Handwriting Recognition

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Contents

1 Timeline

1.1 May 22, 2016

Grasped theory of Machine Learning and Neural Networks.

1.2 May 24, 2016

Finished installations of Lua, Torch, iTorch and subsequent libraries.

1.3 May 28, 2016

Understood the code to recognize digits.

1.4 June 1, 2016

Applied features from the Image Processing Toolbox on input image.

1.5 June 3, 2016

Made a character database with both capital, small letters and digits.

1.6 June 7, 2016

Added segmentation.

1.7 June 10, 2016

Incorporated the database to the model and completed the prefinal code to recognize handwritten text

1.8 June 12, 2016

Added a spell-corrector and space recognition.

1.9 June 15, 2016

Added multiline recognition and generated various examples.

1.10 June 25, 2016

Fixed bugs for better identification.

2 Spell Corrector

Using a million words from Sir. Arthur Conan Doyle 's novel and words from dictionary, a database was created, through which recognized words were compared by applying methods like Bayes' Theorem the correct word was replaced.

3 Segmentation and Multiline Text Recognition

Comparison of each column's or row's pixel intensity with its previous ones, as soon as a sudden jump in values was figured out, it indicated the start or end of a letter. Paragraph was first segmented into various lines and lines into characters (including spaces), so that directly each individual character can be fed to the model.

4 Works for Alphabets as well as Digits

A database was made as a table in Torch using only images of alphabets and digits. In order to expand the database, letters were also rotated by +10 degrees and -10 degrees and added to the database hence constituting more than 10,000 training images. More than 500 images were also maintained as test images to check accuracy.

5 References

5.1 Spell Correcter Library

Their Github page.

5.2 Neural Network Model

RNDuja Blog on Github.