Online Table 1: Clinical and imaging variables in our study population

	All Cases (n = 1431)	Cases with Recanalization (n = 899)	Cases without Recanalization (n = 532)	P Value[a]
Clinical variables				
Age (median) (IQR) (yr)	71 (60–79)	71 (60–79)	70 (59–79)	.84[b]
Sex, female (No.) (%)	715 (50.0)	426 (47.4)	289 (54.3)	.04
Baseline NIHSS (median) (IQR)	14 (8–19)	14 (8–18)	15.5 (9–20)	<.01[c]
Time from onset to baseline (median) (IQR) (h)	2.8 (1.8–5.1)	2.5 (1.7–4.3)	3.3 (1.8–7.0)	<.01[b]
Reperfusion treatment (No.) (%)				
No reperfusion	795 (55.6)	461 (51.3)	334 (62.8)	<.01
IVT	459 (32.1)	295 (32.8)	164 (30.8)	
Endovascular	63 (4.4)	54 (6.0)	9 (1.7)	
IVT and endovascular	114 (8.0)	89 (9.9)	25 (4.7)	
Hypertension (No.) (%)	786 (54.9)	506 (56.3)	280 (52.6)	.41
Diabetes mellitus (No.) (%)	270 (18.9)	170 (18.9)	100 (18.8)	1.00
Hyperlipidemia (No.) (%)	873 (61.0)	572 (63.6)	301 (75.4)	.03
Coronary artery disease (No.) (%)	206 (14.4)	141 (15.7)	65 (12.2)	.20
Atrial fibrillation (No.) (%)	512 (35.8)	338 (37.6)	174 (32.7)	.18
Smoking (No.) (%)	262 (18.3)	183 (20.4)	79 (14.8)	.03
Statins (No.) (%)	281 (19.6)	173 (19.2)	108 (20.3)	.89
SBP at admission (median) (IQR) (mm Hg)	150.0 (130.0–167.0)	150.0 (130.0–163.0)	150.0 (131.0–174.0)	.02[b]
DBP at admission (median) (IQR) (mm Hg)	82.5 (70.0–95.0)	83.0 (70.0–94.0)	82.0 (69.0–96.0)	.71[b]
Glucose at admission (median) (IQR) (mg/dL)	120.6 (106.2–142.2)	120.6 (104.4–140.4)	120.6 (106.2–147.6)	.17[b]
TOAST (No.) (%)				
Atherosclerosis	158 (11.0)	87 (9.7)	71 (13.3)	.05
Cardiac	411 (28.7)	249 (27.7)	162 (30.5)	
Lacunar	135 (9.4)	96 (10.7)	39 (7.3)	
Dissection	124 (8.7)	74 (8.2)	52 (9.8)	
Unknown	280 (19.6)	179 (19.9)	101 (19.0)	
Other undetermined	97 (6.8)	77 (8.6)	20 (3.8)	
Multiple/coexisting	78 (5.5)	44 (4.9)	34 (6.4)	
Other	148 (10.3)	99 (11.0)	49 (9.2)	
Outcome (No.) (%)				
90-Day mRS = 0	161 (11.3)	141 (15.7)	20 (3.8)	<.01
90-Day mRS = 1	175 (12.2)	139 (15.5)	36 (6.8)	
90-Day mRS = 2	191 (13.3)	129 (14.3)	62 (11.7)	
90-Day mRS = 3	286 (20.0)	182 (20.2)	104 (19.5)	
90-Day mRS = 4	239 (16.7)	123 (13.7)	116 (21.8)	
90-Day mRS = 5	203 (14.2)	99 (11.0)	104 (19.5)	
90-Day mRS = 6	176 (12.3)	86 (9.6)	90 (16.9)	
Image variables				
NECT				
ASPECTS, median (IQR)	8 (6–9)	8 (6–9)	8 (5–10)	.41[c]
HMCAS, (No.) (%)	720 (50.3)	457 (50.8)	263 (49.4)	.88
CTA				
Site of occlusion (No.) (%)				
ICA	370 (25.9)	172 (19.1)	198 (37.2)	<.01
M1	810 (56.6)	520 (57.8)	290 (5.5)	.47
M2	789 (55.1)	500 (55.6)	289 (54.3)	.91
TIMI baseline (median) (IQR)	0 (0–0)	0 (0–0)	0 (0–0)	.73[c]
Collaterals (median) (IQR)	2 (1–3)	2 (1–3)	1 (1–2)	<.01[c]
CTA-CBS (median) (IQR)	7 (5–9)	7 (6–9)	6 (3,9)	<.01[c]
NASCET, infarct side (median) (IQR)	0.0 (0.0–90.0)	0.0 (0.0–50.0)	0.0 (0.0–100.0)	<.01[b]
NASCET, collateral side (median) (IQR)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	<.01[b]
CTP				
Ischemic side, right (No.) (%)	617 (43.1)	372 (41.4)	245 (46.1)	.23
Infarct core volume (median) (IQR) (mm^3)	24.21 (5.36–66.90)	19.67 (5.15–53.56)	35.22 (5.56–86.89)	<.01[b]
Penumbra volume (median) (IQR) (mm^3)	80.98 (35.06–124.0)	91.35 (41.05–133.0)	68.92 (28.63–112.9)	<.01[b]

