

Supplementary

Table S1 MR scanner and scanning parameters

Scanning device	Sequence	TR (ms)	TE (ms)	FOV (mm)	Matrix	Slice thickness (mm)	Slice spacing (mm)	Flip angle	Contrast agent
Siemens	T1WI	450	15	230×230	512×168	5	0.5	90°	Gd-DTPA
	T2WI	6000	95	230×230	512×168	5	0.5	90	
	CE-T1WI	450	15	230×230	512×168	5	0.5	90	

CE-T1WI, contrast-enhanced T1 weighted imaging; FOV, field of view; Gd-DTPA, gadopentetic acid (injection dose: 0.1 mmol/kg; T1WI, T1 weighted imaging; T2WI, T2 weighted imaging; TE, echo time; TR, repetition time.

Table S2 Hyperparameters of models

	Clinic	RadiomicsT1	RadiomicsT2	RadiomicsCE	RadiomicsAll	DL-T1	DL-T2	DL-CE	DL-All	Radiomics + DL + Clinic
booster	gbtree	gbtree	gbtree	gbtree	gbtree	gbtree	gbtree	gbtree	gbtree	gbtree
objective	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic	binary:logistic
eval_metric	auc	auc	auc	auc	auc	auc	auc	auc	auc	auc
eta	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
max_depth	1	3	3	3,	3	3	3	3	3	3
min_child_weight	10	5	5	5	5	5	5	5	3	5
subsample	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
colsample_bytree	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
lambda	1	1	1	1	1	1	1	1	1	1
alpha	1	1	1	1	1	1	1	1	1	1

Table S3 Delong test for different models

Dataset	Model 1	Model 2	Z	P value
Train	Clinic	Radiomics-All	-3.14844	0.001641
	Clinic	DL-All	-3.23306	0.001225
	Clinic	RDLC	-5.57754	2.44E-08
	Radiomics-All	DL-All	-0.29298	0.769536
	Radiomics-All	RDLC	-1.9349	0.053002
	DL-All	RDLC	-1.85255	0.063947
Test	Clinic	Radiomics-All	-1.28118	0.200132
	Clinic	DL-All	-1.52105	0.128248
	Clinic	RDLC	-3.62376	0.00029
	Radiomics-All	DL-All	-0.03488	0.972175
	Radiomics-All	RDLC	-0.86476	0.387169
	DL-All	RDLC	-1.54455	0.122456

Radiomics-All, radiomics fusion model; DL-All, deep learning fusion model; RDLC, Radiomics-DeepLearning-Clinic.

