A system for text recognition and conversion to desired language from image

Research day SRM University

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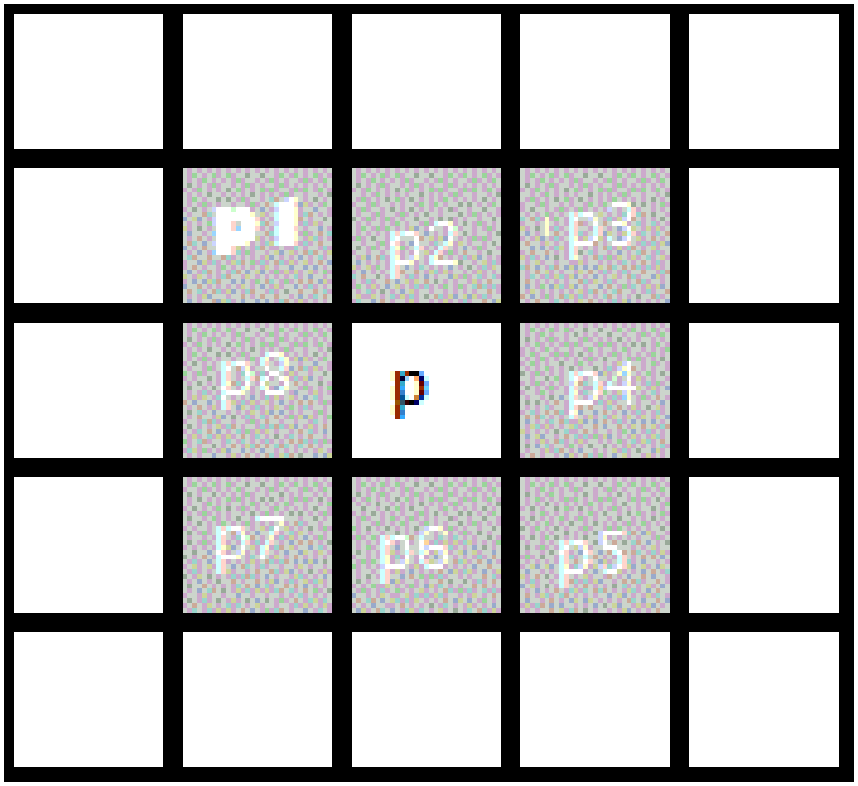
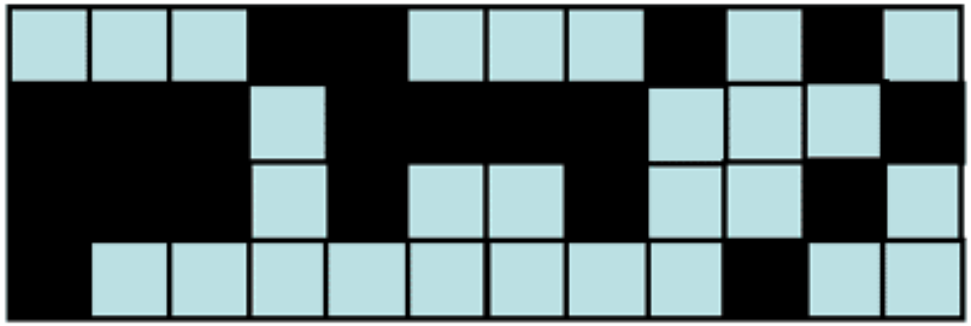
- Detecting object from image
- Recognizing characters from detected objects
- Translating to desired language

