Abstract

We applied traditional fuzzy mathematical approach with enhanced initialization procedure to
segment Pap smear images of cervical cells. The segmented images of the cervical cells were
analyzed with the help of shape theory to classify them accordingly to the presence of
abnormality in the morphological behavior of the cells.

References

- Amir Alush, Heyit Greenspam and Jacob Goldberg, “Lesion detection and segmentation
in Uterine Cervix images using an Arc-level MRF”, Proc. of the 6th IEEE International
- A. Garrido and N. Perezde la Blanca, “Applying Deformable templates for cell image
- B. H. Yang et al, “Cervical cancer as a priority for prevention in different world regions: An
- Chin Wen et al, “Automatic Segmentation of abnormal cell nuclei from microscopic image
analysis for Cervical Cancer screening”, Proc. IEEE 3rd International Conference on
Neuro/Molecular Medicine and Engineering, 2009.
- D. Dutta Majumdar and M. Bhattacharya, “Cybernetics approach to medical technologies:
application to cancer screening and other diagnostics”, Kybernetes, Vol. 29, No. 7/8, 2004
- F. J. Gallegos-Funes et al, “Rank M-type Radial Basis function (RMRBF) Neural network
- George Dounias et al, “Automated identification of Cancerous smears using various
competitive intelligent techniques”, Oncology Reports, 15, 2006.
- G. Ritter, “Handbook of Computer Vision Algorithms in Image Algebra”, CRC Press,
Technical University of Denmark, 1999
- Jan Jantzen and George Dounias, “Analysis of PAP smear image data”, Proc. of Nature
Inspired Smart Information System, NISIS 2006.
- L. R. Coombes and P. F. Culverhouse, “Pattern recognition in Cervical Cytological Slide
Images”, 5th International Conference on Advances in Pattern Recognition (ICAPR -2003)
December, 2003, Kolkata, India.
- M. E. Plissiti et al, “Automated segmentation of cell nuclei in Pap smear images”, Proc. of
IEEE International Special Topic Conference on Information Technology in Biomedicine,
Greece, 2006.
- N. Ramanujam, J. Ghosh and R. Richards-Kortum, “Ensemble of Radial Basis Function
Network for Spectroscopic Detection of Cervical Precancer”, IEEE Trans. on Biomedical
- P. Bamford and B. Lovell, “Unsupervised cell nuclei segmentation with active contours”,
- R. Sankaranarayana et al, “Accuracy of visual screening for cervical cancer neoplasia:

Index Terms

Computer Science
Biomedical

Keywords

Cervical cells
Pap smear
Fuzzy

c-means

Nucleus

Cytoplasm