Segmentation method: maximally stable external regions

Cv2. ConnectedComponents

Cv2. MSER\_create

Instance segmentation: Umid et all 2022

Train Mask-R to extract letter?

Using GANs to augment data -> SRGAN or SSGAN (high resolution rendering of same image , upscaling image) uses perceptron loss

SSGNA: attention modules -> differentiates between different strokes in a single letter (letter = 1 image input, segmented)

Line segmentation:

A\* path planning : “ Schomaker - A\* path planning for line segmentation” rug

Seam carving: generate energy map of image

Character segmentation:

Non-linear clustering

Voronoi Regions

IDEA FOR YOLO GEENRATOR OF TEXT:

Research on histograms of letter length, frequency, and neighbour frequency to generate text base don probabilities from these letter histograms

Need labelled latin transcripted arabic text: Or use the character labels to generate real words or even real text based on the latin alphabet translation of the arabic texts ; so translate real arabic texts to real latin translated arabic texts , and then to permutations of the labels of the characters from our dataset to the latin translated arabic texts => final output is generated handwritten arabic text

A\* star on horizontal and then vertical for char segmentation

And then CNN for char recognition : ensemble model : 1 model CNN with output probability for the letter (ex. 46% aylin, 68% lemen) + use probability of frequency of the context (characters near the detected character) from the N-gram frequencies -> combine probabilities to decide char label

**Preprocessing:**

* Noise removal: Erosion + filter for specific class
* Gaussian blurring? Noise removed around edges of object
* Erosion + dilation

Segmentation: Suzuki algorithm

**Good ideA: transfer learning: pre-train on the GENERATOR script of the prototypical letters**

Us eNN with gated-mechanisms

**PREPROCESS: - Hough transform to align the text!!! -> blur-erosion, kernel size 7**

A\* flip