National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Detection and Classification of Lung Cancer using Computed Tomography
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Venue	: Room No.: EC-303 (Seminar Hall of EC Department)
Date and Time	: 23 Jul 2025 (11.00 AM)
Abstract	: Lung cancer remains the leading cause of cancer deaths all over the globe. Early diagnosis of lung cancer can reduce the mortality rate. Lung cancer screening is time consuming as it involves patient undergoing computed tomography scanning and radiologists analysing the scans for malignant nodules tediously. This has made CAD techniques a popular way for aiding radiologists to accurately detect and classify benign nodules from malignant ones. This report comprises three parts viz. Part I: Literature Survey and Problem Statement, Part II: Research Work carried out so far, and Part III: Research Work proposed to be carried out and road map. In the first part, several recent articles on machine and deep learning-based CAD techniques for pulmonary nodule classification using CT and their strengths and weaknesses are discussed. In the second part, a lung nodule classification method is proposed, that uses a fusion of handcrafted features and deep features. Explainability and uncertainty analyses are performed. Here, LUNA-16 database is used to validate the performance. Performance of the proposed work is compared with some other existing state-of-the-art methods and some popular transfer learning 3D video classification models: RESNET3D, SLOWFAST, I3D, and CSN by means of accuracy, precision, sensitivity, specificity, and F1 score. From experimental results, it is observed that the proposed pulmonary nodule classification method efficiently classifies nodules into two classes: benign and malignant with better performance than others. In the last part, future research work and the roadmap are also described.