



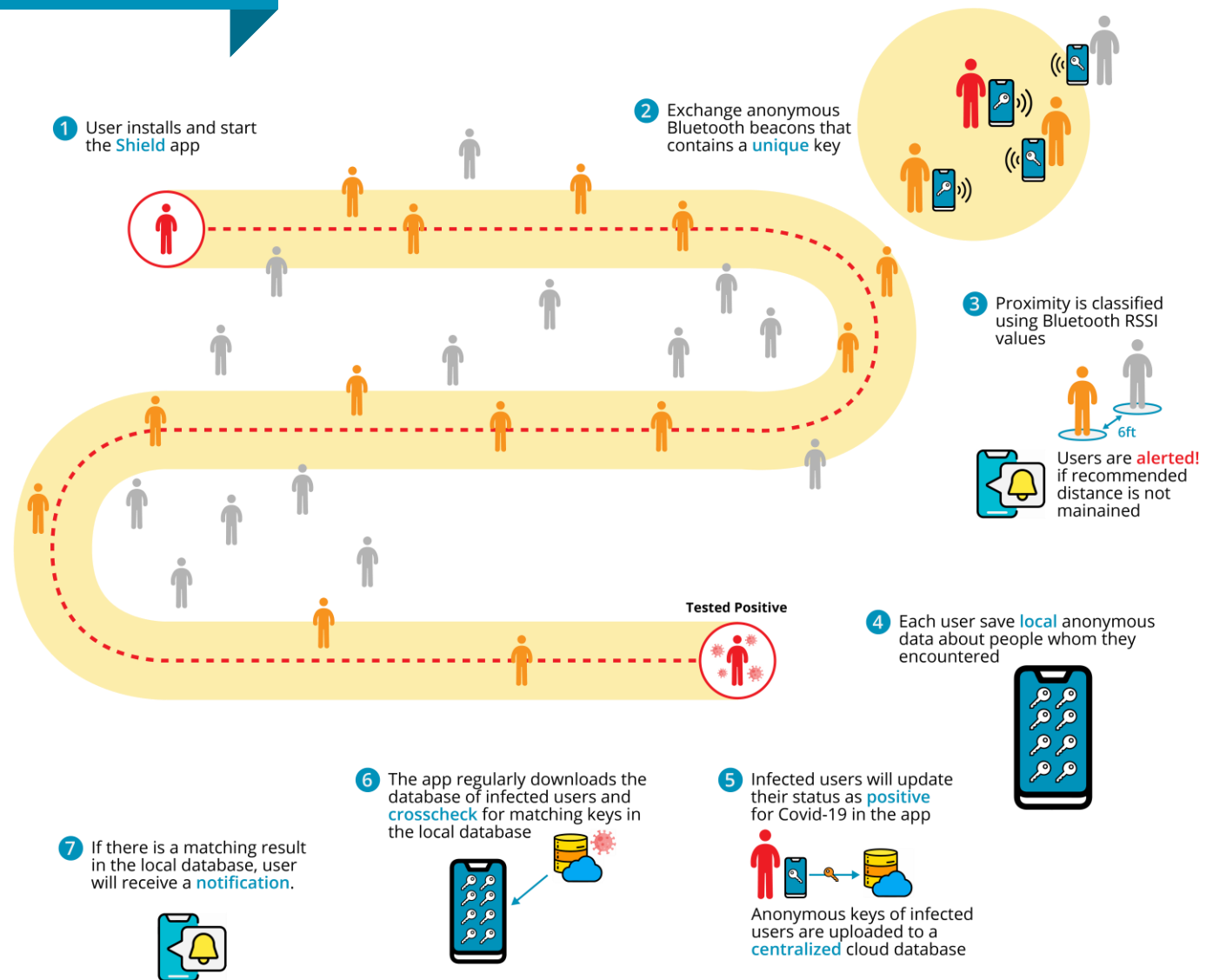
Shield

Social Distancing Reminder

PROJECT PRESENTATION
GROUP NOVA

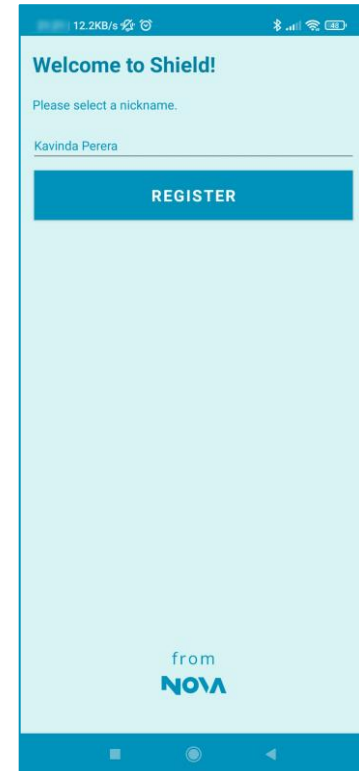
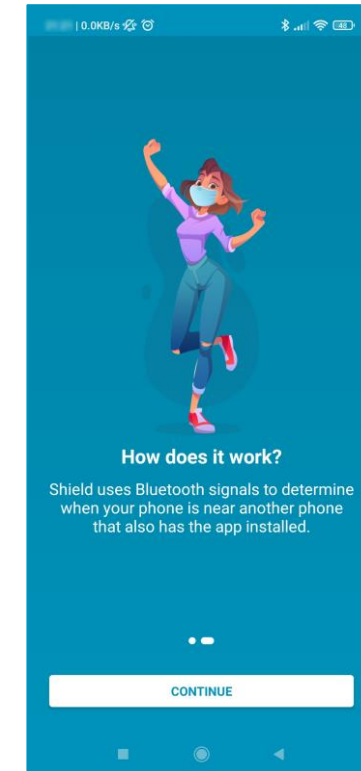
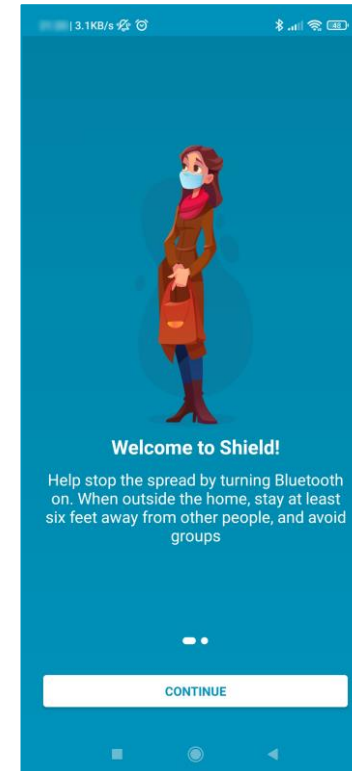
