


# Deep Handwriting Recognition Model

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# Abstract - Problem & Objective

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## Current problems:

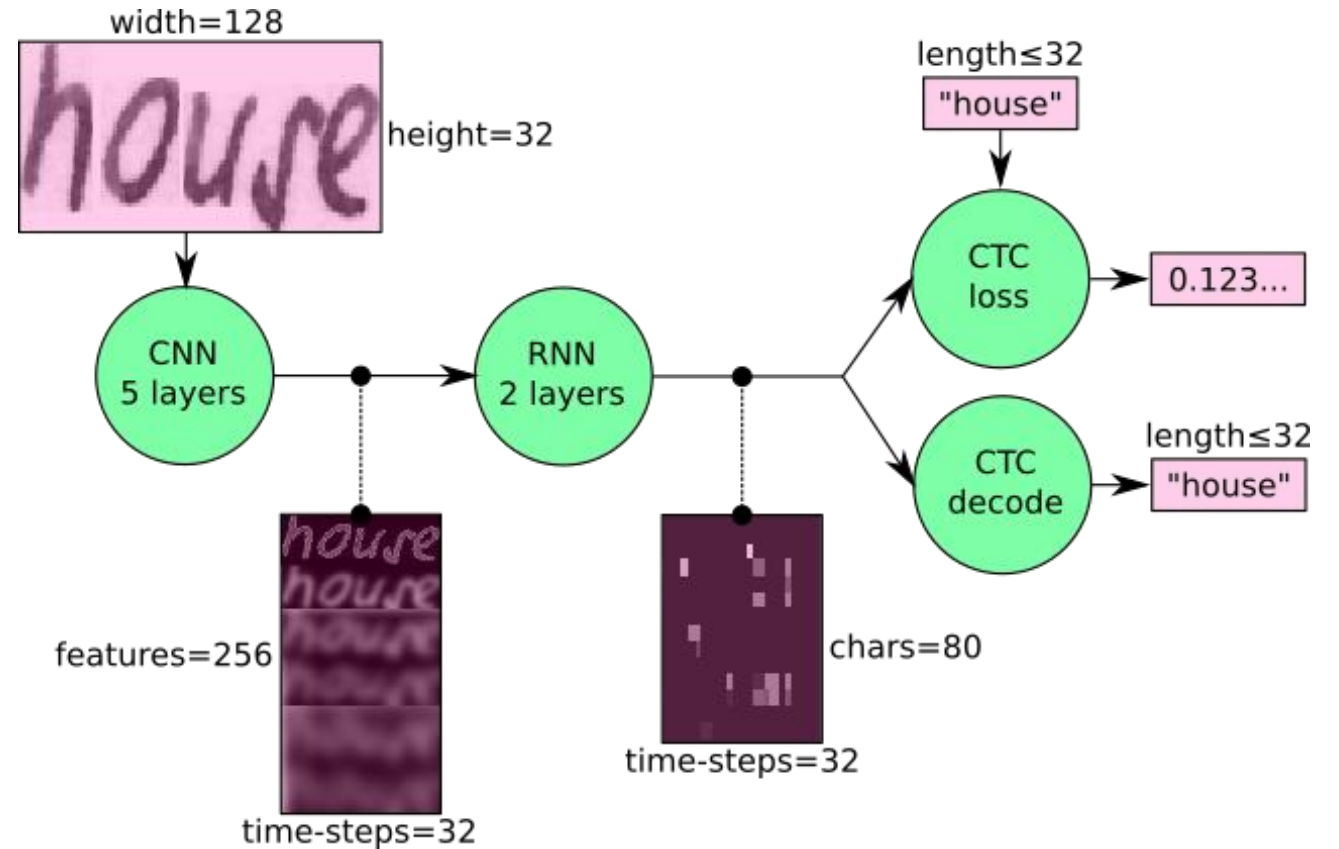
- World becoming more and more digital
- Sometimes things must be hand recorded as bringing devices can be inconvenient.
- Translating written information to being machine readable can take time.

## Objective:

- Build upon an already existing Handwritten Text Recognition model.
- Raise the current 70% to at least 90%.

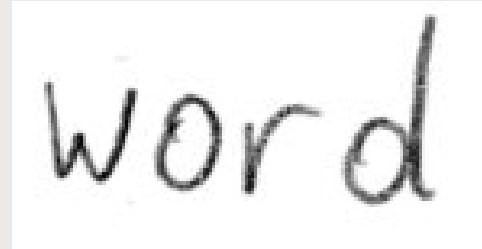
# Model Architecture

- Pre-Processing
  - CNN layers
  - RNN layers
  - Original model prediction
- Post-Processing
  - Spell Correction
  - Adjusted model Prediction
  - Char error rate
  - Word accuracy



# Sample

- Outputs probability for a single word input:



word

- Can also take full sentence input:



or work on line level

```
Recognized: "word"  
Probability: 0.9513835310935974
```

# Successful Implementation



Original IAM Dataset Image

- Training with IAM Dataset
- The Decoder
- Spelling correction
- Random Stretch and Random Noise data augments
- Model accuracy to 81%



Image with  
random noise

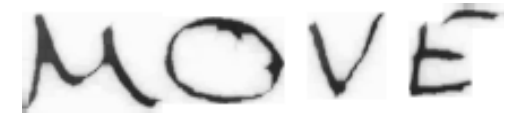


Randomly  
stretched image

# Failed Experimentation

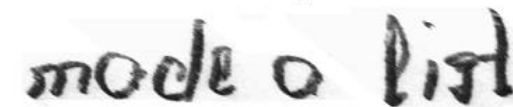


Blurred Image



Adjusted Line  
Thickness

- Removing Cursive writing style
- Changing the Optimizer
- Blurring and adjusting line thickness data augmentations
- Correcting of grammar
- Input of entire sentences



# Future Work

Changing the number of CNN layers



Changing the LSTM to a 2D LSTM



Adding a web application to visualize output better

