CSE-4212 : Machine Learning and Data Mining Lab

Handwritten Character Recognition with CNN

Md. Mezbah Uddin | Atiquzzaman Rana | Rahat Akhand

Instructor : Md. Mynoddin

Motivation

- Prove that machine learning can accurately recognize the handwriting of a historical figure
- Verify the authorship of historical documents whose author is unknown or uncertain

Dataset Description

- We have collected our dataset from Kaggle that contains 785 Columns and 5 Rows that contain approx. 370000+ English alphabets written on hand
- All of these are manually handwritten sample in any possible way that can be happened for a character
- All of these are already normalized and adjusted with binary black and white

Significance of the study

- It would help as a decision support system for the handwritten character to recognize
- It saves the time of a human to recognize of an unlebeled handwritten scripture
- So, a human should not spend much time to recognize a handwritten character

Model

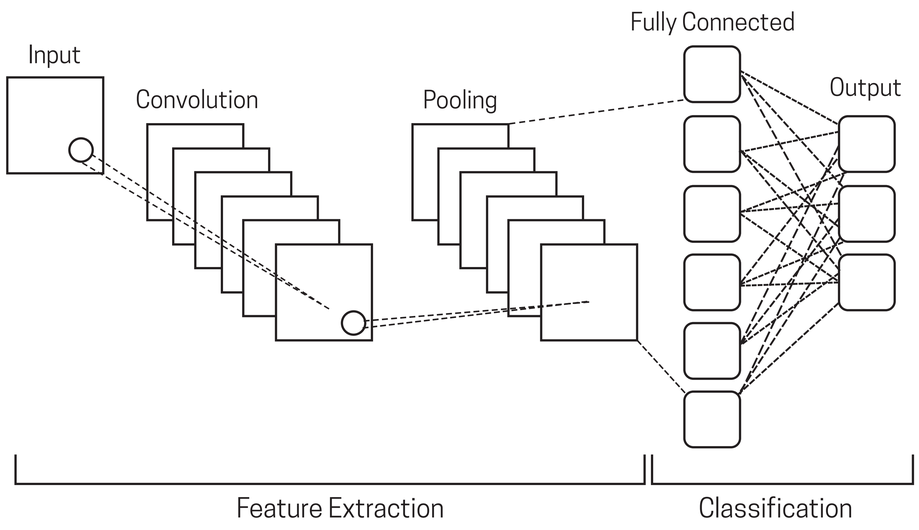
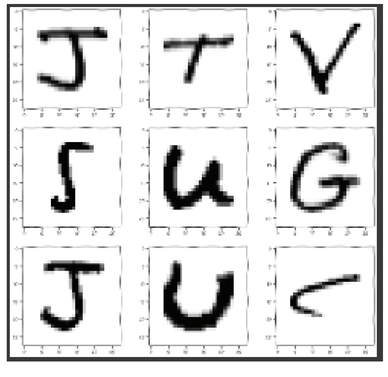


Figure : Logical Diagram Convolutional Neural Network

Testing the Model

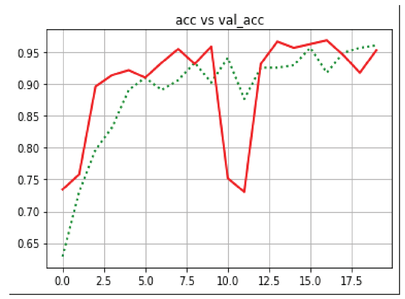
Correct Classification made by the model:



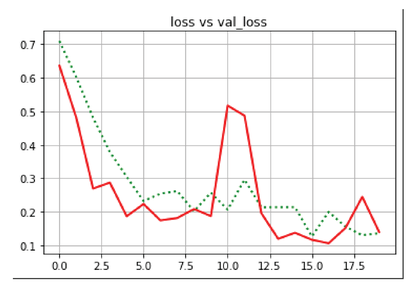
Experiment and Result

98% Testing Accuracy

Here the model accuracy is 98% and rest is the loss.



Model Accuracy graphed against Epoch



Model Loss Graphed against Epoch

Conclusion

We proved that machine learning is able to very accurately classify handwriting samples based on whether or not they were written by a historical figure. In the future and with access to more data, we would expand the model's capabilities to identify more historical figures.

References

1. Handwritten character recognition using convolutional neural network I Khandokar et al 2021 J. Phys.: Conf. Ser. 1918 042152
2. DIAGONAL BASED FEATURE EXTRACTION FOR HANDWRITTEN ALPHABETS RECOGNITION SYSTEM USING NEURAL NETWORK J.Pradeep, E.Srinivasan and S.Himavathi