170446L – T. K. P. Perera
170504N – P. A. J. Ranidu

INTRODUCTION



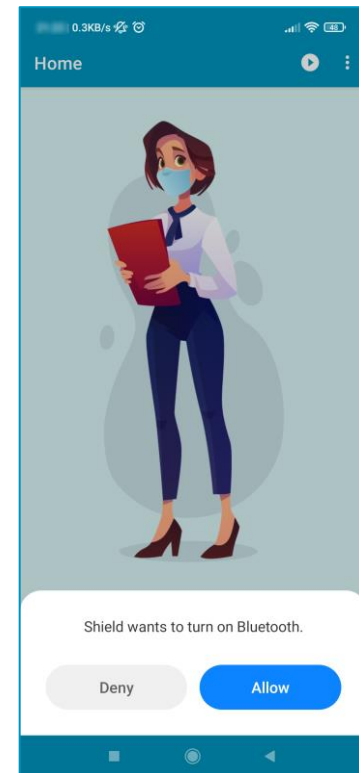
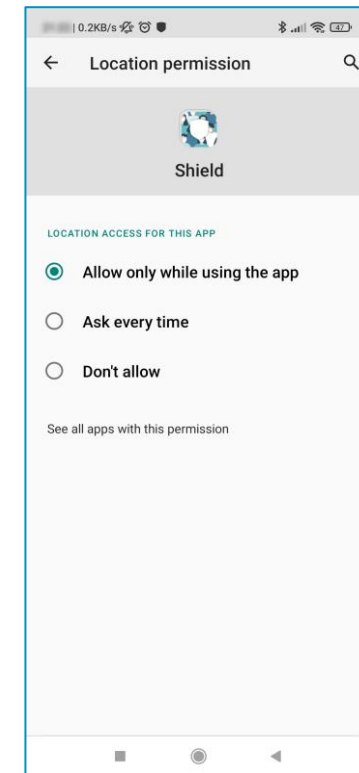
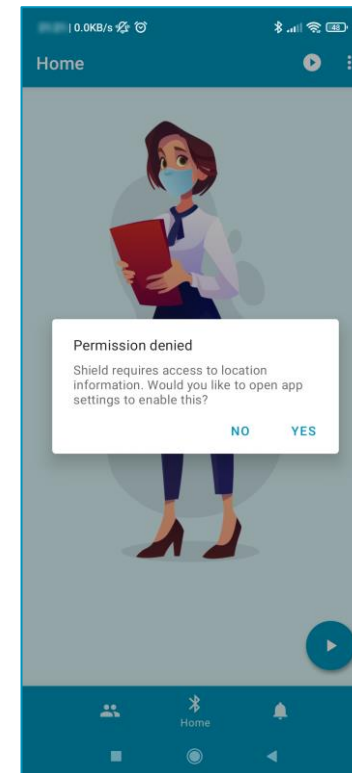
Onboarding.

