ASSIGNMENT

Optic Disc Segmentation Using Active Contour method

You are given a set of color (RGB) fundus images. Develop an active contour algorithm to segment the optic disc region (extract optic disc boundaries) in following stages :

a) **STAGE-1** : Find the center of the optic disc (OD). **(20 marks)**

b) **STAGE-2** : Using the OD center as the origin of the initial contour. Develop an active contour algorithm to fit the initial contour at the edges of the optic disc.

(60 marks)

c) **STAGE-3** : Smooth the segmented binary map using morphological operations such as erosion and dilation etc. Also, in case of any gaps in the extracted region fill the unwanted gaps (holes) and remove other small isolated objects (having area less than the optic disc area).

(20 marks)

Note: Use Images from the Vessel Segmentation problem given previously.

Hints :

- Choose the single best channel/combination of channels for processing.
- Choose the appropriate structuring element (ball, linear, arbitrary or any other) to smoothen the optic disc etc.
- Choose the appropriate parameters such as number of iterations and penalty to smoothness term etc in the active contour algorithm.
- For optic disc detection, use any algorithm like circular hough transform (CHT) or thresholding algorithm to find the coordinate of the optic disc center.