What we have try and what challages?

	Implementation	Status
CRNN + CTC (ResNet + LSTM + CTC)	Yes	False
CRNN + Attention (ResNet, DenseNet + Attention)	Yes	False
CNN + Transformer (EfficientNet + Transformer)	Yes	False
TrOCR (Transformers)	Yes	False

Due to the lack of GPU machines and limited time for training, we are unable to train our model on the entire dataset. Instead, we will focus on sharing the progress and findings we have made so far.

Hand written recognition for small datasets

Historical document explorer

Objective
- To train deep learning models on small datasets efficiently and avoid overfitting:

We’re facing difficulties in training model on the whole dataset due to limited time and GPU resources, consider the following strategies to overcome these challenges:

Dataset

We selected only 1500 images from 0-2000-out.

	Training	Testing	Validation
Amount	1300	100	100

Workflow

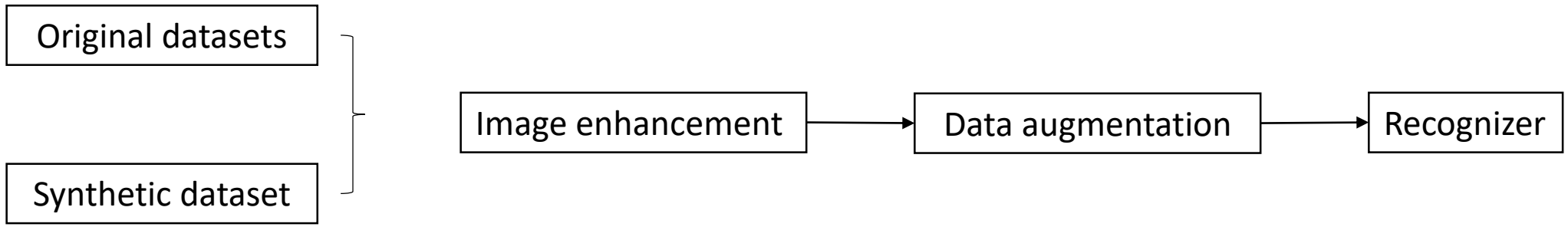


Image Enhancement

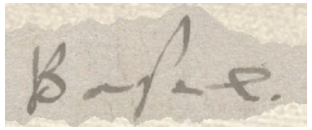
Greyscale

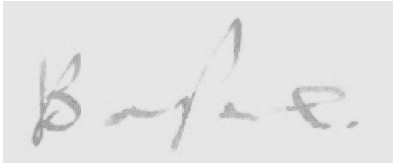
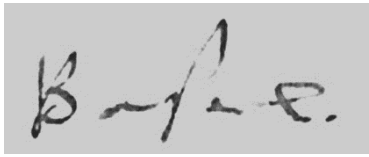
Contrast adjustment

Texture solid text

Thresholding

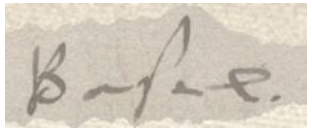
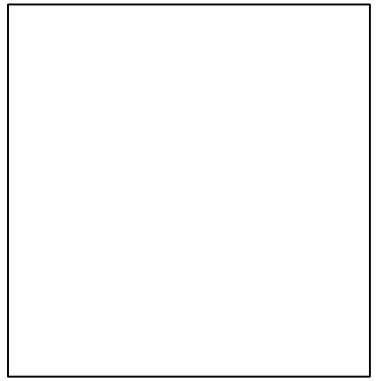
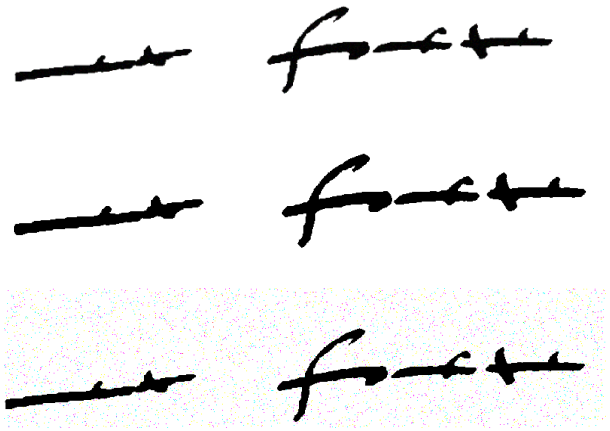
Noise removal



Synthetic and augmentation data generating

1) Noise


Results

		CER	WER
RGB	< 30 Epochs	0.32	0.62
Binary	**< 30 Epochs**	**0.298**	**0.60**
Binary + additional data	**< 30 Epochs**	**0.15**	**0.36**

Train small datasets

- Synthetic and data augmentation generating
- Using early stop for avoid overfitting

Train huge datasets with limited hardware

- Divide huge datasets using Ensemble: divided huge dataset into sub datasets. and training them finally we can combine models for improving accuracy.