Note:—HMCAS indicates hyperdense MCA sign; IVT, IV thrombolysis; DBP, diastolic blood pressure; SBP, systolic blood pressure; NECT, non-contrast enhanced CT.

[a] P values calculated using the χ^2 test unless otherwise indicated.

[b] P values calculated using the ANOVA test.

[c] P values calculated using the Kruskal-Wallis test.

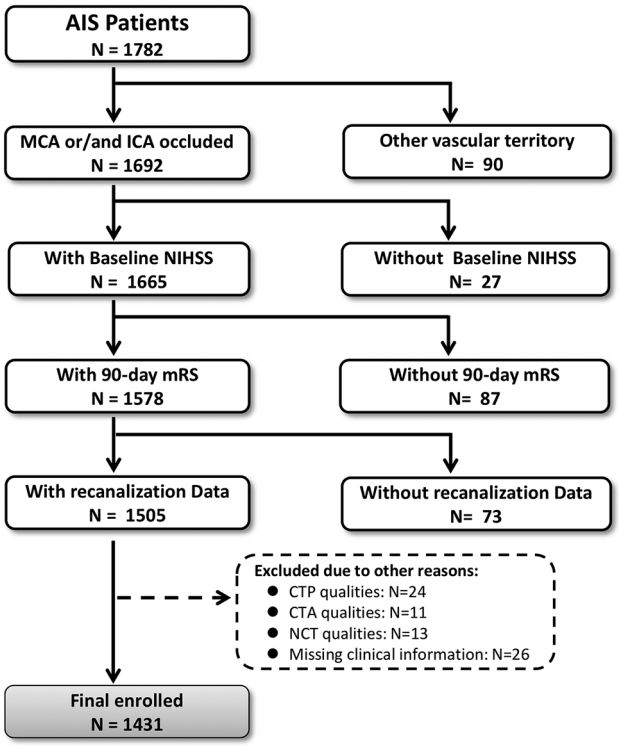
Online Table 2: Top 5 important clinical and imaging features selected on the basis of relative weight and frequency of appearance for each of the machine learning model