Region growing algorithms

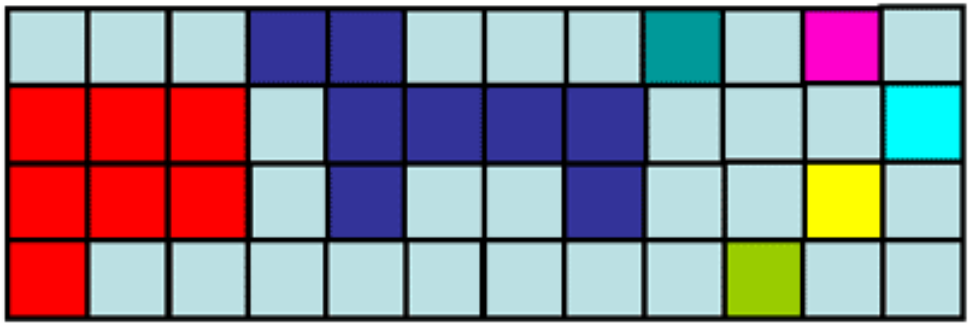
8 - Connectivity

$(a)\ \bigcup_{i=1}^{n} R_i = R.$

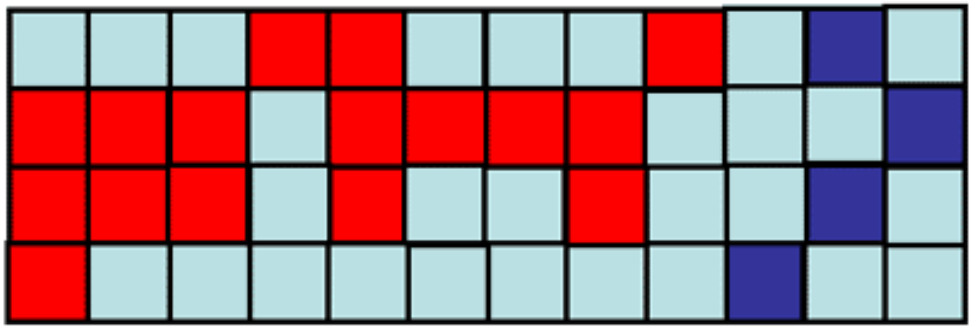




Binary image:
0 - objects;
1 -background

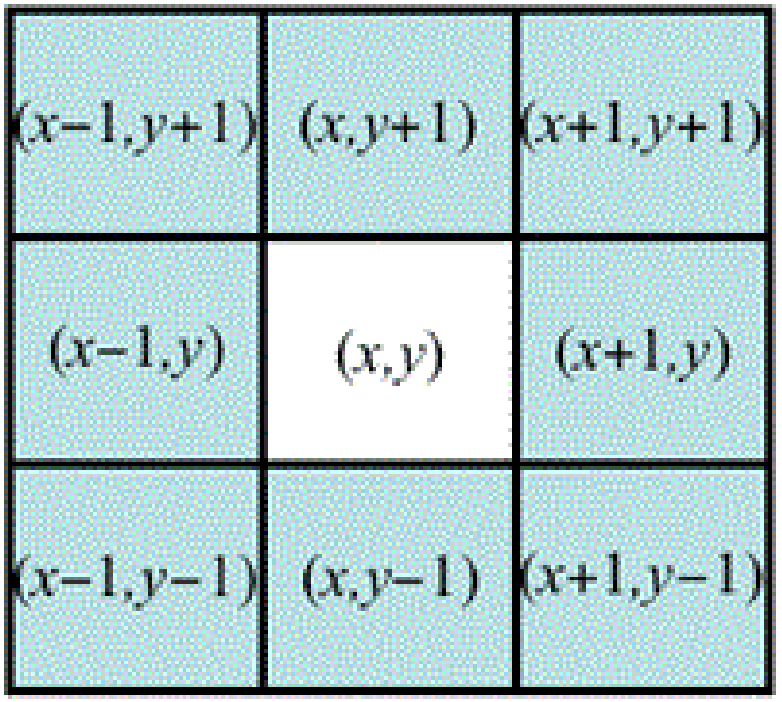


4-connected
objects +
8-connected
background



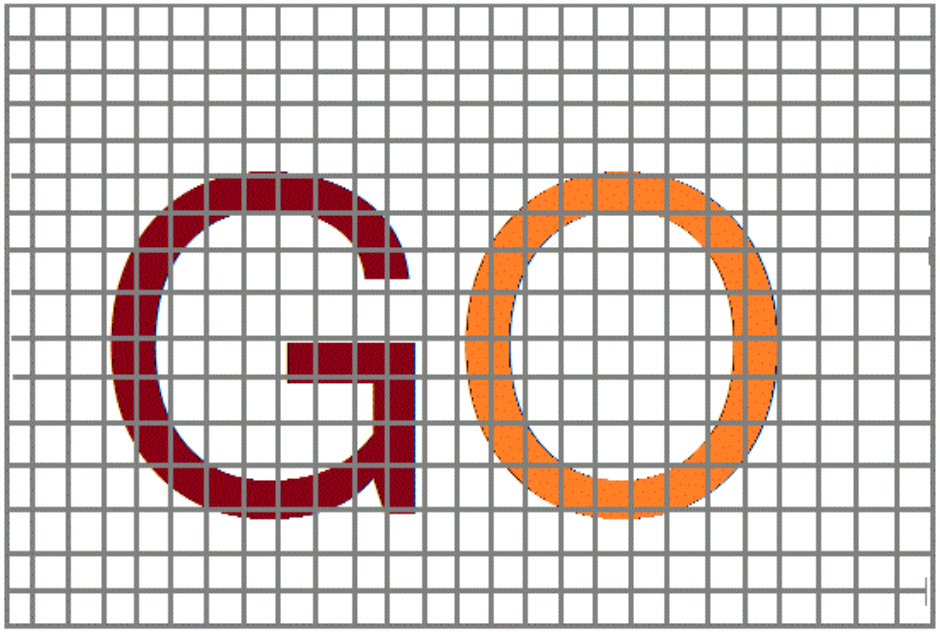
8-connected
objects +
8-connected
background