- When a user first tries to install the Shield app, these 3 screens will appear in the shown order.
- The user can simply press the **CONTINUE** button on the first 2 screens and arrive at the Registration Screen.
- The user can enter a nickname to be used within the app and simply press the **REGISTER** button to complete the registration.





Permissions.

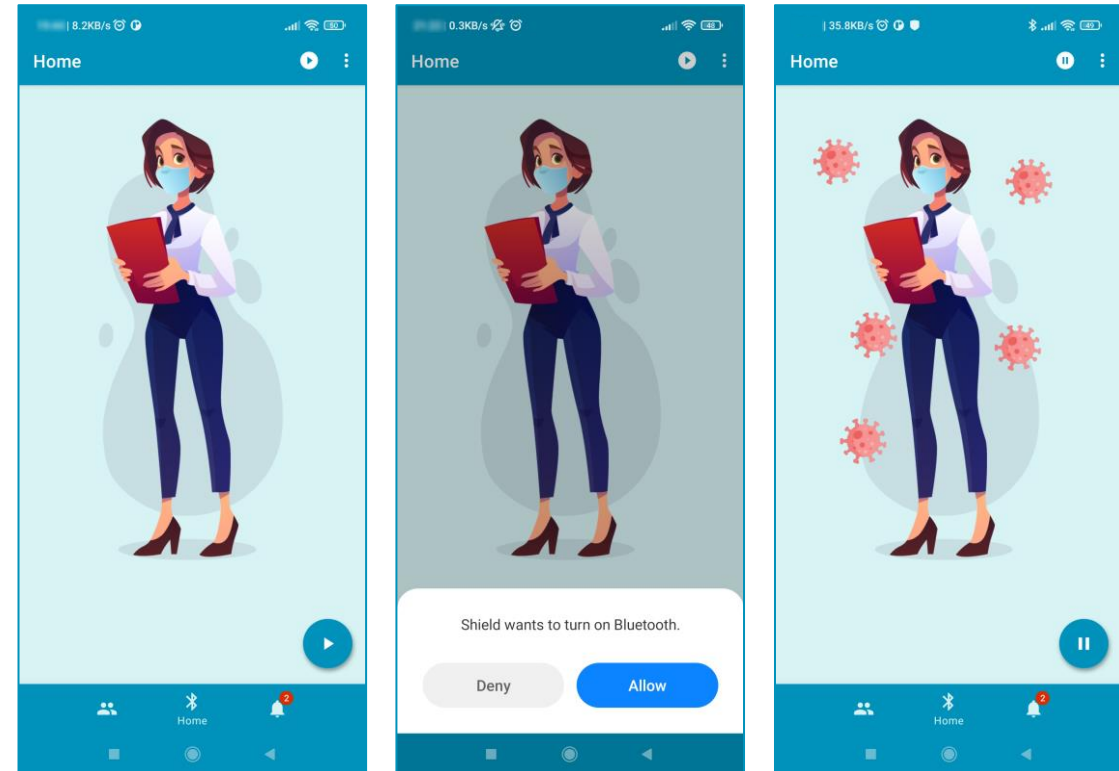
- Shield app requires the users to grant location access permission.
- When the user first launches the app, a pop-up dialog box will appear as shown in the first figure. The user can then select the **Yes** option which will open the phone's settings. Then user can grant the required permission as shown in the second figure.
- In order to run the app, it needs phone's Bluetooth to be turned **on**. If Bluetooth is not on, then a pop-up dialog as shown in the third figure will appear.



