

Handwritten Arabic Letter Recognition

Alanoud Alqubaysi
Asma Alsubaie
Fatimah Alghamdi

Outline

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- CNN Model
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Introduction

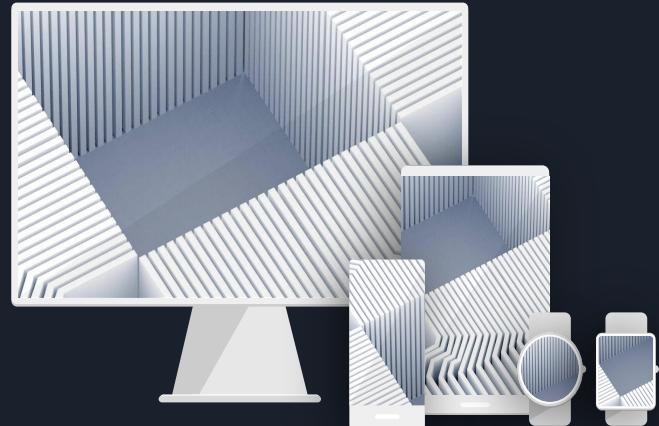
Automatic handwriting recognition is an important component for many applications in several fields. It can be defined as the ability of a system to identify human handwritten input. Handwriting can be from many sources such as touch-screens, paper or images. It is considered a challenging problem in computer vision.



Problem Statement

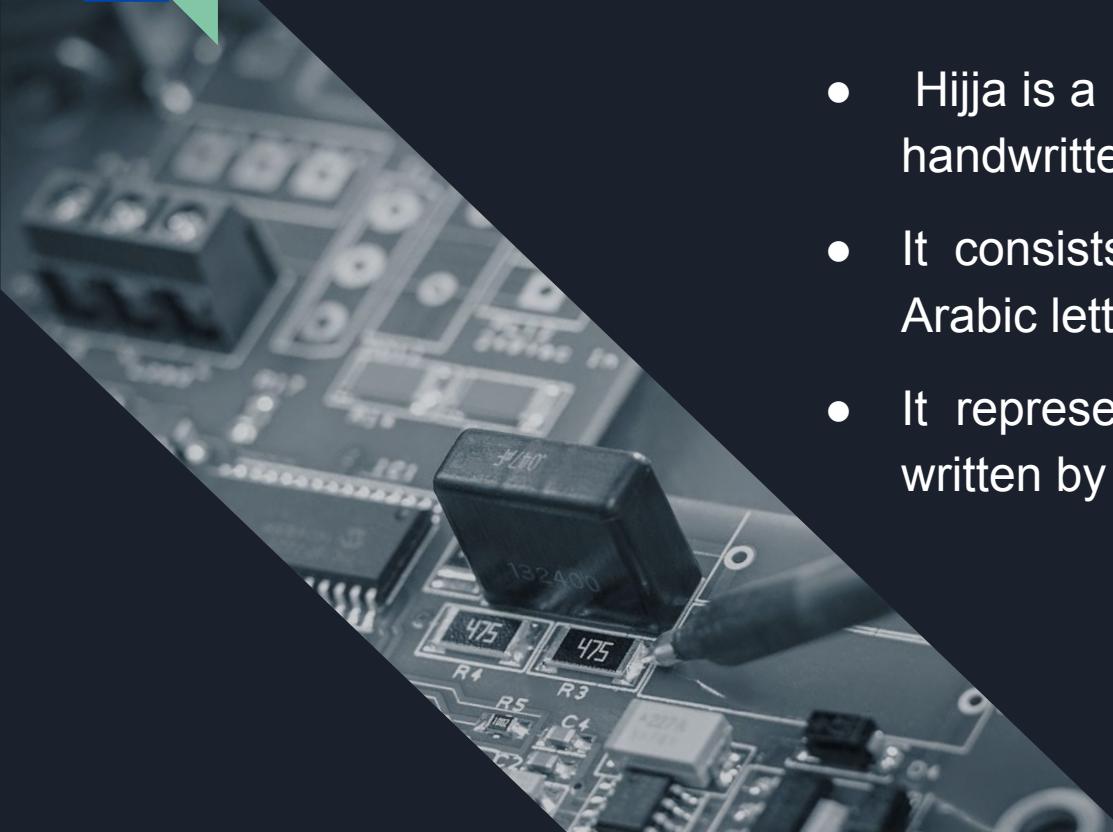
Recognizing individuals handwriting is becoming an important part of many applications. The handwriting using a finger or stylus is becoming one of the preferred user input options.