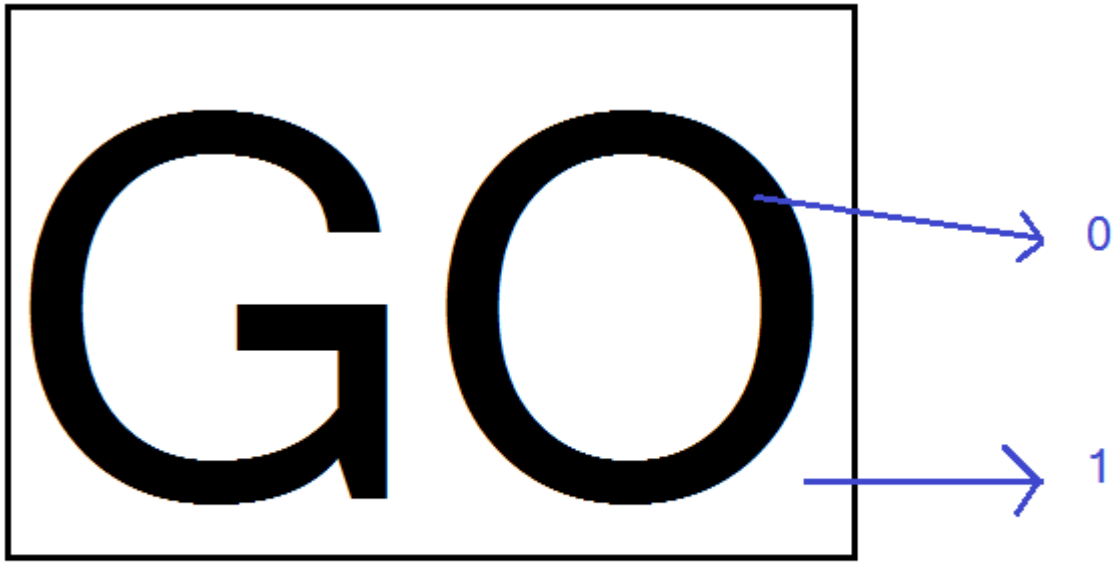
- Centre pixel be P(X , Y)
- P1 → (X-1 , Y+1)
- P2 → (X+1 , Y)
- P3 → (X+1 , Y+1)
- P4 → (X , Y+1)
- P5 → (X+1 , Y-1)
- P6 → (X , Y-1)
- P7 → (X-1 , Y-1)
- P8 → (X-1 , Y-1)



8-neighbourhood


GO


GO

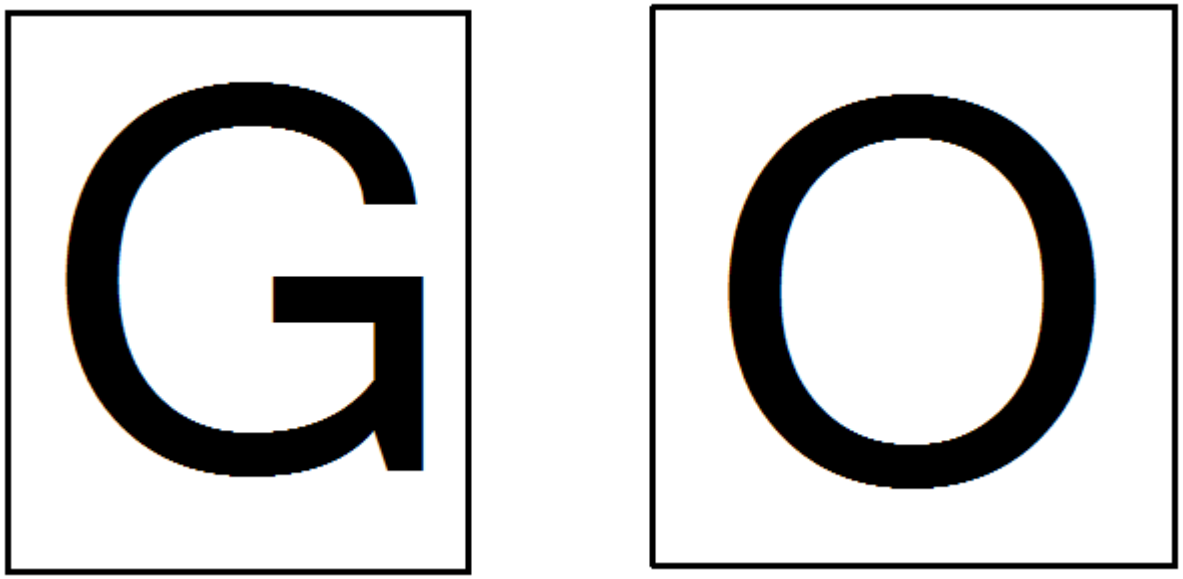


conncomp(IMG);

