IMAGE CLASSIFICATION ANDROID APP

ABSTRACT

- Image classification is a classical problem of image processing, computer vision, and machine learning fields. In this project, I've used MobileNet architecture with convolutional neural networks for this purpose. This trained model is being converted into Tflite format and deployed in the android application. This project predicts the image captured by the device camera and gives it a suitable label. Apart from that user feedback is also taken for further improvement.

PROBLEM STATEMENT

- To develop a system for users, which can automatically generate the label of an image with the use of CNN along with LSTM.

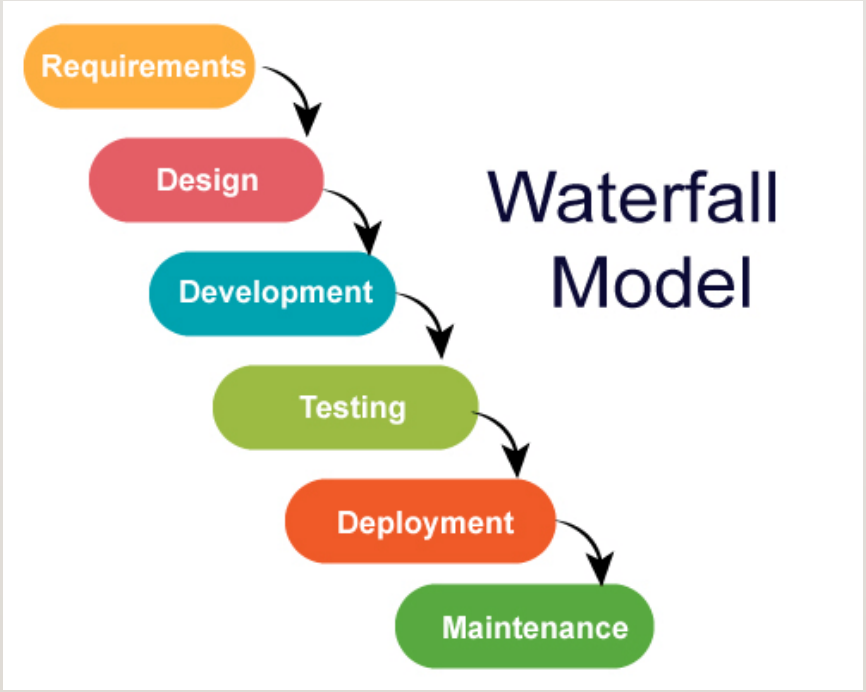
FUNCTIONAL REQUIREMENTS:

- user should be asked for image source
- user can input an image using a camera or storage gallery
- the output should be displayed after inputting the image
- user should be asked that output is correct or wrong
- feedback system if the output is wrong
- history data should be displayed

NON-FUNCTIONAL REQUIREMENTS:

- The processing of each request should be done within 10 seconds
- The app should load in 3 seconds when the number of simultaneous users is> 10000
- System shutdown in case of a cyber attack.
- history data should not take more than 5 seconds to load