Nowadays, the main difficulties in handwriting recognition revolve around distortions and pattern variability.





Dataset

- Hijja is a publicly available dataset of Arabic handwritten alphabets.
 - It consists of 29 characters which are 28 Arabic letters in addition to “Hamza”.
 - It represents a total of 47,434 characters written by 591.
- 



Dataset Used

Training Set
30346
images

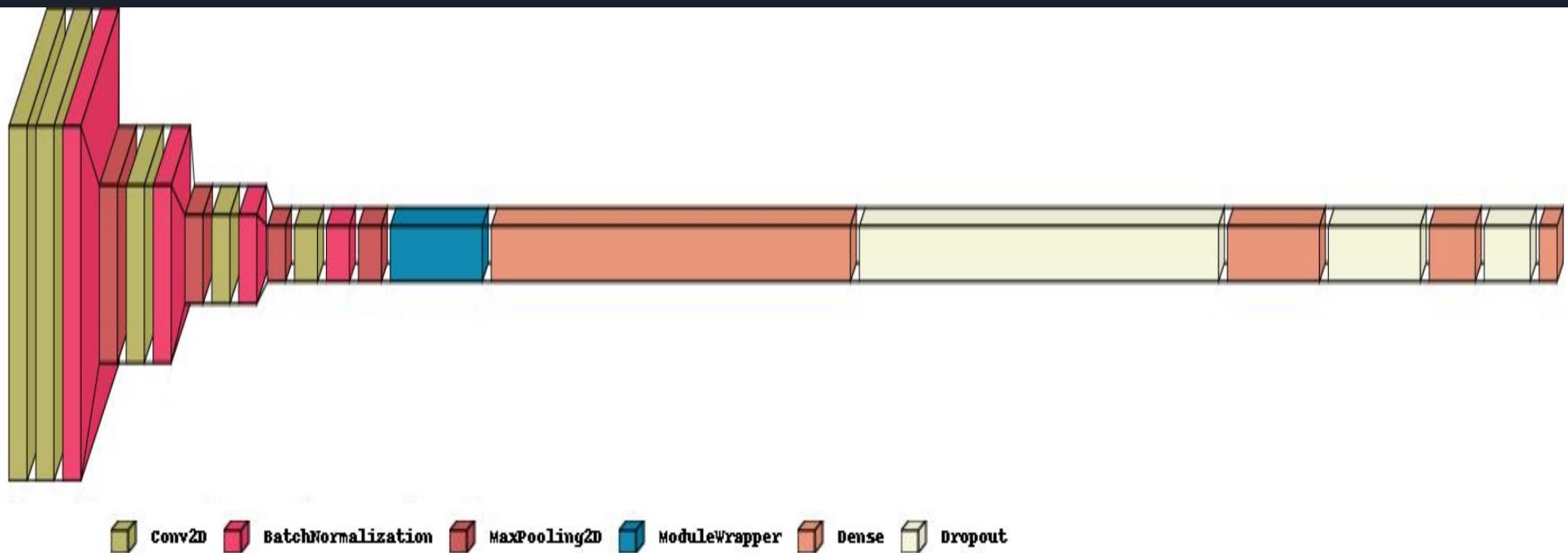
Validation Set
7587
images

Test Set
9501
images

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CNN Model

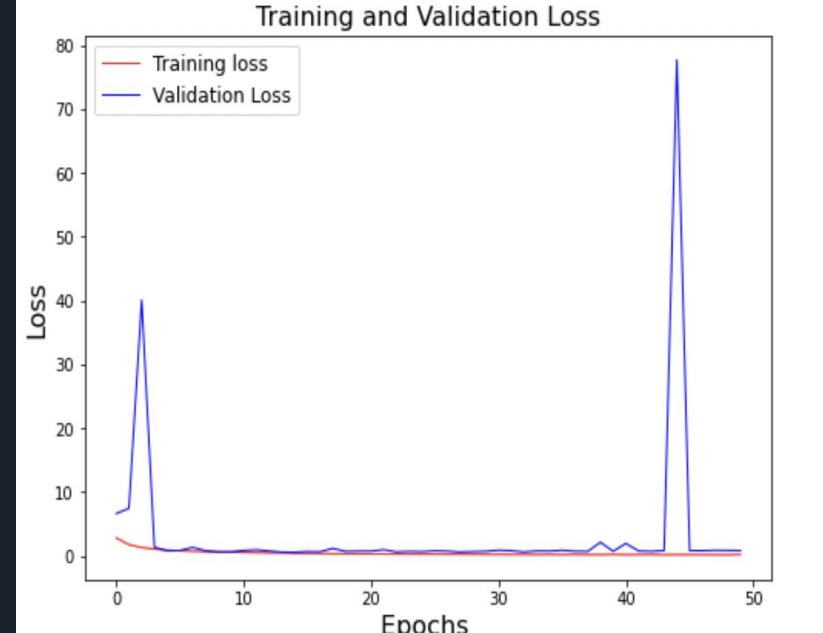
