DIP PROJECT - TS-10

TEXT SEGMENTATION

Text segmentation is the process of dividing written text into meaningful units, such as words, sentences, or topics. The term applies both to mental processes used by humans when reading text, and to artificial processes implemented in computers, which are the subject of natural language processing.

PROBLEM FORMULATION

Given as Image File we need to segment text in it into meaningful words, lines, characters, paragraphs etc.

KEY WORDS

Threshold: Thresholding is a type of image segmentation, where we change the pixels of an image to make the image easier to analyse. In thresholding, we convert an image from colour or grayscale into a binary image, i.e., one that is simply black and white.

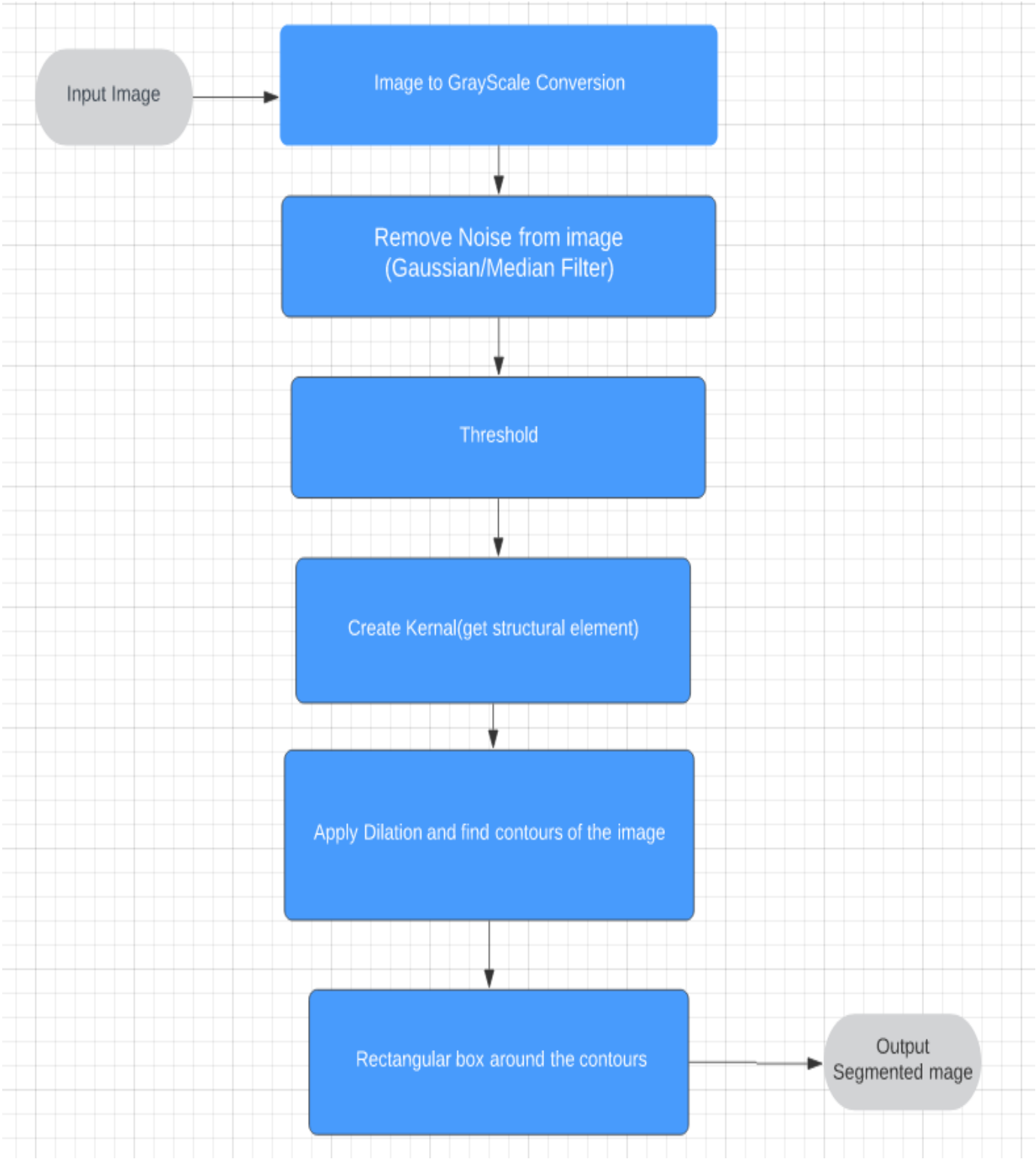
Remove Noise: Using Gaussian Filter / Median Filter we remove noise in the image.

