Warwick dataset for gland segmentation in Colon histology images in MICCAI'15 is available for open access at https://warwick.ac.uk/fac/cross_fac/tia/data/glascontest/download/.

To do this assignment, use the samples given in the folder, according to the roll number mapping mentioned at the last of this document. The folder contains images in .bmp format and its associated segmentation mask in .bmp format.

The data folder can be downloaded from:

https://drive.google.com/drive/folders/1yW6Byed2mx6irW1rCmFhJjY7m1bJoFQq?usp=sharing

Note: For all parts, code and summarize your observations and results in a document, illustrate the code pipeline through flow chart and pseudocode and submit the code and summary document as one zip file.

To avoid confusion in the code execution sequence, you can attach a readme file in .txt format, if required.

Try to submit the assignment on or before 26th October 2021, 11.59 PM.

Part 1: Use histogram-based approach to assign the class label for the given images

Part 2: Apply graph cut method to optimize the delineation of the gland from the background using minimization algorithms: alpha-expansion and alpha-beta swap

Part 3: Compare the segmentation results with the ground truth using metrics [1] like accuracy, Dice similarity coefficient, Jaccard index (JAC), sensitivity, specificity

References:

1. Ahmed Refaat Hawas, Yanhui Guo, Chunlai Du, Kemal Polat, Amira S. Ashour, OCE-NGC: A neutrosophic graph cut algorithm using optimized clustering estimation algorithm for dermoscopic skin lesion segmentation, Applied Soft Computing, Volume 86, 2020, 105931, ISSN 1568-4946, https://doi.org/10.1016/j.asoc.2019.105931. (http://www.sciencedirect.com/science/article/pii/S1568494619307124)

2. V.R. Balaji, S.T. Suganthi, R. Rajadevi, V. Krishna Kumar, B. Saravana Balaji, Sanjeevi Pandiyan, Skin disease detection and segmentation using dynamic graph cut algorithm and classification through Naive Bayes classifier, Measurement, Volume163, 2020, 107922, ISSN 0263-2241, https://doi.org/10.1016/j.measurement.2020.107922.

3. K. Sirinukunwattana, J. P. W. Pluim, H. Chen, X Qi, P. Heng, Y. Guo, L. Wang, B. J. Matuszewski, E. Bruni, U. Sanchez, A. Böhm, O. Ronneberger, B. Ben Cheikh, D. Racoceanu, P. Kainz, M. Pfeiffer, M. Urschler, D. R. J. Snead, N. M. Rajpoot, "Gland

Segmentation in Colon Histology Images: The GlaS Challenge Contest" http://arxiv.org/abs/1603.00275 [Preprint]

4. K. Sirinukunwattana, D.R.J. Snead, N.M. Rajpoot, "A Stochastic Polygons Model for Glandular Structures in Colon Histology Images," in IEEE Transactions on Medical Imaging, 2015, doi: 10.1109/TMI.2015.2433900

Folder name	Roll No.
1	AE17B020
2	AE18B024
3	AE19B039
4	AE20D412
5	AM20D010
6	AM20S052
7	AM21D602
8	BE17B019
9	CE19D201
10	CH18B114
11	CL21M011
12	ED17B001
13	ED17B055
14	ED18B002
15	ED18B004
16	ED18B007
17	ED18B009
18	ED18B012
19	ED18B017
20	ED18B021
21	ED18B022
22	ED18B024
23	ED18B025
24	ED18B028
25	ED18B031
26	ED18B033
27	ED18B034
28	ED18B035
29	ED18B037
30	ED18B039
31	ED18B043
32	ED18B045
33	ED18B047
34	ED18B048
35	ED18B049
36	ED18B052
37	ED18B054
38	ED18B056
39	ED20D402
40	ED20D601
41	ED20S014
42	ED21S001
43	ED21S006
44	ED21S007
45	EE19S046
46	EE20S046

47	EE20S047
48	EE20S049
49	EE20S051
50	EE20S052
51	EE21D023
52	EE21S050
53	EP18B007
54	EP18B009
55	EP18B021
56	ME21S032