Prediction with 16 Clinical Variables			Prediction with 11 Image Variables			Prediction with 27 Image and Clinical Variables		
Top 5 Significant Variables	Absolute Weights	Relative Weights	Top 5 Significant Variables	Absolute Weights	Relative Weights	Top 5 Significant Variables	Absolute Weights	Relative Weights
Complete cohort ($n = 1431$)								
Baseline NIHSS	2494.17	0.50	PCT Infarct volume	1016.08	0.29	Baseline NIHSS	2224.60	0.41
Glucose at admission	759.93	0.15	CTA-CBS	738.35	0.21	Glucose at admission	888.11	0.16
Age	713.98	0.14	Recanalization	646.92	0.18	Age	551.94	0.10
Hypertension	148.00	0.03	PCT Penumbra volume	414.41	0.12	Recanalization	52.71	0.10
Cholesterol level	145	0.03	Collateral blood flow	123.34	0.04	PCT Infarct volume	212.40	0.04
Recanalized cases ($n = 899$)								
Baseline NIHSS	1556.41	0.37	PCT Infarct volume	831.80	0.36	Baseline NIHSS	1549.84	0.36
Glucose at admission	914.71	0.21	PCT Penumbra volume	444.98	0.19	Glucose at admission	907.07	0.21
Age	534.76	0.13	CTA-CBS	349.11	0.15	Age	589.38	0.14
Time from onset to baseline	355.55	0.08	Collateral blood flow	169.15	0.07	PCT Infarct volume	157.98	0.04
WBC	175.65	0.04	ASPECTS total	100.77	0.04	Collateral blood flow	130.16	0.03
Nonrecanalized cases ($n = 532$)								
Baseline NIHSS	923.90	0.65	PCT Infarct volume	477.28	0.47	Baseline NIHSS	1055.30	0.69
Age	168.61	0.12	Infarct side	121.59	0.12	Age	182.91	0.12
SBP at admission	53.85	0.04	PCT Penumbra volume	99.22	0.10	PCT Infarct volume	45.96	0.03
Glucose at admission	50.47	0.04	ASPECTS total	92.84	0.09	Time from onset to baseline	31.98	0.02
Time from onset to baseline	46.68	0.03	Baseline TIMI score	64.12	0.06	PCT Penumbra volume	29.43	0.02

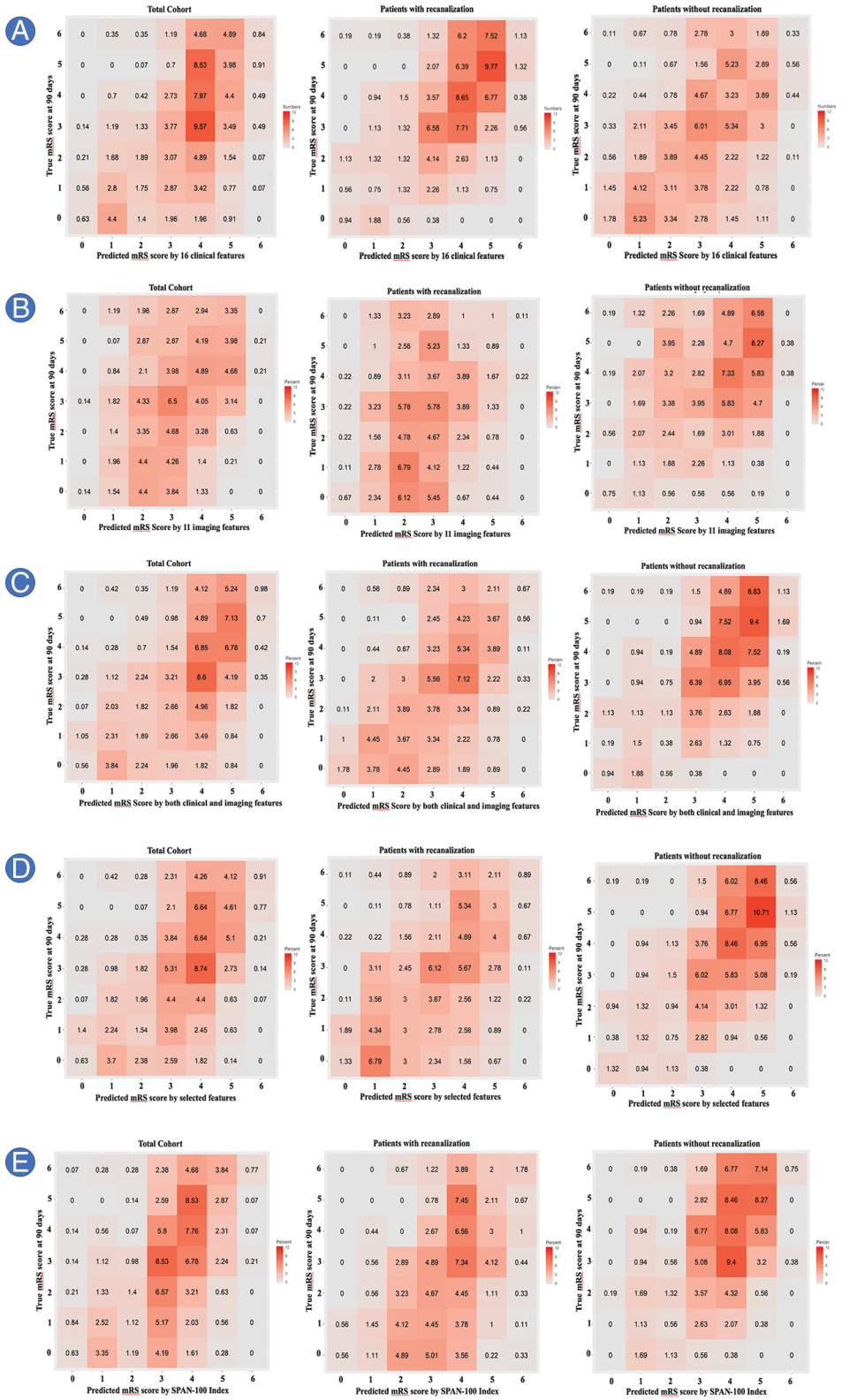
Note:—WBC indicates white blood cell; SBP, systolic blood pressure.

