Recent Achievements of Deep Learning on Recognition of Modern Japanese Magazines

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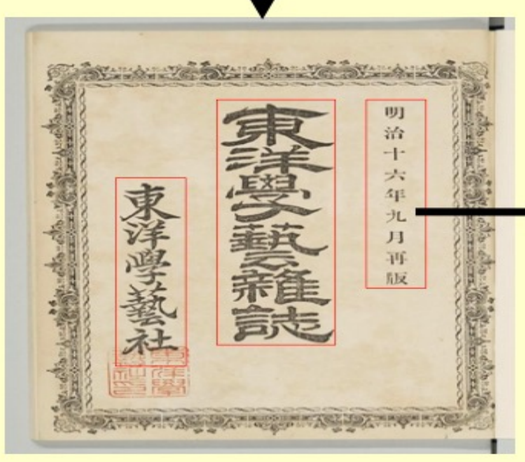
Introduction

- Since historical documents are an invaluable resource for historians in exploring social aspects, lifestyles, even weather in the previous era, many countries have been preserved their historical documents
- Document analysis and recognition can speed up the transcription process.
- We Employ state-of-the-art technologies in Deep Learning to digitize modern Japanese document
- We aim to build an OCR system for modern Japanese historical documents. The recognition system should be easy to train and reuse by other researchers from document analysis and digital humanities fields

System Overview

Input image

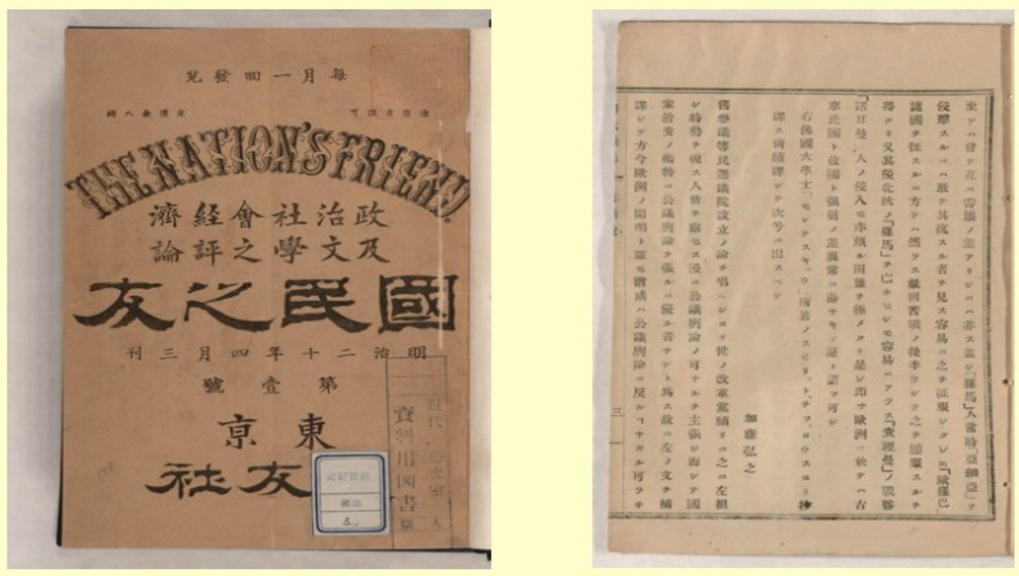
Layout analysis
paragraph, line, word



明治十六年九月再版

Text Recognition

Dataset & results



Japanese Modern Magazines (~1900)

- Collected dataset: The dataset contains 922 pages from historical magazines in Japan from 1870 to 1945.
- The number of categories is 5,398 which contains many character categories that do not use in current Japanese character system.

