CAP5415 Computer Vision
Programming Assignment # 3

1. Implement Williams and Shah's algorithm for deformable contours (Snakes). The input of your program will be a gray scale image and a list of points (in clockwise or counter clock wise order) around an object in the image and the program will output a contour of the object. Generate three types of output for each experiment:
   a. Contour of the Object (in terms of input points).
   b. The path of each point in the snake as they converge to the object boundary.
   c. The graph of error (energy function of the contour) over number of iterations.

Experiment with different values of σ and initializations of α, β, γ for input images. Additional experimentation is encouraged.

2. Implement the following skeletonization algorithms. The input of the program will be a binary image and output will be a skeletal description of the image.
   a. T. Y. Zhang, and C. Y. Suen, "A fast parallel algorithm for thinning digital patterns," Communications of ACM, vol. 27, no. 3, pp. 236-239, 1984.
   b. P. S. P. Wang and Y. Y. Zhang, "A fast and flexible thinning algorithm," IEEE Transactions on Computers, vol. 38, no. 5, pp. 741-745, 1989.
   c. Z. Guo and R. W. Hall, "Parallel thinning with two-subiteration algorithms," Communications of ACM, vol. 32, no. 3, pp. 359-373, 1989.

Deliverables:
1. Report including Input and Output images (Soft Copy)
2. Code (Soft copy)

Send your assignments by email to rcen@cs.ucf.edu or webct.

Submission Deadline: March 25, 2003 (23:59)