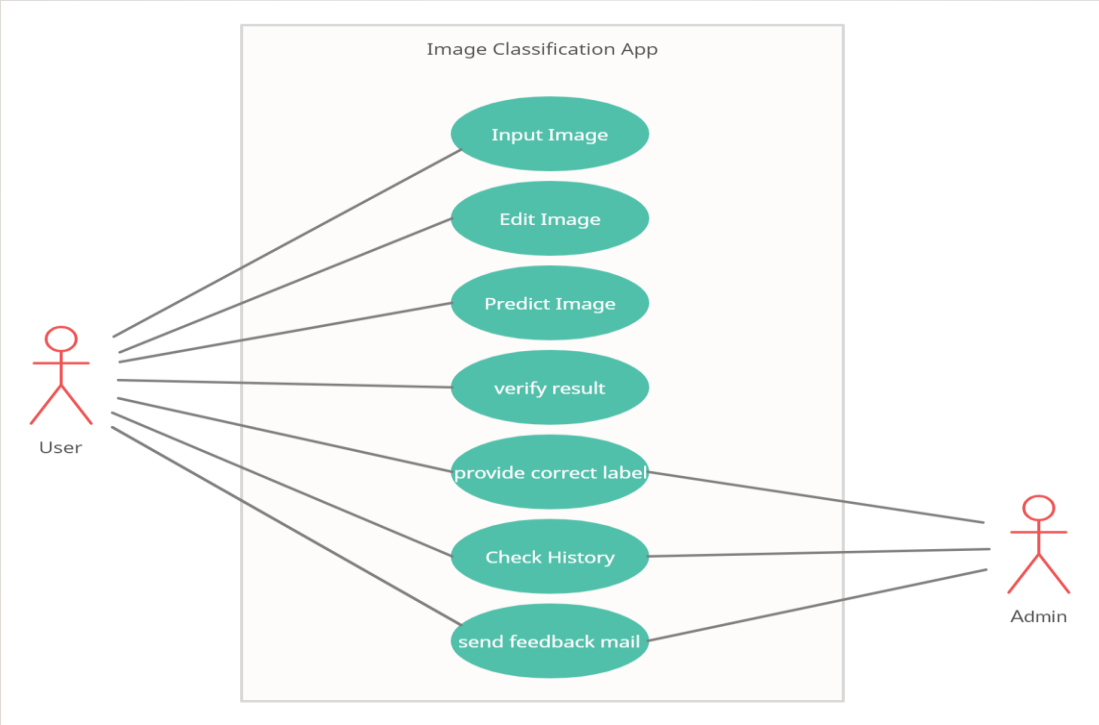
SOFTWARE MODEL



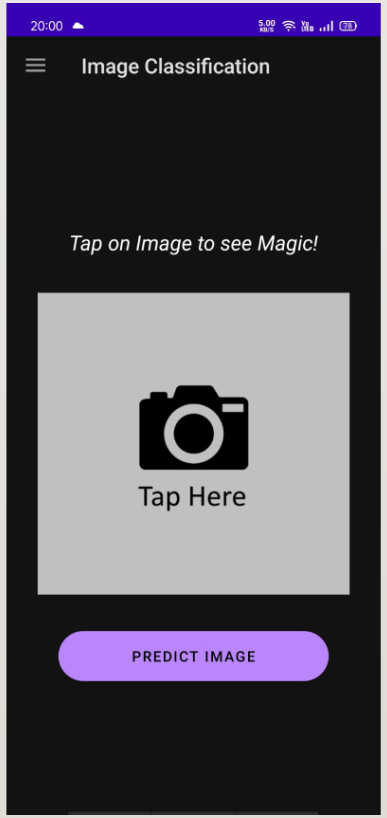
THE WATERFALL MODEL WAS SELECTED AS THE SDLC MODEL DUE TO THE FOLLOWING REASONS :

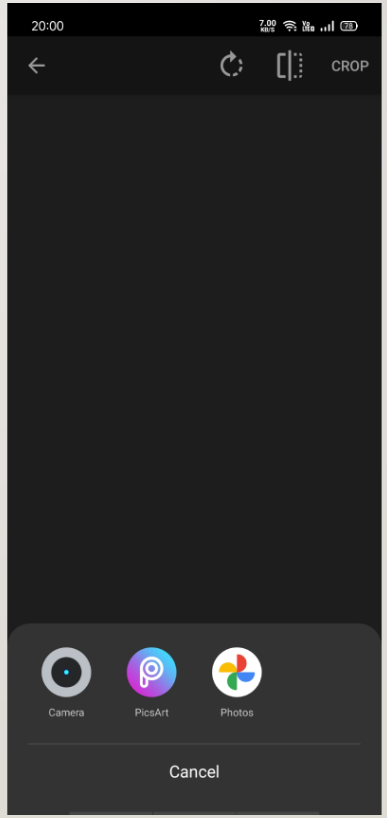
- Requirements were very well documented, clear, and fixed.
- Technology was adequately understood.
- Simple and easy to understand and use.
- There were no ambiguous requirements.
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.
- Clearly defined stages.
- Well understood milestones.
- Easy to arrange tasks.