Kernal: Structuring element of size N x N is used for dilation.

Dilation: Dilation enlarge the boundaries of regions of foreground pixels (i.e. white pixels, typically). Thus, areas of foreground pixels grow in size while holes within those regions become smaller.

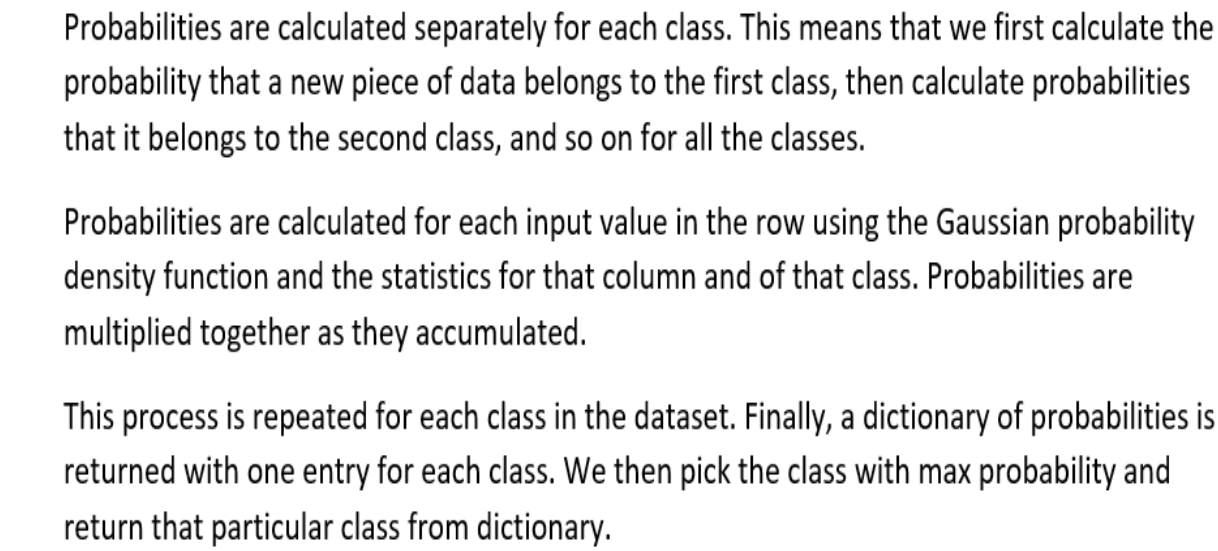
Contours: Contours are the boundaries of a shape with same intensity. It stores the (x,y) coordinates of the boundary of a shape.

ALGORITHM (PROCEDURE)