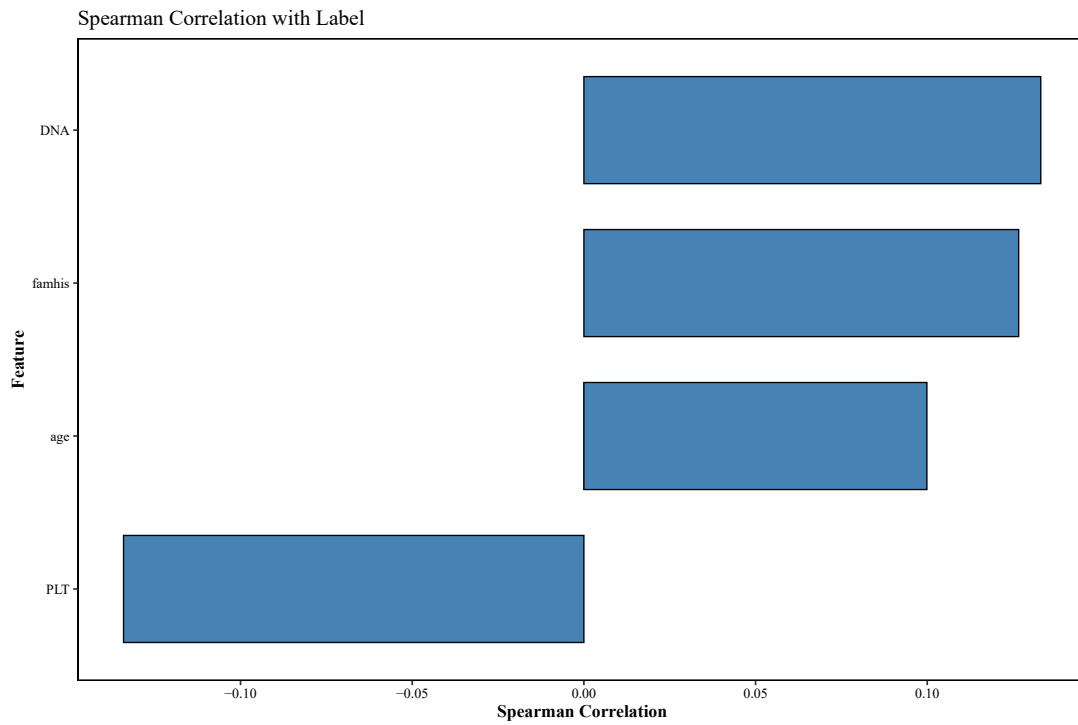


Figure S1 Feature selection results of clinical.

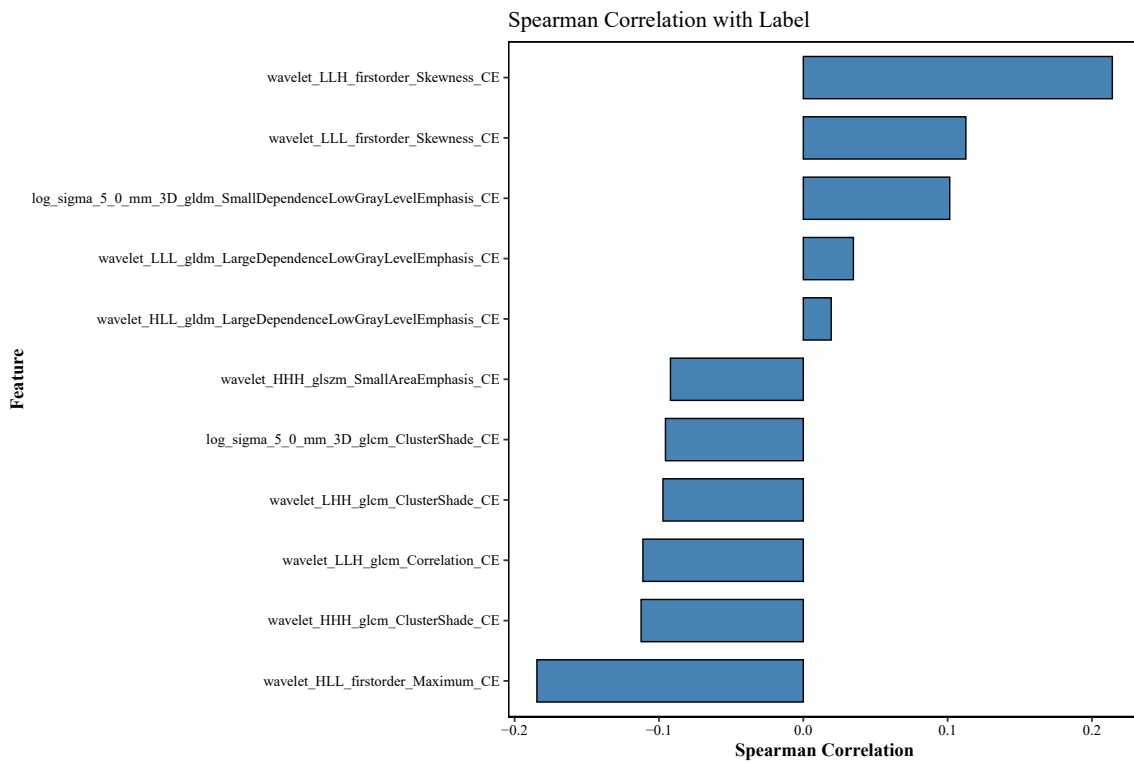


Figure S2 Feature selection results of radiomics-CE.

