National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: A New Framework for Brain Tumor Feature Extraction and Classification Using Localized Global Feature Patches.
Speaker	: Anarkali Prabhakar
Supervisor	: Prof U C Pati
Venue	: Room No. EC-128, Virtual Instrumentation Laboratory, ECE Department.
Date and Time	: 14 May 2024 (11.00AM)

Abstract : Texture-based feature extraction is crucial in brain tumor feature extraction and classification. The texture-based feature extraction provides valuable information on the textural difference between the tumorous and non-tumorous region and its spatial arrangement of pixel intensities. In this proposed framework, machine learning models using Gray-Level Co-occurrence Matrices (GLCM) and Gabor filter on localized global feature patches have been developed to classify different types of brain tumors. The best results were obtained using GLCM features: energy, contrast, correlation, and homogeneity. The concatenation of the features of localized 35x35 patches reduces the computational requirements and complexity. The proposed framework provides robust methods for characterizing various texture-based features using localization. Figshare, a publicly available dataset of 3064 images, has been used in this work for three classes: Meningioma, Glioma, and Pituitary. The no-tumor dataset has been obtained by publicly available Br35H, making 4010 images. The dataset is divided into 70:30, 80:20, and 90:10.

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