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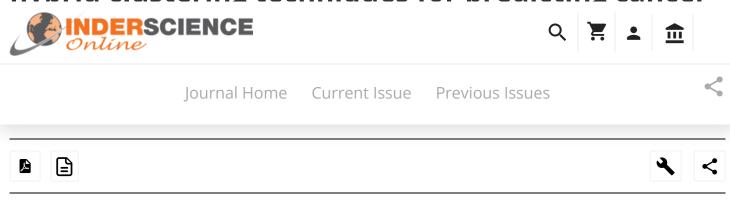
Utilising deep convolutional neural networks and hybrid clustering techniques for predicting cancer

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Abstract

Blood malignancies and various blood disorders pose significant health challenges across all age groups. This study introduces adaptive fast fuzzy C means hybrid clustering (AFFCMHC) and binary adaptive Otsu (BAO) thresholding for image processing to segment cancer-related blood abnormalities. We recommend DCNNs for cancer blood abnormalities prediction. Blood illness images are filtered and enhanced in our framework. The 2D hybrid wavelet frequency domain bilateral filter (2D HWFDBF) removes noise from photographs. Denoising and 2D EPHI improve image clarity. Clustering and thresholding segment better pictures. Clustering and image thresholding are done using AFFCMHC and BAO, respectively. Features are extracted from a real-time collection of microscopic blood sample images from 1,000 cancer patients using the grey level co-occurrence matrix (GLCM). Our revolutionary DCNN classification architecture trains quickly. With 98% accuracy, our method is incredibly successful. We compare our system to existing classifiers to test its performance. We developed a complete system for segmenting and predicting cancer-related blood abnormalities, exceeding current methods.

Keywords

cancer blood disorder, deep convolutional neural networks, DCNN, classification, grey level co-occurrence matrix, GLCM, tumour recognition, medical image analysis, machine learning models, disease segmentation, predictive healthcare models

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