RESULTS

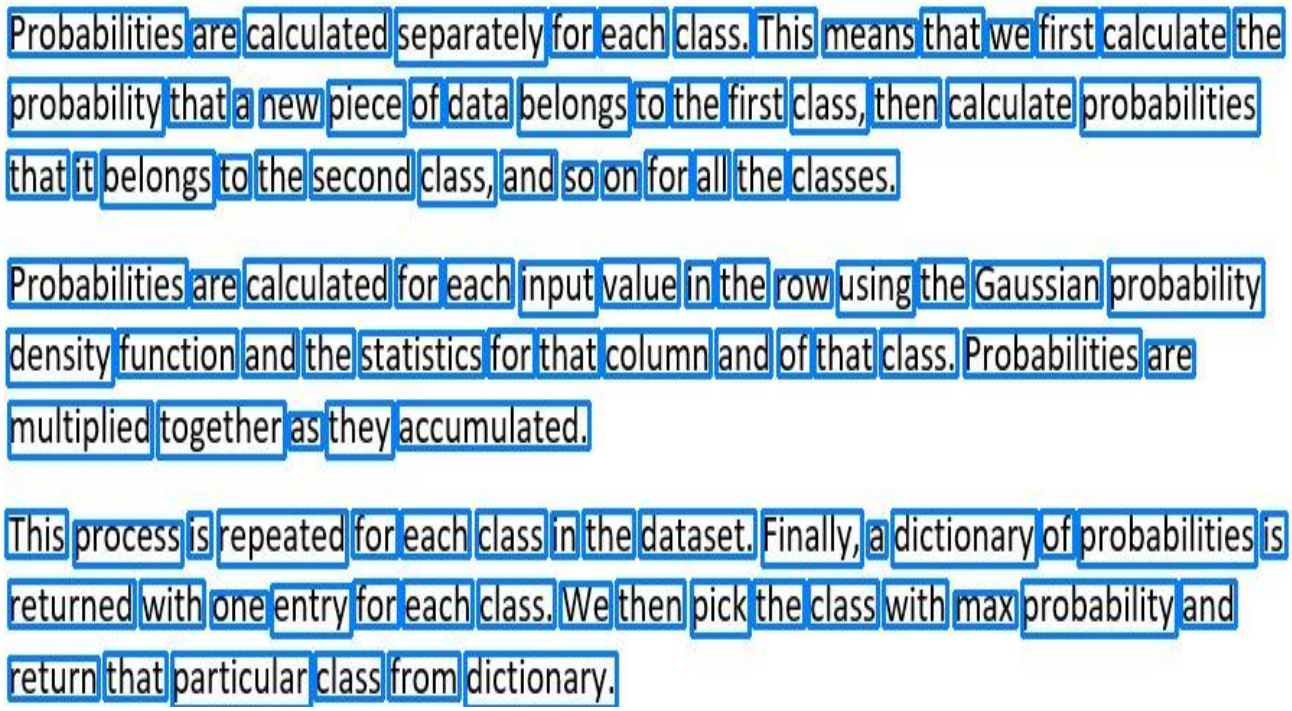
INPUT IMAGE FILE


Probabilities are calculated separately for each class. This means that we first calculate the probability that a new piece of data belongs to the first class, then calculate probabilities that it belongs to the second class, and so on for all the classes.

Probabilities are calculated for each input value in the row using the Gaussian probability density function and the statistics for that column and of that class. Probabilities are multiplied together as they accumulated.

This process is repeated for each class in the dataset. Finally, a dictionary of probabilities is returned with one entry for each class. We then pick the class with max probability and return that particular class from dictionary.

WORD SEGMENTATION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PARAGRAPH SEGMENTATION

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LINE SEGMENTATION

Probabilities are calculated separately for each class. This means that we first calculate the probability that a new piece of data belongs to the first class, then calculate probabilities that it belongs to the second class, and so on for all the classes.

Probabilities are calculated for each input value in the row using the Gaussian probability density function and the statistics for that column and of that class. Probabilities are multiplied together as they accumulated.

This process is repeated for each class in the dataset. Finally, a dictionary of probabilities is returned with one entry for each class. We then pick the class with max probability and return that particular class from dictionary.

CHARACTER SEGMENTATION

Probabilities are calculated separately for each class. This means that we first calculate the probability that a new piece of data belongs to the first class, then calculate probabilities that it belongs to the second class, and so on for all the classes.

Probabilities are calculated for each input value in the row using the Gaussian probability density function and the statistics for that column and of that class. Probabilities are multiplied together as they accumulated.

This process is repeated for each class in the dataset. Finally, a dictionary of probabilities is returned with one entry for each class. We then pick the class with max probability and return that particular class from dictionary.

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