Online Table 3. Absolute and relative weight of best-performing clinical and imaging features ($n = 6$) for each of the machine learning models

Variables	Absolute Weights	Relative Weights
Complete cohort ($n = 1431$)		
Baseline NIHSS	2172.52	0.37
Glucose at admission	1230.35	0.21
Age	977.04	0.17
Infarct volume	671.08	0.11
CTA-CBS	432.09	0.07
Penumbra volume	372.31	0.06
Recanalized cases ($n = 899$)		
Baseline NIHSS	1440.05	0.32
Glucose at admission	1091.34	0.24
Age	1025.32	0.23
Infarct volume	371.57	0.08
CTA-CBS	298.38	0.07
Penumbra volume	295.97	0.06
Nonrecanalized cases ($n = 532$)		
Baseline NIHSS	953.10	0.67
Age	182.01	0.13
Infarct volume	86.76	0.06
Glucose at admission	84.00	0.06
CTA-CBS	60.22	0.04
Penumbra volume	48.60	0.03



ONLINE FIG 1. Flow chart of patients considered for this study.



ONLINE FIG 2. The comparison of confusion matrices of 90-day mRS scores predicted by GBM algorithms and the SPAN-100 index. Correct predictions correspond to the diagonal of matrix with the values indicating percentage of patients. As the scales become redder, the percentage of patients belonging to that category increases. The models with input from all 16 clinical features (*A*), all 11 imaging features (*B*), all 27 clinical and imaging features (*C*), and the 6 best-performing features (3 clinical and 3 imaging) (*D*) in the total study group (*first column*) and recanalized (*second column*) and nonrecanalized groups (*third column*), respectively. *E*, The confusion matrices of the SPAN-100 model. The models with both imaging and clinical features performed better than those with only clinical or imaging input. The model with the 6 best-performing features performed better than models with clinical features only, models with imaging features only, models with both clinical and imaging features, and the SPAN-100.