USER INTERFACE

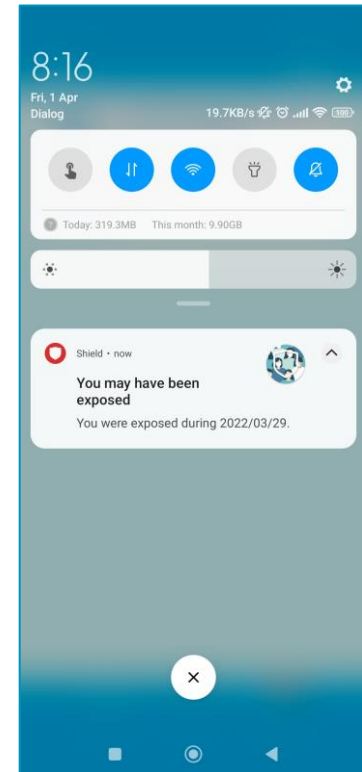
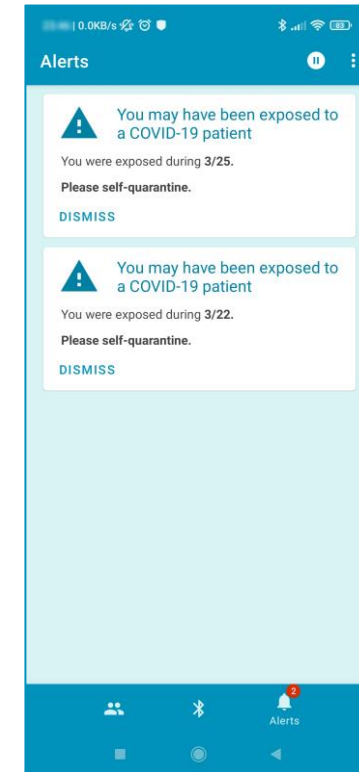
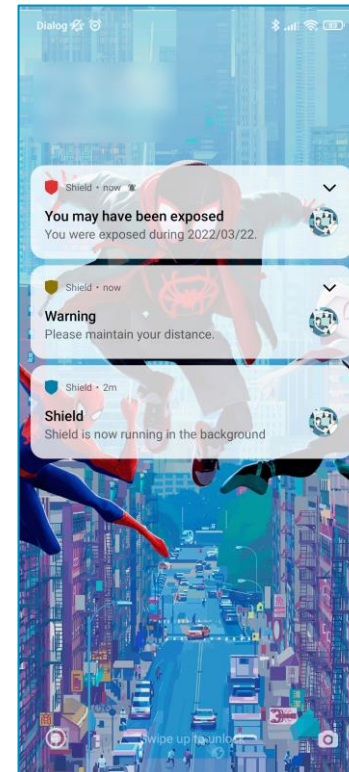
Home Tab.

- A user can start the Shield protection service by pressing the  button on the bottom right corner of the home screen.
- This will start a simple animation on the home screen which indicates that the Shield protection is ON.
- The user can leave the app after this and still the application will be running in the background.
- If the user needs to stop the Shield protection, then he/she needs to press the  button.



