for users to scan in every enclosure (the pictures needed to scan will be stated in each enclosure). However, for demonstration purposes, there are only 4 animals shown (may not belong to the Singapore Zoo).

If users are unclear about what to do, they can tap on the information icon on the top left to find out more or ask a Zoo staff on how to use the app. Staff members should be informed of the usage of the AR feature. Scan the following pictures to view more.

Tiger AR Experience

When scanning the tiger image, users will be able to see an information bubble. The information bubble contains a round photo of a tiger, background information of the tiger, a sound button and an "AR Experience" button.

When you tap on the sound button, you will hear the sound of a tiger's roar.

When you tap on the "AR Experience" button, you will be brought to another page that enables the AR Camera. Please ensure you have sufficient space around you to properly utilize this feature.

Point your camera at the floor and wait for a scan icon to appear. Once it appears, tap on the screen to see a tiger model in real size. Tap again anywhere to re-position the model.

Penguin AR Experience

When scanning the penguin image, users will also be able to see an information bubble. The information bubble contains a round photo of a penguin, background information of the penguin, a sound button and an "AR Experience" button.

When you tap on the sound button, you will hear the sound of a penguin's honk.

When you tap on the "AR Experience" button, you will be brought to another page that enables the AR Camera. Please ensure you have sufficient space around you to properly utilize this feature.

Point your camera at the floor and wait for a scan icon to appear. Once it appears, tap on the screen to see a penguin model in real size. Tap again anywhere to re-position the model.

Animal Page

On the top right corner of the scan page, you will see a button with a paw print icon. Tap on it to view the Animal Page. The search feature does not work. You will see 2 buttons, one called "Colobus" and another called "Sparrow". Tap on either one of them to view its features.

Colobus Page

In the Colobus Page, you will see a picture of a colobus at the top of the screen, a sound button and an "AR Experience" button. These buttons have the same functionality as the buttons in the Tiger AR Experience and Penguin AR Experience. You can also scroll up and down on the information paragraph.

Tap on the AR Experience in the Colobus Page. You will see something different from the other 2 animal's AR Experiences. First, click on the ground to spawn

the colobus model in real size. You are unable to re-position the colobus model. Instead, tap on it again to view an animation.

Now, tap on the banana icon, you are now able to spawn a banana model. Please spawn the banana model a considerable distance away from the colobus model. Now drag the banana towards the colobus. This is a feeding feature, where if you successfully feed the animal, it will play an animation. In this experience, you will see the colobus' eyes turn happy and playing an eating animation.

Sparrow Page

Navigate back to the Animal Page and click on the "Sparrow" button. In the Sparrow Page, you will see a picture of a Sparrow at the top of the screen, a sound button and an "AR Experience" button. These buttons have the same functionality as the buttons in the Tiger AR Experience and Penguin AR Experience. You can also scroll up and down on the information paragraph.

Tap on the AR Experience in the Sparrow Page. First, click on the ground to spawn the Sparrow model in real size. You are unable to re-position the Sparrow model. Instead, tap on it again to view an animation.
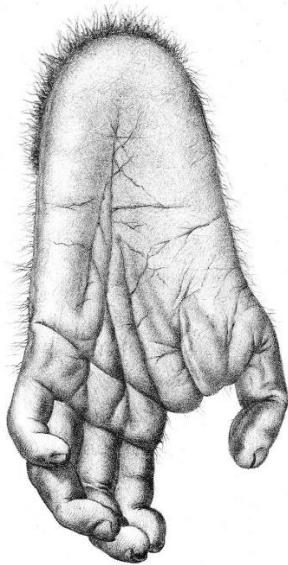
Now, tap on the radish icon, you are now able to spawn a radish model. Please spawn the radish model a considerable distance away from the sparrow model. Now drag the radish towards the sparrow. In this experience, you will see the sparrow's eyes turn into sparkles and play an eating animation.