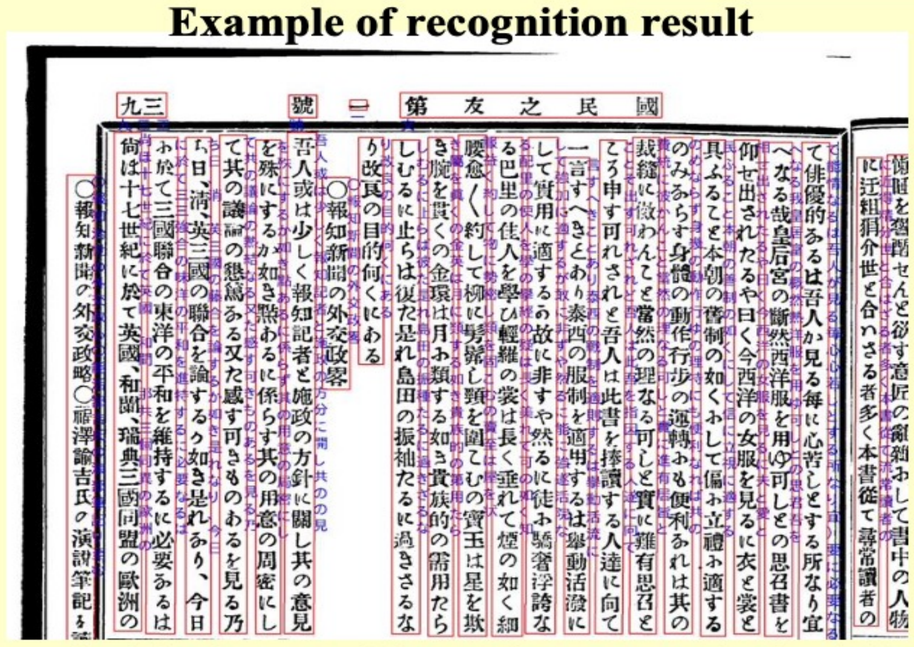
Text Detection

Precision	Recall	F1
89.6	92.0	90.8

Text Recognition

Method	Character Error Rate
Attention model	22.52
Transformer	20.85

Example of recognition result

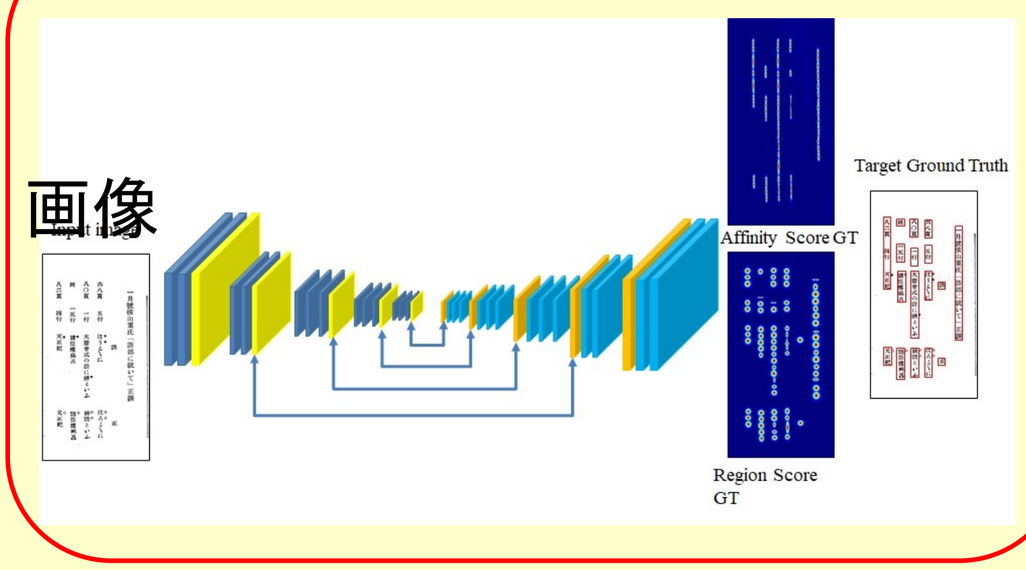


https://github.com/ducanh841988/Kindai-OCR

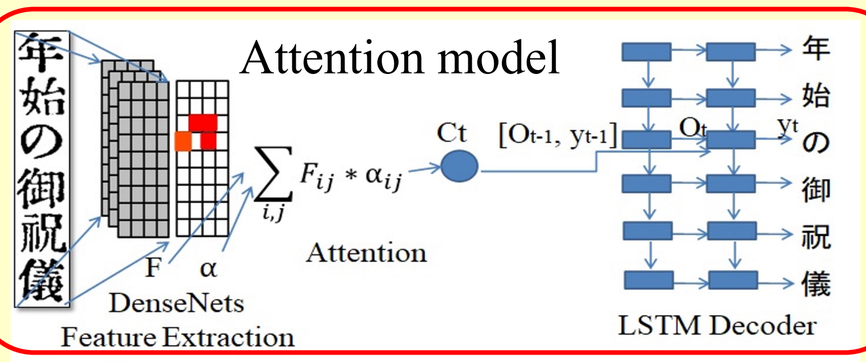
System Architecture

Text detection

CRAFT: Character-Region Awareness For Text detection



Text recognition



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