

# Nigerian Textile Identification and Styles Recommendation using Computer Vision

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## ABSTRACT



- This project solves the problem faced with identifying Nigerian traditional textiles and the kind of styles that can be worn with them
- I built a machine learning model and deployed in a mobile application that I developed
- I manually downloaded about 200 images of the different textiles from google images to train my model
- I carried out transfer learning on MobileNetV2 and I obtained an accuracy of 85%

## INTRODUCTION

- **Aim:** Classify traditional attire and recommend styles
- **Prior work:** None
- **Challenges:**
  - Lack of available dataset
  - Different patterns on textiles

## METHOD

### Dataset:

- Downloaded images of traditional attires from google images
- 200 medium resolution images were collected
- I collected 50 images each for the four(4) categories

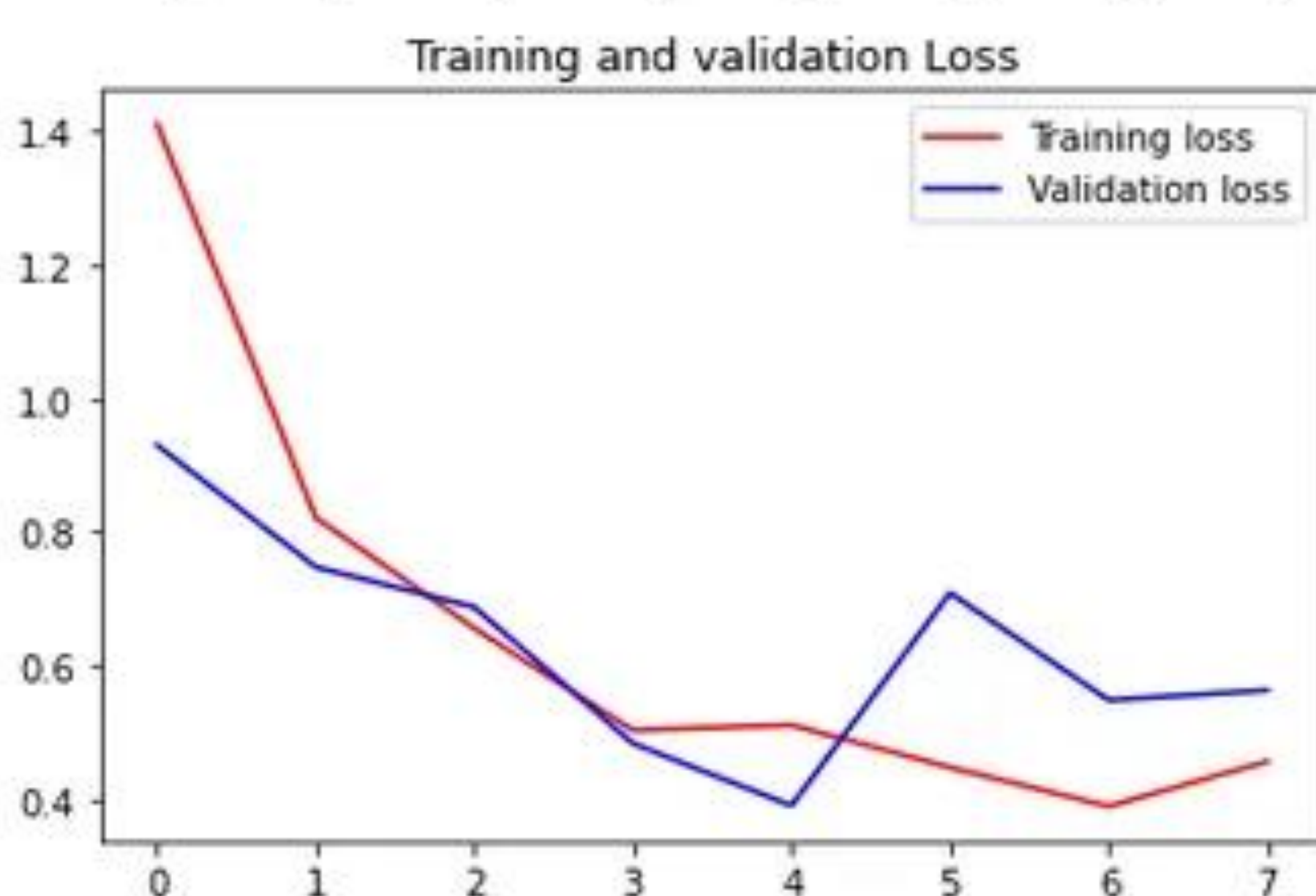
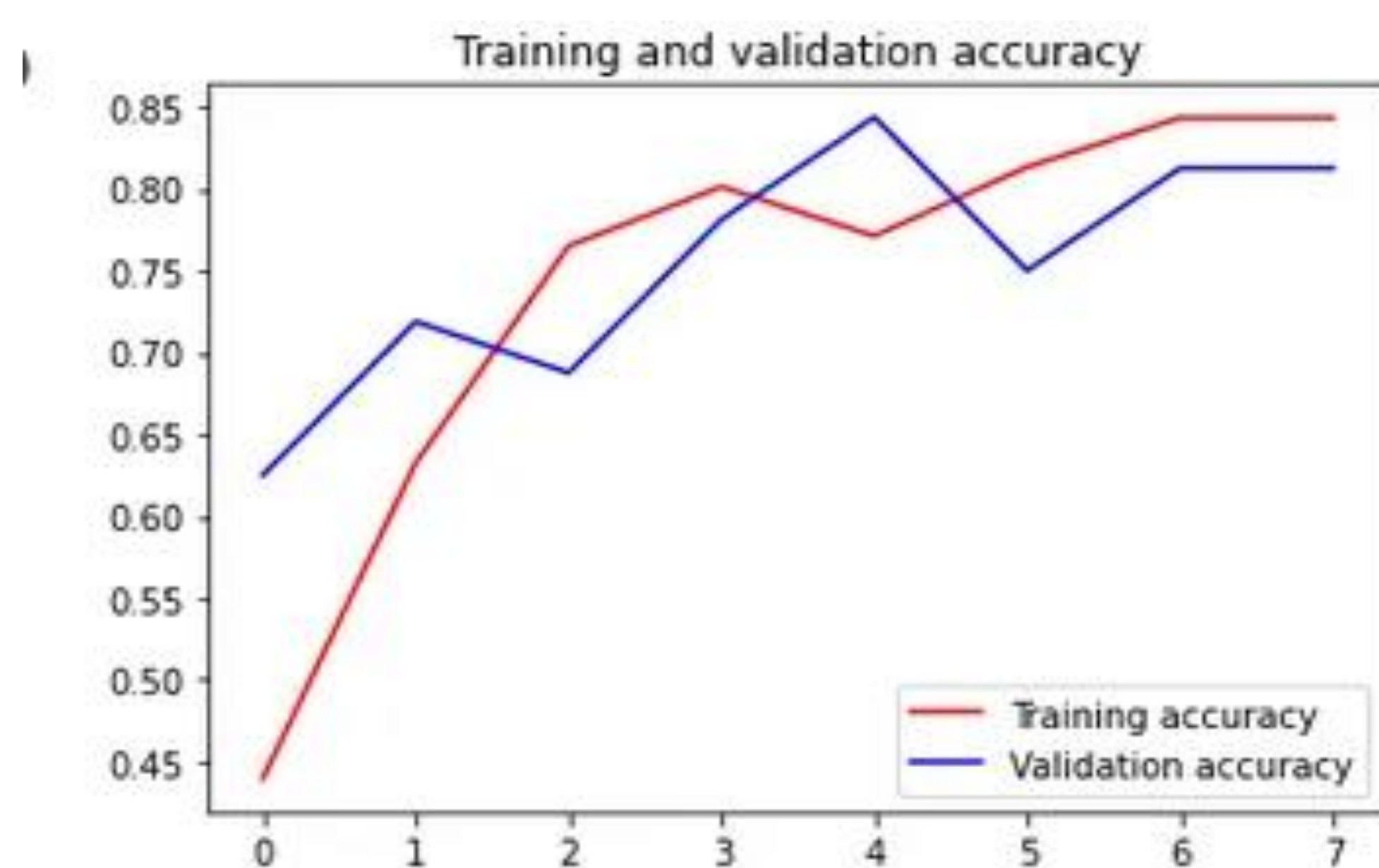
### Proposed Approach:

- I loaded my data into my notebook from my local directory using the Tensorflow data loader function
- I made sure to scale the image data
- I reshaped the data to the input shape of the mobilenetv2
- I removed a few layers from the mobilenetv2 and trained the model
- After getting the models pickle file, I deployed it in tflite format to the mobile application I built for it
- Made styles recommendation using the image label identified by the model

## EXPERIMENT

- **Evaluation and metrics:** Accuracy, F1 score
- **Findings:**
  - The performance of the model was about 67% without transfer learning
  - Model was deployed on an android device

## REPORT



<Figure size 432x288 with 0 Axes>

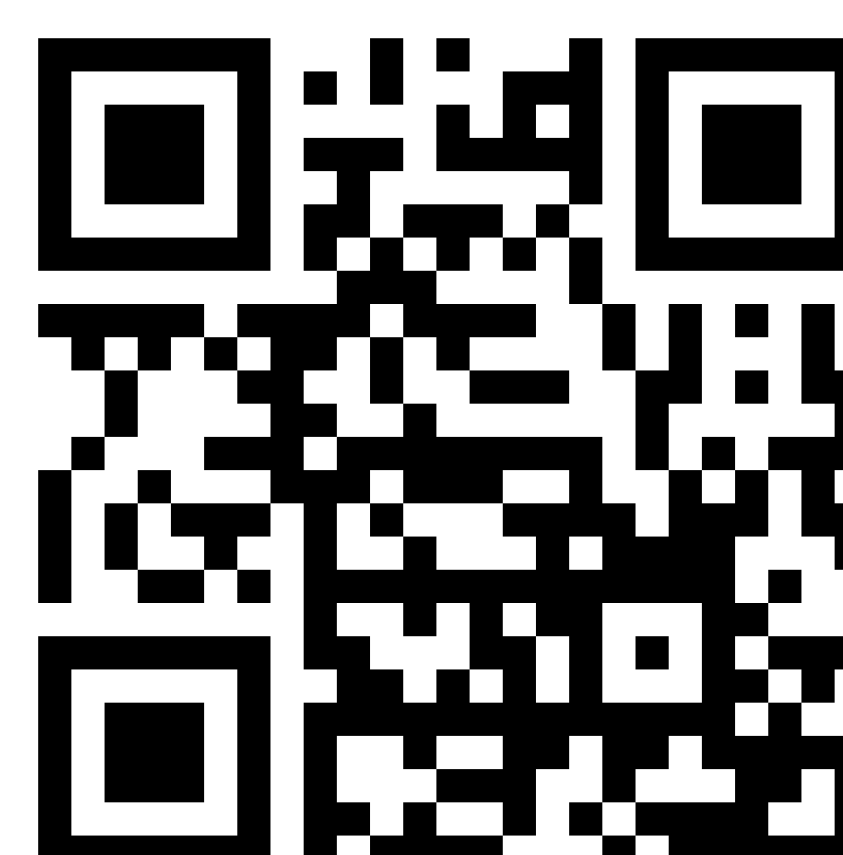
Graphs showing training and validation loss and accuracy

- A final training accuracy of 85% and validation accuracy of 80% was realized at the end of the training



This model predicted Aso oke fabric  
Classification accuracy is 0.94

Interface of mobile application that I developed



## CONCLUSIONS

The developed model is capable recognizing the four Nigerian textile it was trained on with good accuracy

### Limitation:

- The solution was only limited to four traditional textiles. It cannot recognize varieties of African textiles for now
- The model runs on device instead of a cloud platform

### Future Work:

- Gather more data to build a better model that could identify more African traditional textiles
- Move the model to a cloud platform so that it can be easily managed and updated.

## REFERENCE