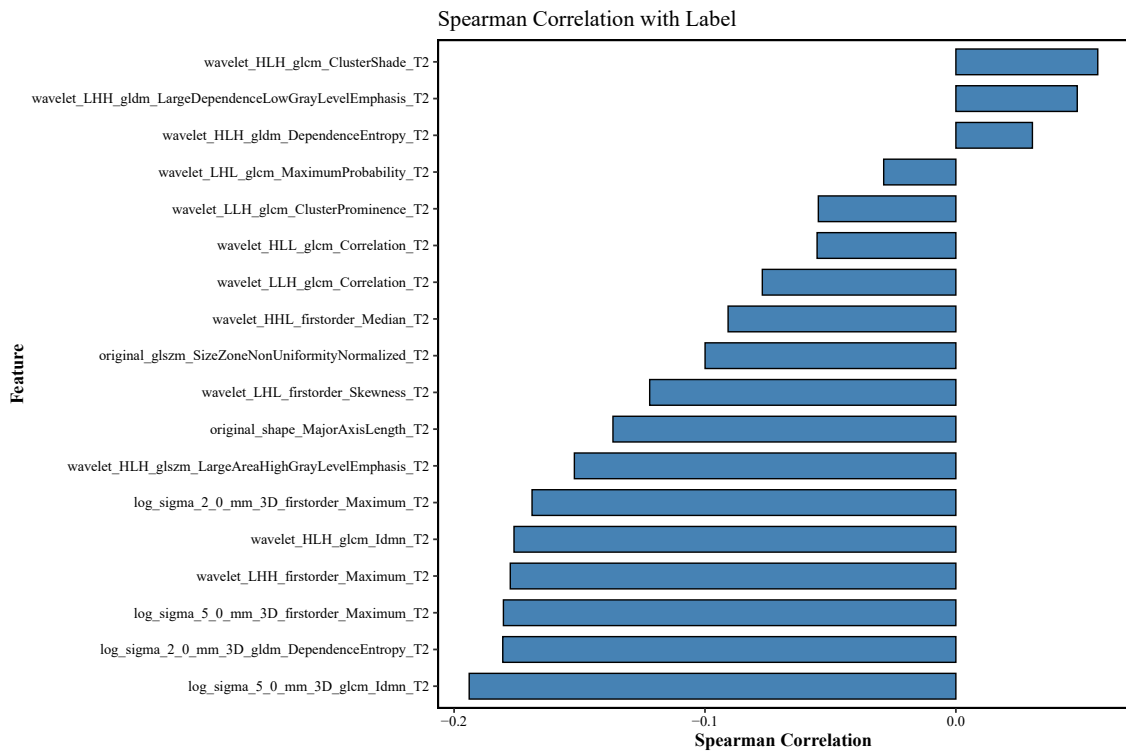


Figure S3 Feature selection results of radiomics-T2.