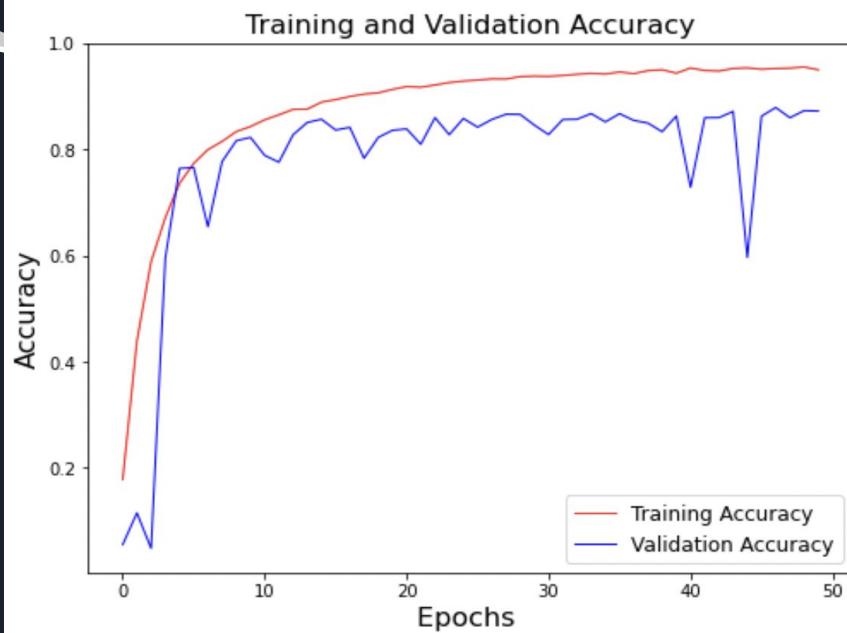


Experiment

- The model was trained for 50 epochs.
- Adam optimizer.
- The performance of the model was evaluated based on the accuracy and loss rate of test set.



Results / Train and Validation Sets





Results / Test Set

```
297/297 [=====] - 2s 8ms/step - loss: 0.7523 - accuracy: 0.8796
```

Test Accuracy: 87.95916438102722 %

Test Loss: 0.7522985339164734

Future Work

- It is advised to use other input shapes, such as lines or paragraphs.
- The proposed model can be conducted on other datasets.





THANK YOU