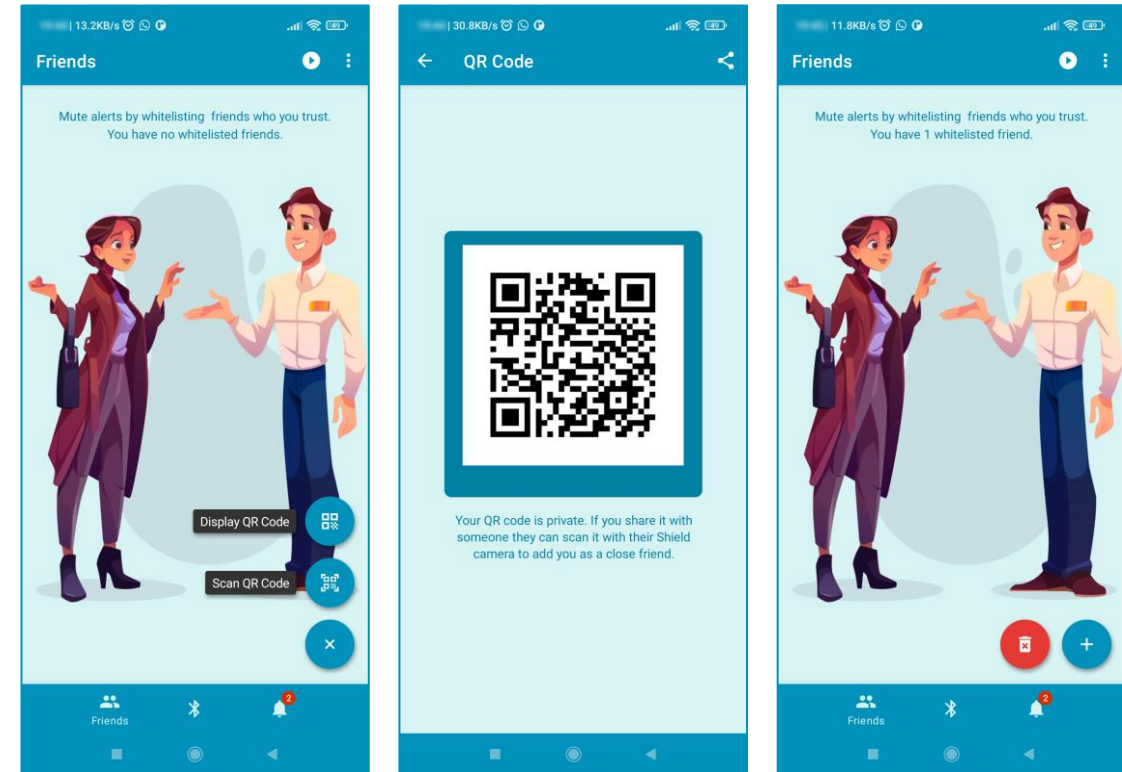
Notifications.

- Shield consists of two main types of notifications:
 - Exposed Notifications
 - Proximity Alerts
- Proximity alerts are received if a user does not maintain the recommended distance (<6 feet) from another Shield user.
- Exposed notifications are received if a user has been exposed to a Covid-19 infected person within the last 7 days.
- These Exposed notifications can be also viewed by accessing the Alerts Screen by pressing the Alerts Tab on the bottom navigation bar.



Friend List.

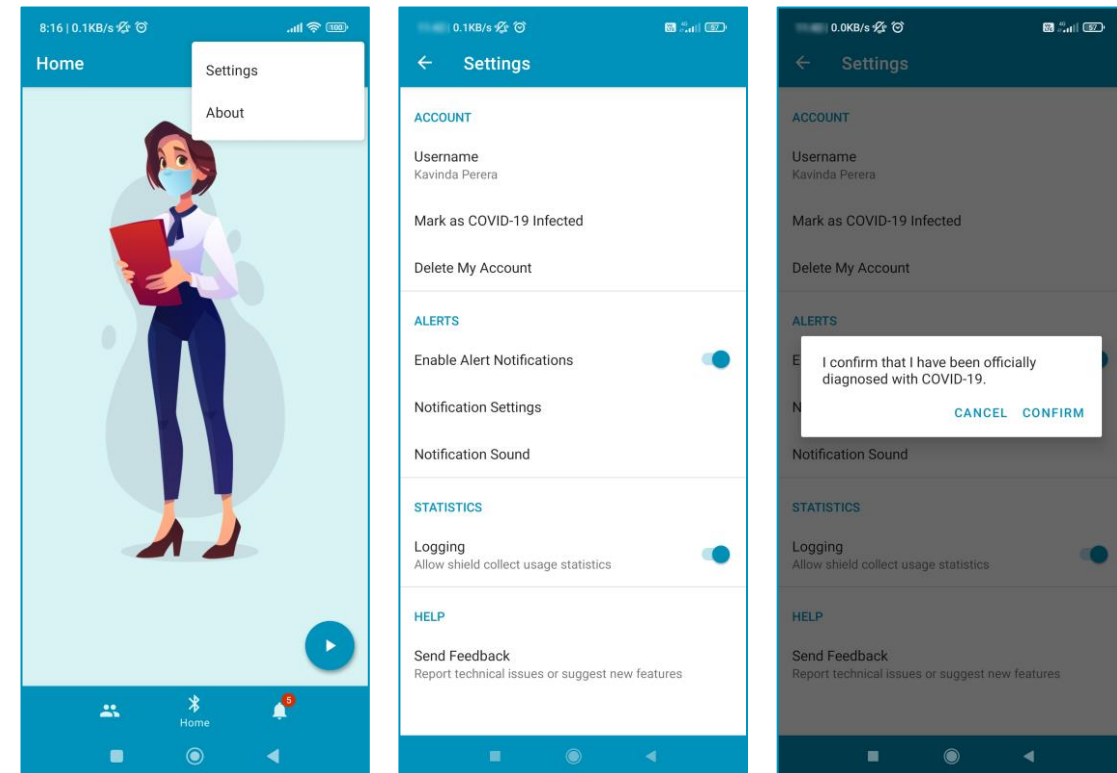
- A user can access the **Friends** Screen by pressing the **Friends** Tab on the bottom navigation bar.
- By pressing the **+** button on the bottom right corner, a user can get the **Scan QR Code** & **Display QR Code** options.
- Using the **Scan QR Code** option, a user can scan the Shield QR Code of a close friend and add him/her to the whitelist.
- Using the **Display QR Code** option, a user can show his/her Shield QR Code to another person to scan.