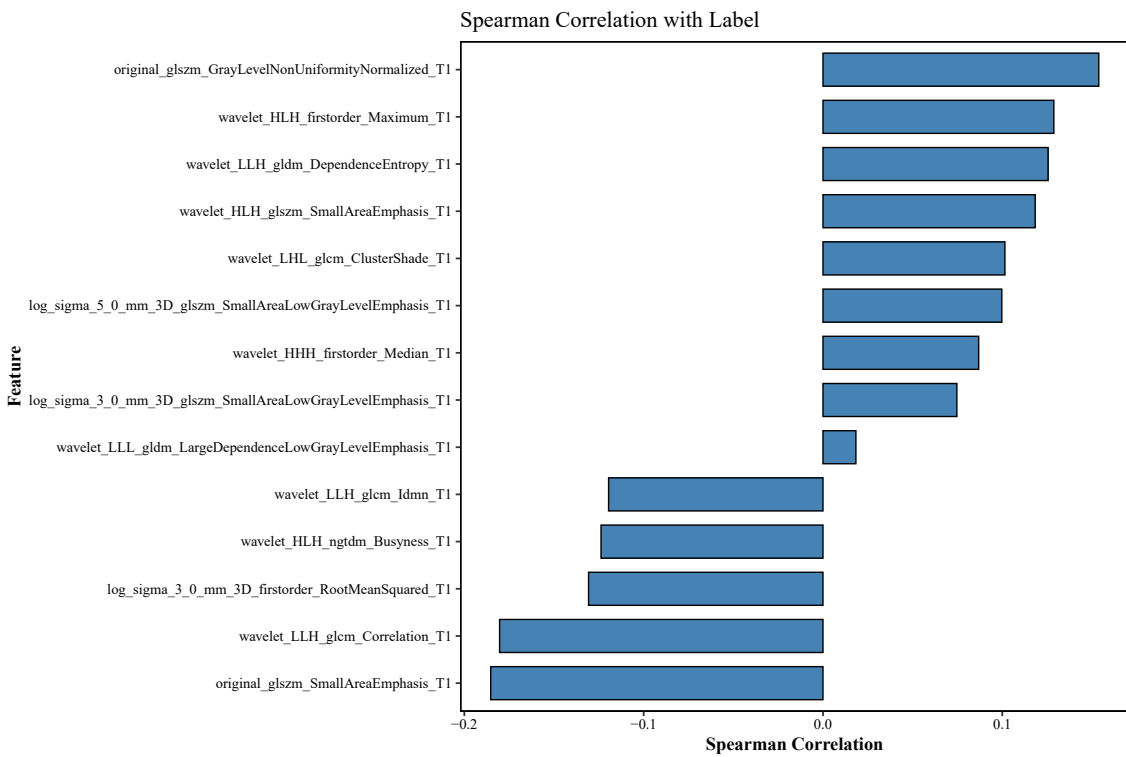


Figure S4 Feature selection results of radiomics-T1.

