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Quantitative CT Analysis of Pulmonary Nodules for Lung Adenocarcinoma Risk Classification Based on an Exponential Weighted Grey Scale Angular Density Distribution Feature

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Highlight

- A greatly robustness and highly effective pulmonary nodule classification system.
- The reference map is constructed using an integral image and labelled the map by K-means. Then, the grey density distribution feature is generated.
- Furthermore, we proposed the feature extraction method for pulmonary nodule image by designing an exponential weighted multi-angular histogram to describe each component of the grey density distribution features.
- The proposed feature combined with Random Forest model to classify lung nodule to four categories: Atypical Adenomatous Hyperplasia (AAH), Adenocarcinoma In Situ (AIS), Minimally Invasive Adenocarcinoma (MIA), and Invasive Adenocarcinoma (IA).

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