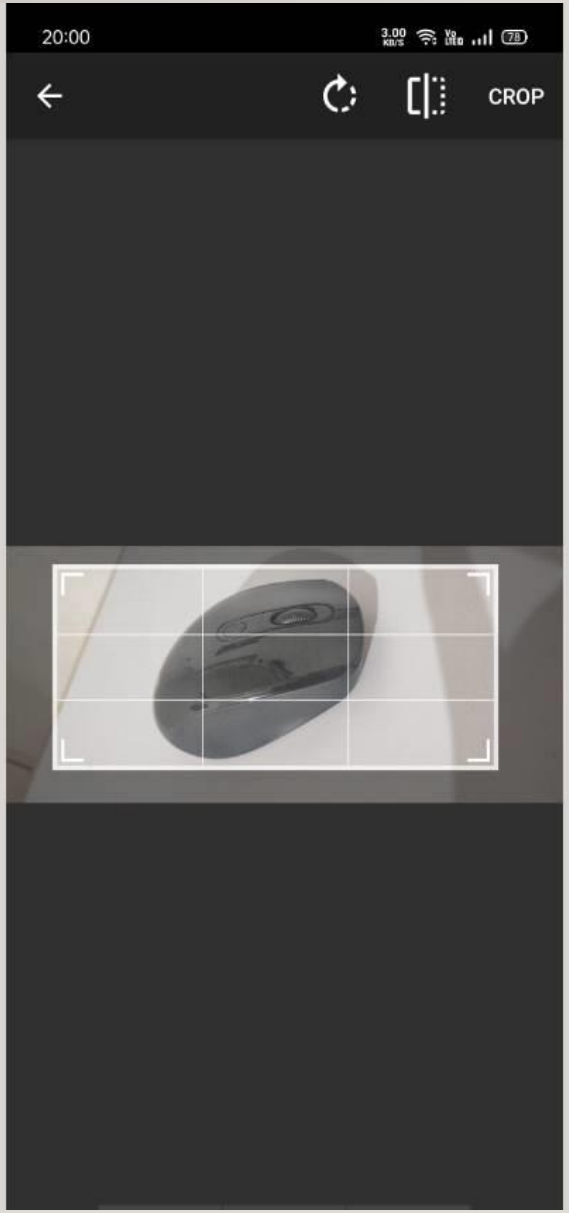
USE CASE DIAGRAM

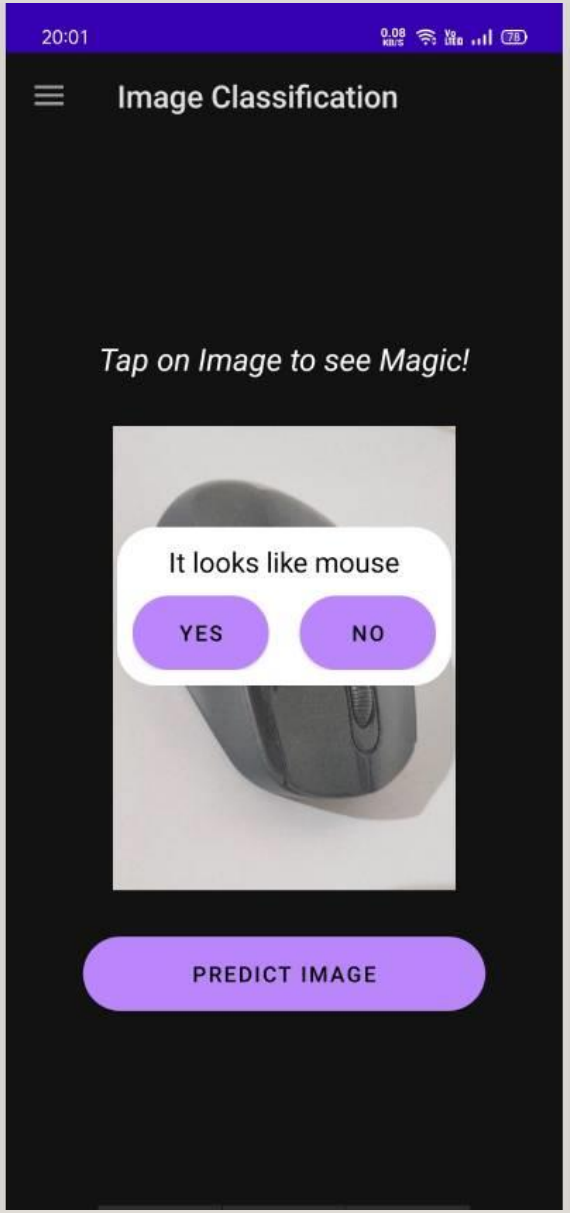


GUI SCREENSHOTS

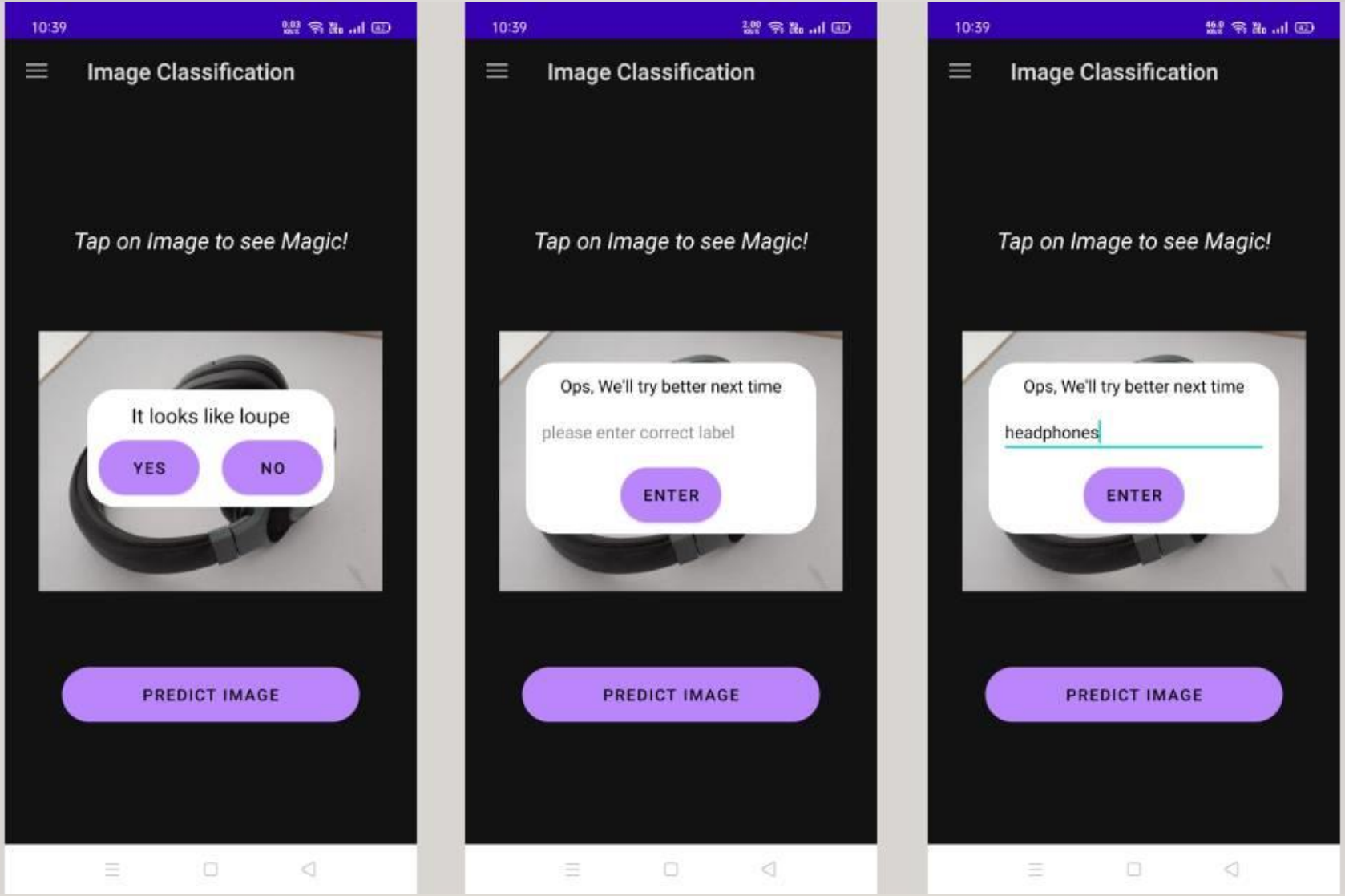




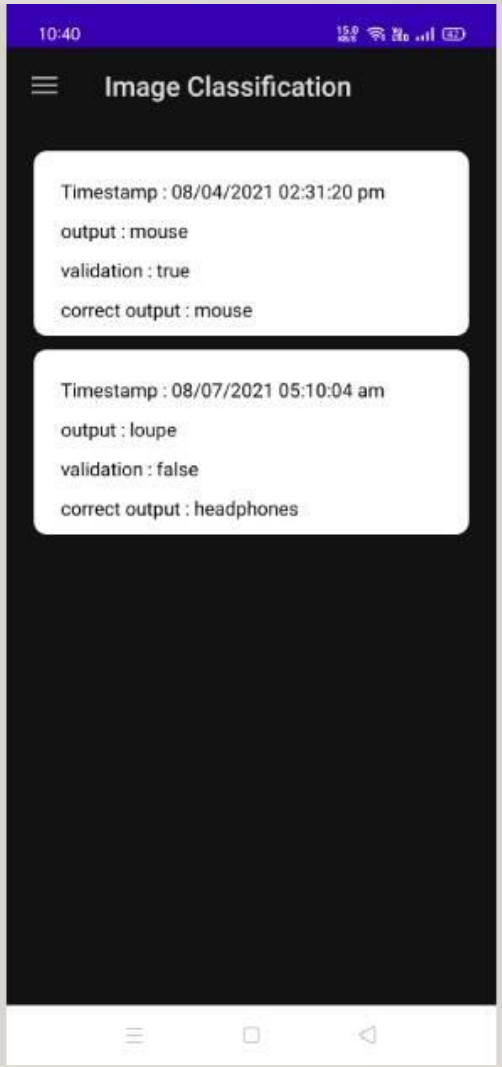

20:00
CROP


20:01
Image Classification
Tap on Image to see Magic!
It looks like mouse
YES
NO
PREDICT IMAGE


10:39
Image Classification
Tap on Image to see Magic!
PREDICT IMAGE


10:39
Image Classification
Tap on Image to see Magic!
It looks like loupe
YES
NO
PREDICT IMAGE
10:39
Image Classification
Tap on Image to see Magic!
Ops, We'll try better next time
please enter correct label
ENTER
PREDICT IMAGE
10:39
Image Classification
Tap on Image to see Magic!
Ops, We'll try better next time
headphones
ENTER
PREDICT IMAGE


20:01
Image Classification
Home
History
Mail Me
data added successfully!!


10:40
Image Classification
Timestamp : 08/04/2021 02:31:20 pm
output : mouse
validation : true
correct output : mouse
Timestamp : 08/07/2021 05:10:04 am
output : loupe
validation : false
correct output : headphones

CONCLUSION

- Finally, in the Image Classification Android system, I have developed a user-friendly Image Predicting System. This System will help to give labels according to the theme of an image. A trained machine learning model helps this task to achieve success. Every user can also cross verify the result and give feedback according to it. This feedback will help the developer to tweak the model and getting more accuracy. Users can also check the history data of past predictions.

FUTURE ENHANCEMENT

- automatic train the model after getting user's feedback
- user authentication system
- more reliable database connections
- make the system more secure against harmful attacks
- improve GUI of the app
- develop a similar system for ios users

REFERENCE

- https://www.tensorflow.org
- https://www.tensorflow.org/lite
- https://developer.android.com/docs
- https://stackoverflow.com/
- https://github.community/