

Image Segmentation and Classification Research

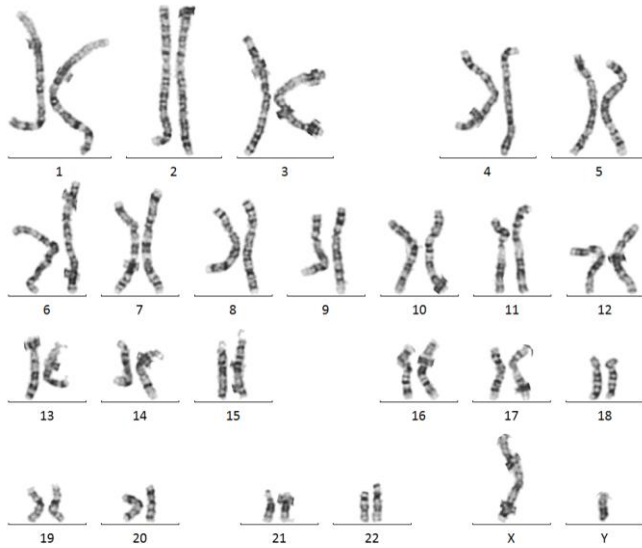
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This research is my current research I am working on. The main goal is to segment chromosomes and then classify them. Use the karyotype to diagnose abnormal features for medical purpose.

Normally, a chromosome image looks like below:



Then we segment them and classify them into different groups like below.
In human cells, normally there are 23 pairs of chromosomes.

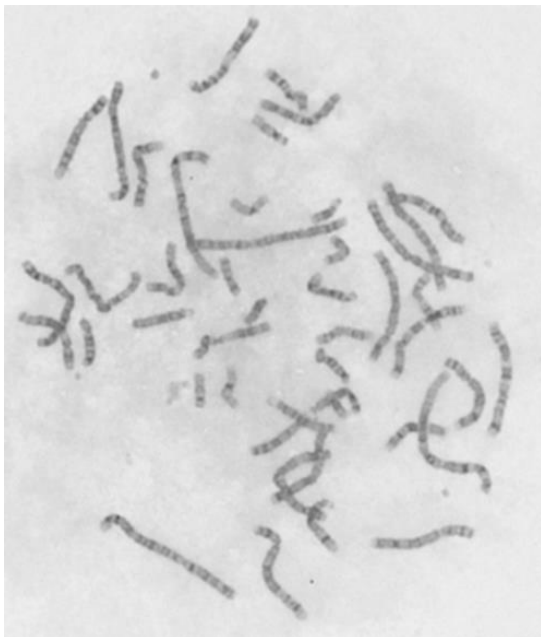


Then doctors use professional knowledge to diagnose disease based on the image above.

In this research, we try to use machine learning and computer vision methods to finish all the steps automatically.

The current progress:

1 Mean filter (3x3) to blur image



2 Segment image by convolution and two thresholds (negative background, half positive, positive)



3 Denoise image based on area and thresholds



4 Use erosion to break some connections between different chromosomes and find potential end points by local maximum in distance.



Future Plan:

Try to use lines to represent chromosomes and classify them using neural network