Game Page

Navigate back to the Scan Page. On the top right, you will see a button with a game icon. Tap on it to view the Game Page. The only button you will see is the "Maze". Tap on it to view the game.
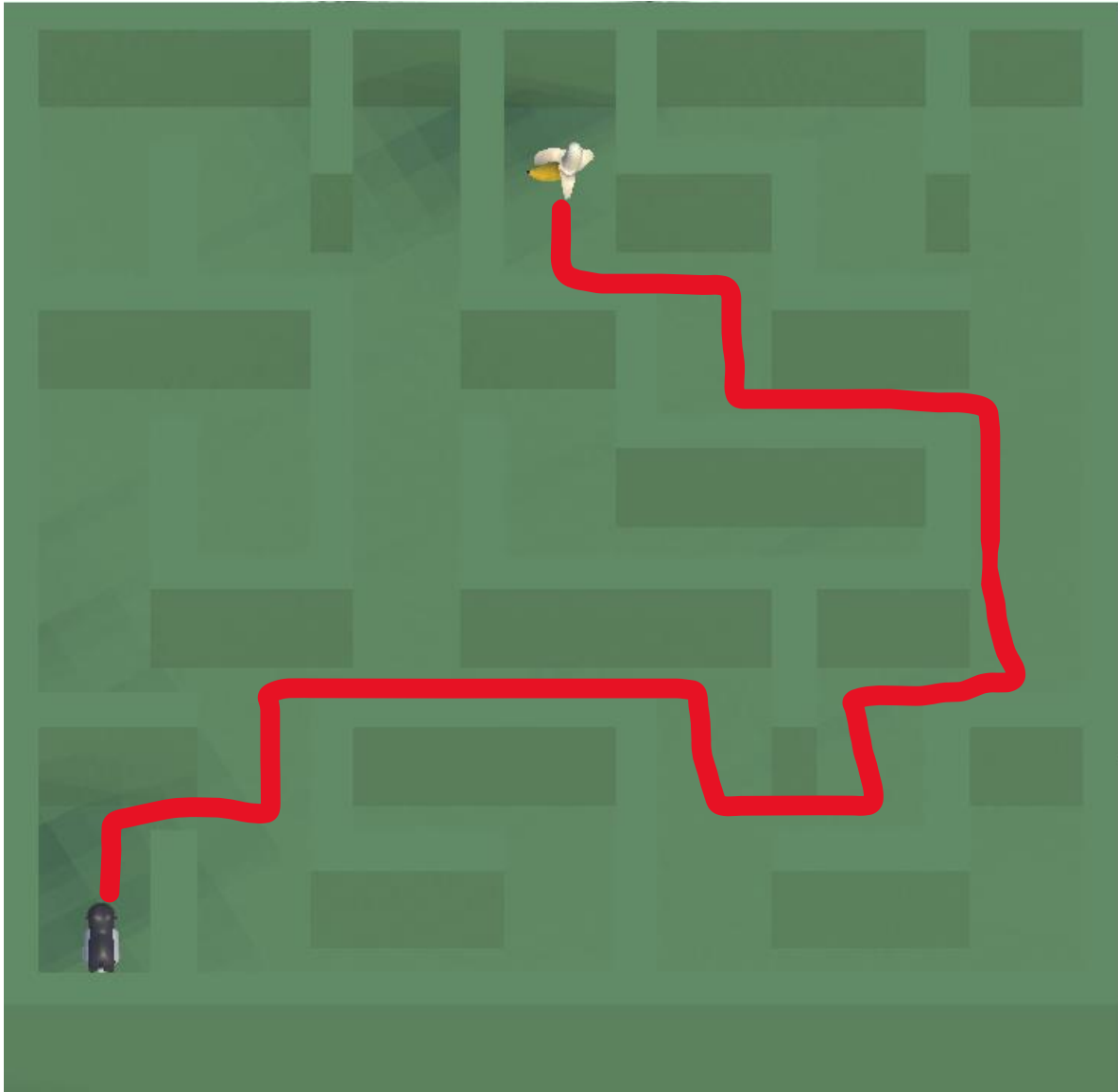
Maze Game

Only one maze is made for demonstration purposes. In the Game Page, you will activate the AR Camera. This feature requires users to scan the pawprints of different animals. Ideally, there should be a photocard of animal paw prints in every animal enclosure for usage. Scan the following picture:

(If possible, show this picture on a smaller device in order to move it with easy)

After scanning this picture, you will spawn a maze, inside you will see a colobus and a banana. The colobus will not move until you press the start button. After pressing start, guide the monkey to the banana to win the game. Guide the monkey by moving the picture around. After winning, a firework animation will be played to indicate that you have won. However, there has not been a reward system implemented yet. The following picture below shows how to get through the maze.

Bugs and Limitations

1. In the Sparrow and Colobus AR Experiences pages, once you spawn the banana or radish and feed it. You are unable to spawn the food again. You are also unable to spawn the colobus or sparrow again.
2. In all Animal AR Experiences, once you spawn the animal, they will not disappear even after you exit the page. For example, in the Tiger AR

Experience, when you spawn the tiger, then exit and return to the page, the tiger will still remain in the same spot as it was spawned previously.
3. If you scan the monkey pawprint in any of the AR Camera enabled pages, the maze will appear.
4. Animations for sparrow and colobus are a bit glitchy

Credits and References

Information on animal references:

Tiger:

1. https://en.wikipedia.org/wiki/Tiger
2. https://www.twinkl.com.sg/teaching-wiki/tiger
3. https://a-z-animals.com/blog/what-do-tigers-eat/
4. https://quicksounds.com/sound/4457/tiger-snarl-aggressive - tiger roar

Penguin:

1. https://mingosounds.com/penguin-sound/ - penguin honk
2. https://en.wikipedia.org/wiki/Emperor_penguin

Colobus
1. https://en.wikipedia.org/wiki/Black-and-white_colobus
2. https://www.sfzoo.org/black-and-white-colobus-monkey/#:~:text=Physical%20Characteristics,leap%20from%20branch%20to%20branch.
3. https://www.voicy.network/sounds/uHjK5GyqB0WAwfkQli1GZw-black-and-white-colobus-monkey
4. https://pngtree.com/freepng/banana-cartoon-clipart-elements_5782904.html - banana
5. https://search.library.wisc.edu/digital/AV7F5Q4TIZTL7Y85 - colobus pawprint

Sparrows
1. https://www.freesoundslibrary.com/sparrow-sound-effect/#google_vignette
2. https://en.wikipedia.org/wiki/House_sparrow
3. https://www.allaboutbirds.org/guide/House_Sparrow/id#:~:text=Male%20House%20Sparrows%20are%20brightly,buff%2C%20black%2C%20and%20brown.
4. https://celebrateurbanbirds.org/learn/birds/focal-species/house-sparrow/#:~:text=House%20Sparrows%20eat%20mostly%20grains,%2C%20milo%2C%20and%20sunflower%20seeds.
5. https://www.vecteezy.com/vector-art/22419748-radish-drawing-isolated - radish

Mazes
• https://stock.adobe.com/search?k=simple+maze

Other Images
• https://thelittletot.com/zoe/trip-to-the-singapore-zoo-once-again/
• https://acres.org.sg/campaigns/past-campaigns/past-campaigns-campaign-to-end-the-use-of-animals-in-animal-shows-at-the-singapore-zoo-and-night-safari/
• https://foursquare.com/v/singapore-zoo-gift-shop/4d5ac2c2f8ff236ac5a1d94a
• https://stock.adobe.com/images/aerial-view-of-maze-made-of-trees-and-bush/170641824