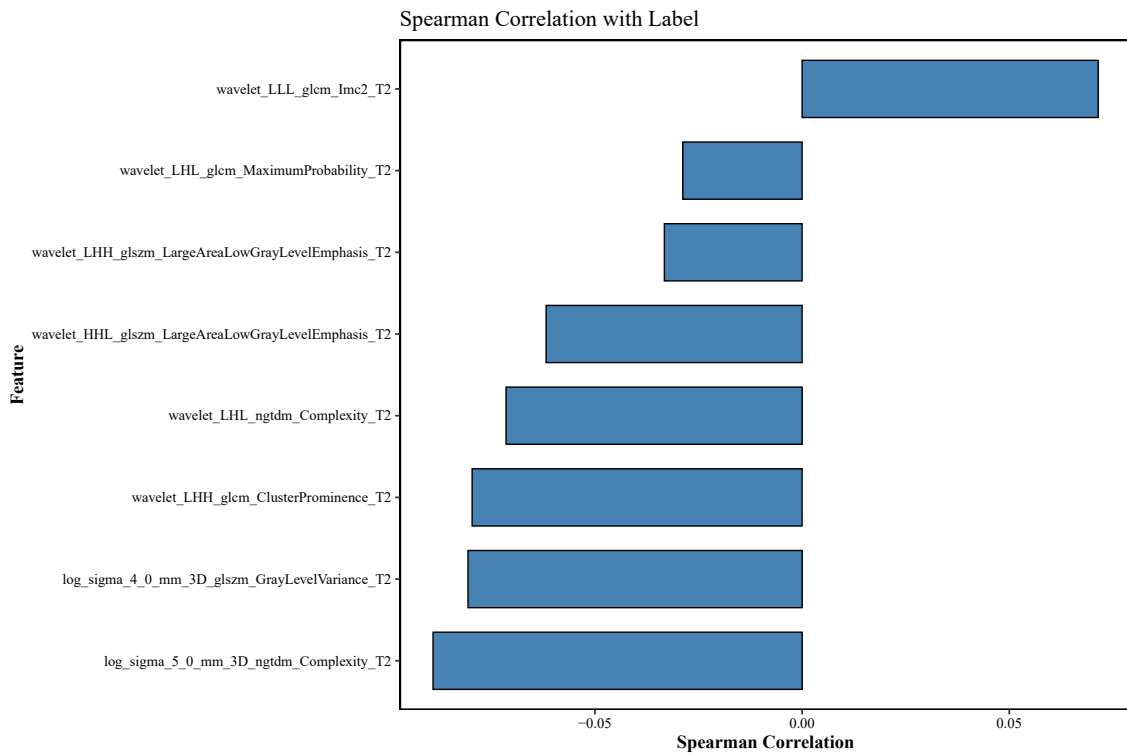


Figure S5 Feature selection results of radiomics-T1-T2-CE.

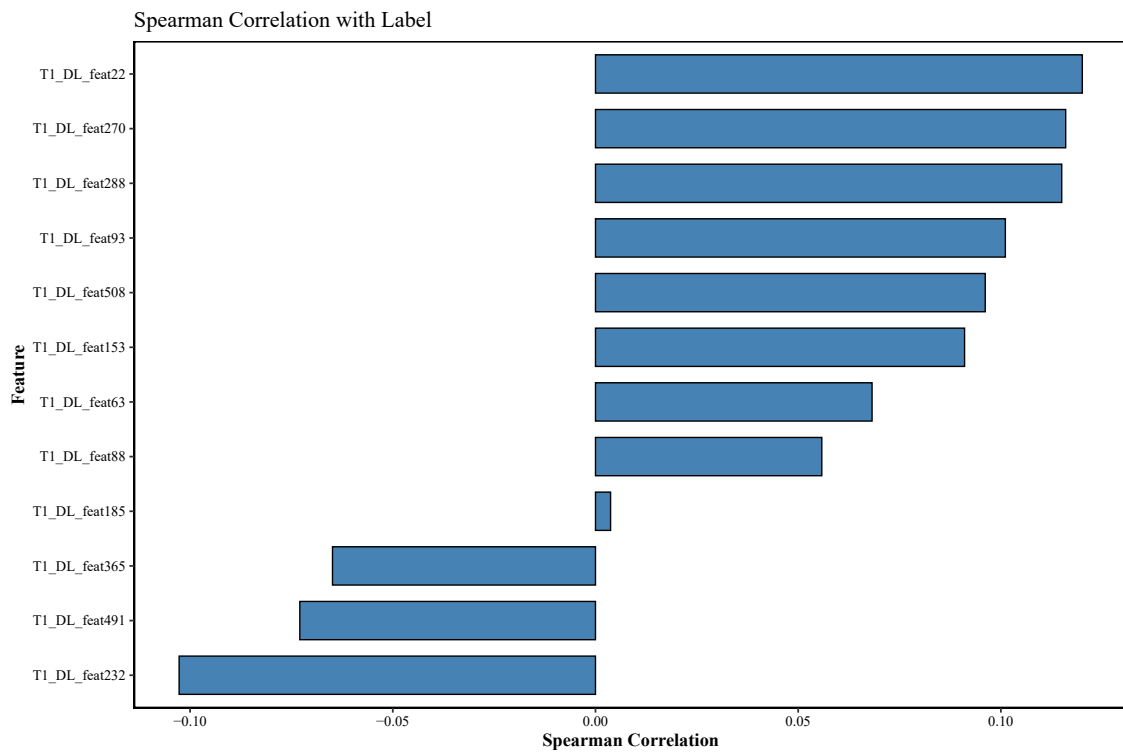


Figure S6 Feature selection results of DL-T1.

