Hiragana Recognition with CNN

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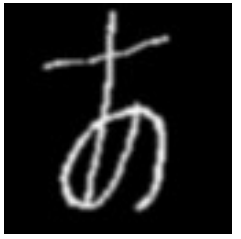
Dataset

- 1000 handwritten Hiragana images
  - 50 Hiragana characters, each character having 20 images.
  - The dataset is produced by Matheus Inoue.
- Extract labels from filenames
  - Each filename contains the romanji corresponding to each Hiragana, e.g. “kanaA0.jpg” indicates “a” (あ).
  - Regex is used to extract the file name.



- Training data and testing data
  - Data is split into 800 training data and 200 testing data.

Augmentation

- Augmentation is used to generate more data.
  - Images are slightly rotated, stretched in height and width to imitate real-life handwriting.
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CNN Model

- A CNN model is constructed with several layers
  - Two convolutional layers to extract the features in the images.
  - A pooling layer (max pooling) to extract the most important features.
  - Two dense layers to categorize each image into each label.
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Training Result

- 200 testing data are kept for validation. They are not included in the training process.
- The accuracy of the trained model is 99.5%, i.e., only one incorrect within 200 samples.
- The wrong result:
  - る (ru)
  - ろ (ro)