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A method for distinguishing benign and malignant pulmonary nodules based on 3D dual path network aided by *K*-means clustering analysis

Key words: CT images, Pulmonary nodule, Computer-aided diagnosis, Dual Path Network, Clustering analysis.

Research Summary

In this study, a novel classification scheme was proposed to identify benign and malignant pulmonary nodules based on 3D dual path network (DPN) aided by clustering analysis.

- **3D dual path network**
- **Clustering analysis.**
- **Weight adjustment**

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Innovation points

- **Distinguishing benign and malignant pulmonary nodules based on 3D Dual Path Network aided by K-means clustering analysis.**

- **The class decomposition can effectively represent multiple potential subtypes of both benign and malignant pulmonary nodules.**

- **A better classification performance is obtained in both LIDC and Shanghai Chest Hospital databases.**

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Figure 4

Innovation points

A series of comprehensive tables were generated to summarize the latest classification model.

Table 3.b | Comparison of classification performance in three experimental configurations.

Table 3.c | Heat maps between number of clusters and classification accuracy.

Table 3.e | Performance of different predictive models based on 3D CNNs aided by clustering analysis.

Table 3.f | Comparison of our method with the results of related studies.

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