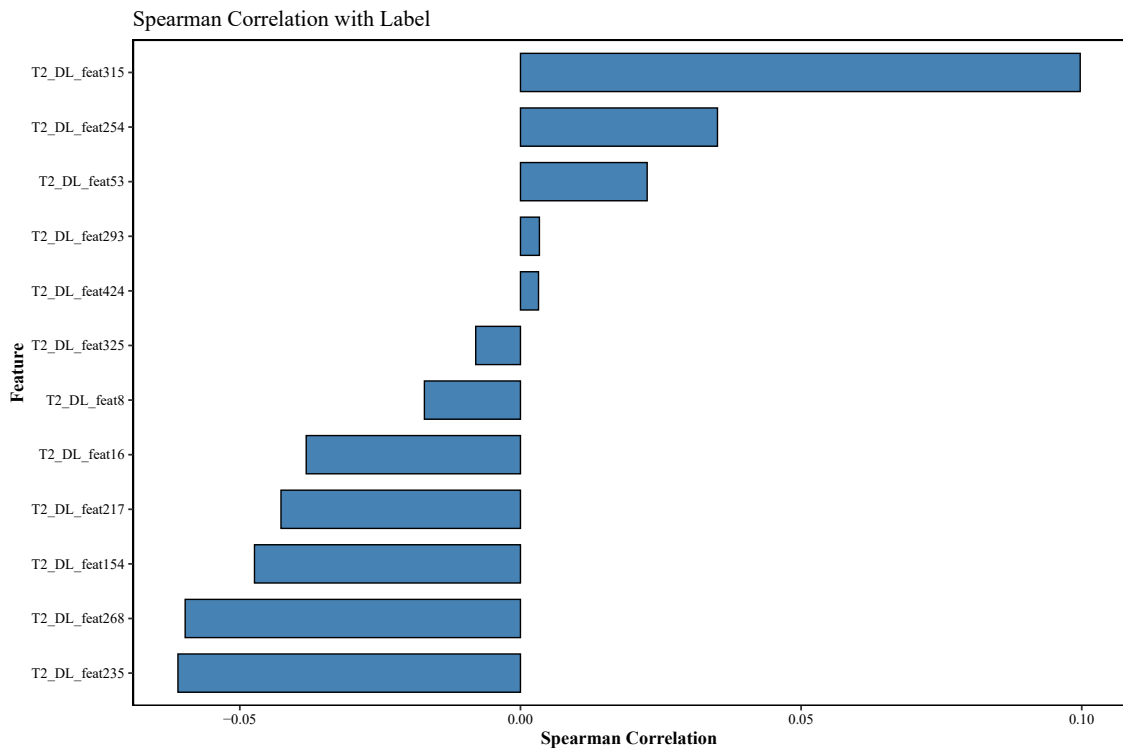


Figure S7 Feature selection results of DL-T2.