USER INTERFACE

Settings.

- A user can access the menu which on the top right corner of home screen and go to the **Settings** Tab on that menu.
- It shows few options as shown in the figure here.
- By pressing the **Mark as COVID-19 Infected** option, a user can update the Firebase database so that other Shield users will get **Exposed Notifications** if they have been in contact with you within the last 7 days.

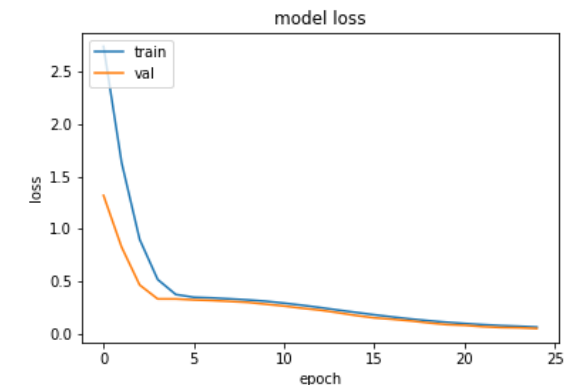
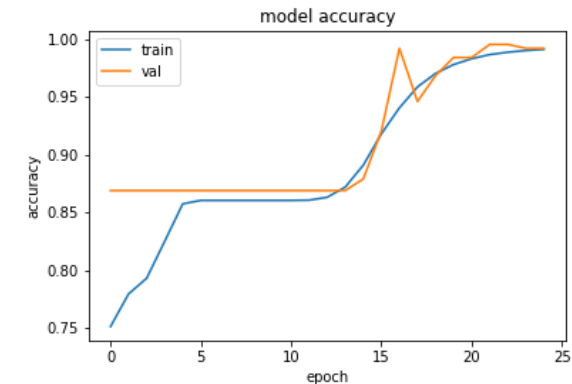


PROXIMITY CLASSIFICATION

- RSSI Data in 4 different scenarios were collected
 1. 3 feet apart in an indoor open space
 2. 9 feet apart in an indoor open space
 3. 3 feet apart with an interior wall in between
 4. 9 feet apart with an interior wall in between
- A feed forward sequential deep neural network was developed.
- Model was developed using Keras, and TensorFlow.
- The optimal model was found to use one dense layer (64-layer size), 0.25 dropout, and Adam optimizer.
- The final test accuracy of the model was above 76.6%

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 64)	128
dropout (Dropout)	(None, 64)	0
dense_1 (Dense)	(None, 2)	130
Total params: 258		
Trainable params: 258		
Non-trainable params: 0		



A blurred background image showing four people walking outdoors. From left to right: a man in a blue jacket and grey shirt, a woman in a blue and white patterned shirt, a woman in an orange shirt, and a man in a grey shirt and plaid jacket. All four are wearing light blue face masks. The text "Thank you." is overlaid in white on the left side of the image.

|| Thank you.