No. of objects = 2;

Pixels of obj1 = (x1,y1),(x1+1,y1),(x1+2,y+1)……

Pixels of obj2 = (x2,y2),(x2+1,y2+1),(x2+1,y2-1)……



Detected objects(characters) in the image.

MATCHING OBJECTS WITH DATA SET

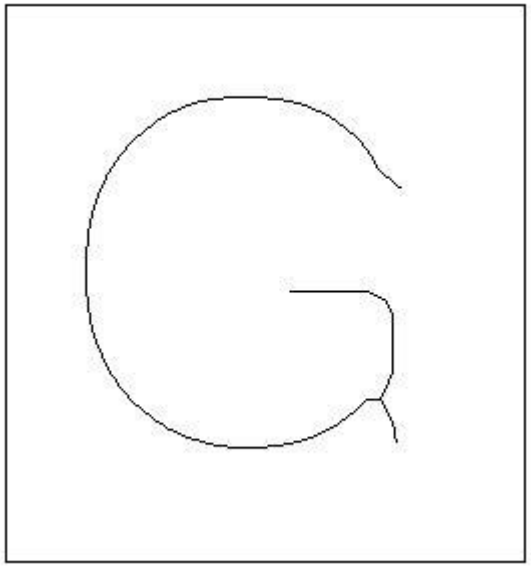
CHARACTER RECOGNITION

1: For every character c in language
2: For every input i for the character c in test data
3: Generate Graph g of i
4: Generate graph t of input image
5: For every character c in language
6: Use Genetic Algorithm to generate hybrid graphs
7: Return character corresponding to graph with the minimum most fitness function

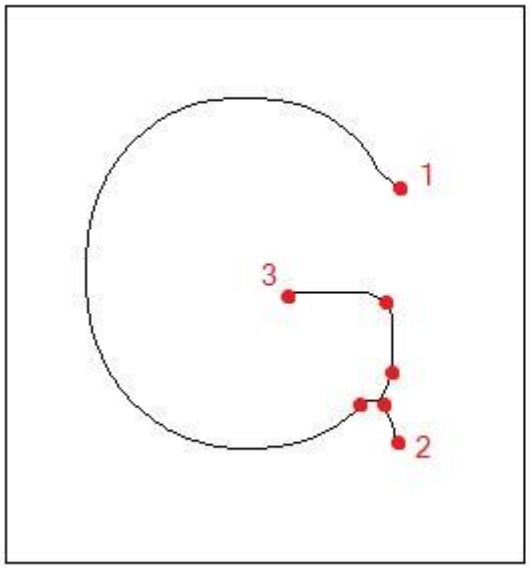
Character recognition involved the matching of the graph generated from the unknown character image with the graphs generated by mixing.

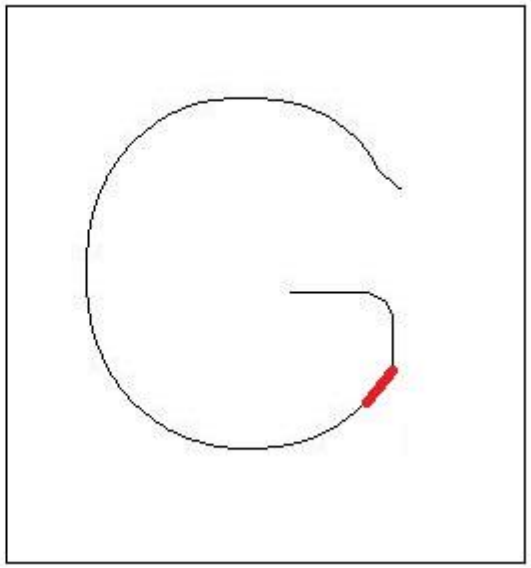
Generation of Graph

1. Expand the image to a x a pixel size
2. Thin the image to unit thickness using thinning algorithm



3. Find edges (end points).
4. if the edge is found, regard its end-point as separate point .
5. Dist between edges is found.
6. If length of line $< x$ delete it.





- Generate Adjacency Matrices of the graph
- Compare Adjacency Matrices
- Word with highest match is selected