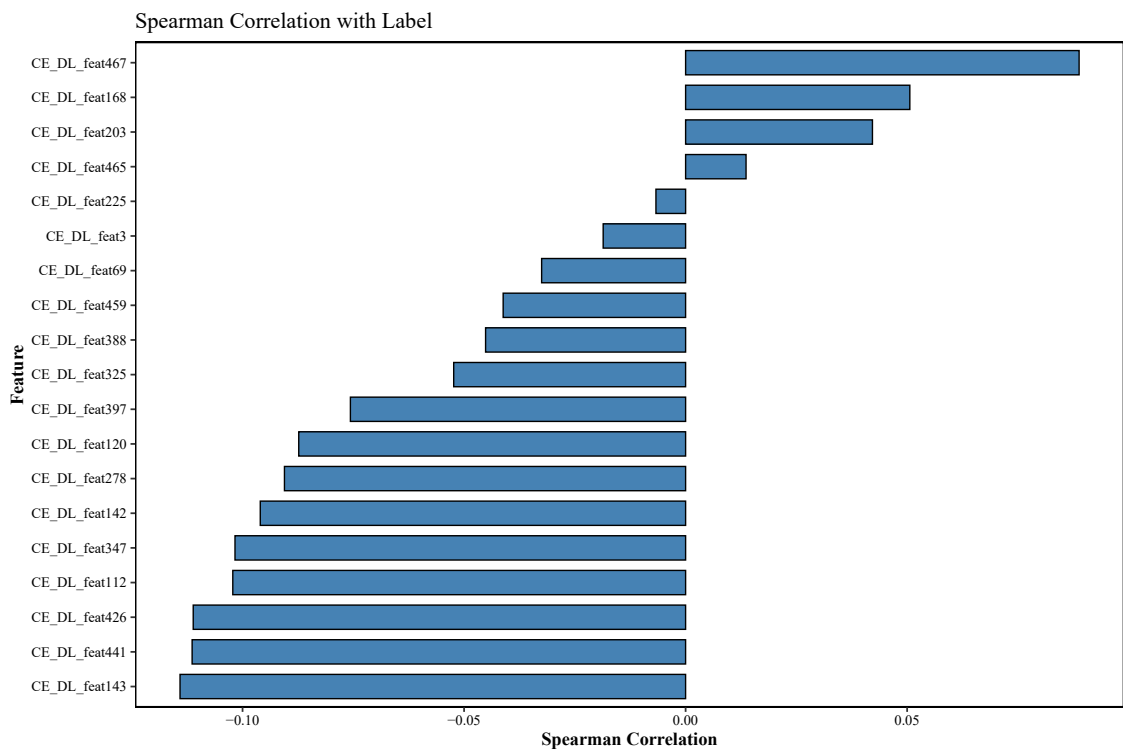


Figure S8 Feature selection results of DL-CE.

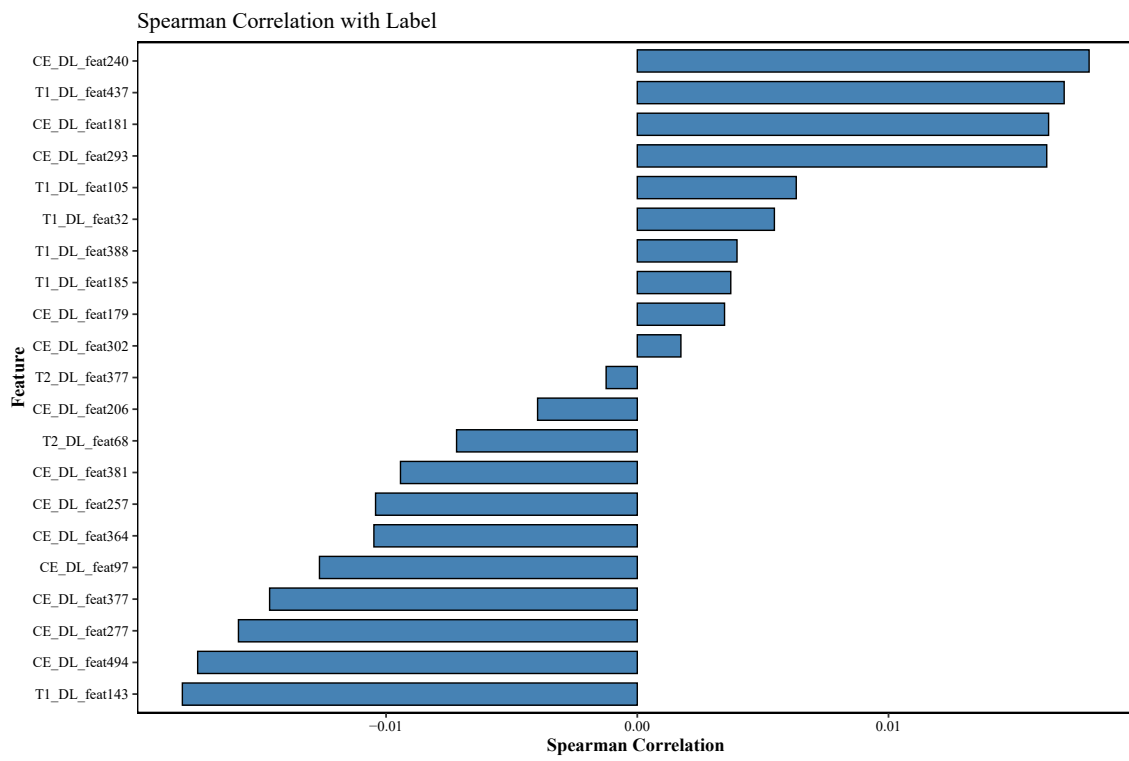


Figure S9 Feature selection results of DL-T1-T2-CE.