

Table S1 Detailed CECT scan protocols

Hospital	Makers	Image thickness (mm)	Rotation time (s)	Tube voltage (kVp)	Tube currents (mA)
The Second Affiliated Hospital of Guizhou Medical University	PHILIPS	0.625	0.4	140	Automation
Guiyang Pulmonary Hospital	GE	0.625	0.5	140	
Guizhou Southeast Guizhou People's Hospital	PHILIPS	0.625	0.4	140	
Qiannan Hospital of Traditional Chinese Medicine	SIEMENS	0.6	0.5	130	
Qiannan People's Hospital	GE	0.625	0.5	140	
Guiyang First People's Hospital	GE	0.625	0.5	140	

CECT, contrast-enhanced computed tomography.

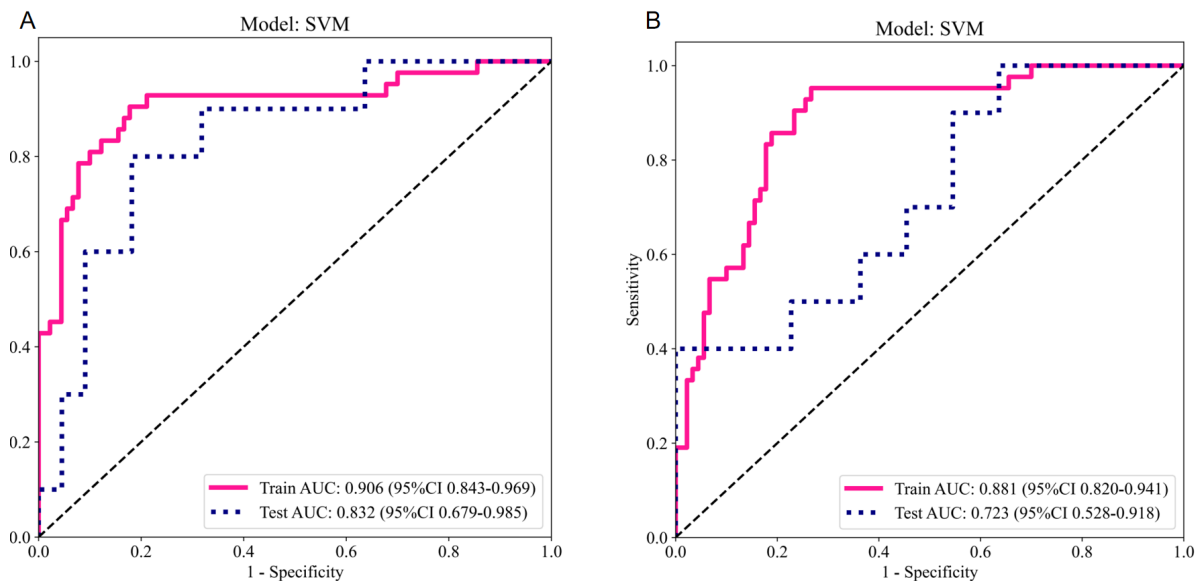


Figure S1 ROCs for ITTH (intra-tumor ecological diversity features) and conventional radiomics features are shown in. (A) ITTH (intra-tumor ecological diversity features); (B) conventional radiomics features. AUC, area under the ROC curve; CI, confidence interval; ITTH, intra-tumoral heterogeneity; ROC, receiver operating characteristic; SVM, support vector machine.

Table S2 An illustration of the overall research design

Model	AUC (95% CI)	Training cohort				Validation cohort		
		Accuracy	Sensitivity	Specificity	AUC (95% CI)	Accuracy	Sensitivity	Specificity
a	0.62 (0.52–0.73)	0.63	0.54	0.67	0.64 (0.44–0.84)	0.52	0.55	0.50
b	0.64 (0.54–0.74)	0.55	0.93	0.38	0.69 (0.50–0.88)	0.72	0.70	0.73
c	0.78 (0.70–0.86)	0.70	0.86	0.57	0.77 (0.59–0.94)	0.78	0.50	0.91
d	0.81 (0.74–0.89)	0.72	0.76	0.70	0.78 (0.61–0.94)	0.73	0.73	0.73
e	0.82 (0.75–0.90)	0.72	0.88	0.64	0.79 (0.62–0.97)	0.81	0.50	0.96
f	0.81 (0.73–0.89)	0.78	0.68	0.82	0.80 (0.64–0.97)	0.76	0.55	0.86
g	0.92 (0.86–0.98)	0.82	0.90	0.78	0.87 (0.72–1.00)	0.85	0.55	1.00

(a) clinical characteristic(clinical model); (b) C-radiomics features (C-radiomics model); (c) intra-tumoral ecological diversity features (ITH model); (d) clinical characteristic + C- radiomics (clinical-radiomics)model; (e) clinical characteristic + intra-tumoral ecological diversity features (clinical-ITH model); (f) c-radiomics + intra-tumoral ecological diversity features (ITH-radiomics model); (g) clinical characteristic + C-radiomics + intra-tumoral ecological diversity features (combined model). AUC, area under the receiver operating characteristic curve; CI, confidence interval; ITH, intra-tumoral heterogeneity.

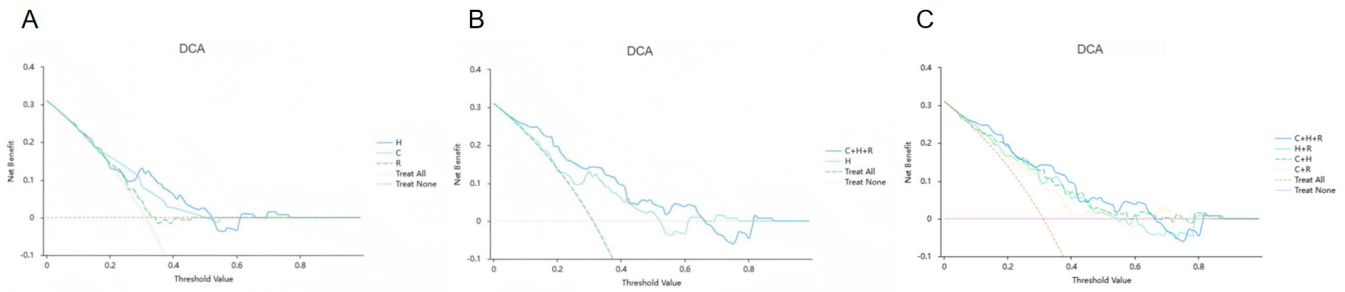


Figure S2 Decision curve analysis (DCA). (A) Clinical feature modeling, radiomics feature modeling, DCA for ITH model; (B) DCA for combined and ITH model; (C) DCA for each combined model. ITH, intra-tumoral heterogeneity.