

	Modalities				Dataset: ADNI / Metric: <u>AUC</u>									
	I	G	C	B	Domain specific 1	Domain specific 2	ShaSpec	mmFormer	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
I,G					70.04±0.72	70.25±3.26	66.07±1.11	68.05±2.04	73.45±1.06	70.95±1.76	73.14±0.71	71.88±1.14	72.37±1.08	74.52±1.81
I,C					54.52±2.93	73.99±1.02	65.39±0.82	68.15±2.09	72.88±0.81	71.37±1.65	71.68±1.90	71.86±1.27	70.98±0.24	73.03±0.14
I,B					57.02±8.74	76.06±0.85	68.86±0.69	68.44±1.98	71.70±0.42	72.43±1.84	72.82±1.84	71.82±1.65	70.59±1.09	77.68±0.33
G,C					69.24±0.45	66.46±3.29	71.38±0.82	65.50±5.45	47.57±1.96	61.17±5.61	52.00±1.08	51.14±0.60	49.23±1.54	78.34±0.47
G,B					48.91±5.97	69.68±3.58	75.29±2.91	64.69±5.26	51.32±2.33	53.53±0.68	51.36±1.07	51.82±0.30	51.82±0.30	79.24±0.79
C,B					58.41±5.16	79.53±0.34	78.73±0.22	63.25±5.89	49.82±2.03	64.36±2.80	50.20±1.63	48.29±3.21	48.82±0.58	79.65±0.81
I,G,C					69.07±3.39	76.05±0.86	66.70±4.15	66.35±0.86	74.24±0.62	71.87±0.84	72.77±1.21	70.98±1.06	71.14±0.83	79.55±1.69
I,G,B					70.75±2.30	76.02±0.86	69.79±1.39	65.91±2.01	72.11±2.08	71.88±0.34	72.35±0.32	71.70±0.81	72.16±0.57	79.27±0.65
I,C,B					52.98±5.16	76.05±0.86	69.79±1.39	66.09±1.67	72.04±0.92	71.32±0.16	71.97±1.76	72.25±0.65	71.20±1.33	80.55±1.26
G,C,B					56.71±4.72	70.41±3.99	79.18±0.63	63.49±4.78	48.42±1.20	60.85±5.25	51.73±1.94	51.24±0.67	49.36±0.52	81.67±0.59
I,G,C,B					69.44±0.84	76.06±0.85	69.79±1.39	73.93±5.97	69.42±3.20	71.09±0.66	71.99±0.54	72.05±2.07	71.16±1.01	81.67±0.54

	Modalities				Dataset: ADNI / Metric: <u>ACC</u>									
	I	G	C	B	Domain specific 1	Domain specific 2	ShaSpec	mmFormer	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
I,G					54.81±1.45	53.59±2.98	48.09±0.66	49.85±4.92	59.94±0.40	60.32±0.95	59.94±1.00	59.29±0.95	60.41±0.87	61.08±0.78
I,C					44.35±1.99	57.15±1.58	47.62±1.81	51.96±4.23	54.53±0.66	50.14±1.05	52.19±2.90	52.38±3.46	53.13±1.97	56.49±2.55
I,B					40.80±2.94	57.61±1.86	50.98±2.09	51.45±3.53	52.57±2.06	51.17±2.88	52.47±4.11	53.87±2.75	49.67±0.80	60.41±0.26
G,C					51.91±1.39	52.85±2.47	52.85±2.65	49.58±4.45	38.38±3.03	46.03±5.42	40.34±0.61	35.76±6.24	38.84±2.42	60.60±0.26
G,B					45.01±1.30	52.66±3.63	58.54±2.97	48.45±4.56	42.20±1.78	39.40±2.91	40.52±2.52	36.88±5.04	36.88±5.04	63.59±1.60
C,B					44.63±0.92	63.68±0.48	59.10±2.69	47.71±4.49	39.68±2.38	44.54±0.82	40.15±2.08	43.98±0.00	37.91±0.80	60.50±0.82
I,G,C					55.12±2.38	54.72±0.28	49.30±3.17	46.49±3.57	54.06±1.98	60.97±0.95	61.34±0.61	53.50±2.25	60.97±1.32	63.21±1.73
I,G,B					56.12±2.38	55.28±3.44	52.85±0.53	47.15±4.63	54.44±2.26	53.03±1.95	54.15±1.06	53.97±1.08	53.59±1.26	62.28±2.75
I,C,B					43.79±0.69	60.97±2.60	52.85±0.53	47.18±4.63	52.29±1.47	49.86±1.50	52.38±1.79	52.38±1.99	49.67±1.17	64.05±1.78
G,C,B					45.28±1.85	53.87±3.35	62.09±3.27	46.38±4.24	33.43±4.41	43.32±6.74	37.25±1.99	40.99±2.26	34.64±1.95	65.36±1.38
I,G,C,B					52.10±0.99	55.64±1.86	52.84±0.53	58.92±5.68	57.24±0.35	58.82±0.82	61.44±1.61	55.18±2.42	59.52±1.00	66.11±1.14

	Modalities				Dataset: ADNI / Metric: <u>F1</u>									
	I	G	C	B	Domain specific 1	Domain specific 2	ShaSpec	mmFormer	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
I,G					52.92±0.17	52.75±3.91	45.86±1.55	40.25±7.03	60.03±0.88	60.59±1.05	61.06±0.79	58.75±0.83	61.04±0.95	61.05±1.03
I,C					25.65±6.58	57.36±1.45	47.68±0.80	44.31±8.97	54.45±0.90	51.88±1.30	52.72±3.39	51.84±0.96	53.32±1.47	54.16±2.01
I,B					28.78±1.32	57.93±2.04	49.82±2.00	45.82±9.33	51.20±2.64	52.64±2.57	53.36±2.96	52.70±3.47	50.38±1.31	58.50±0.94
G,C					50.54±1.38	51.62±3.34	50.29±0.36	39.45±5.47	27.85±1.89	36.77±6.42	29.33±0.46	29.57±3.65	27.49±2.87	59.44±0.49
G,B					31.21±1.71	51.41±4.30	56.32±4.83	35.63±1.44	29.82±1.48	32.41±1.55	28.29±1.05	20.91±0.60	20.91±0.60	61.65±1.71
C,B					24.78±6.24	63.46±0.35	55.46±4.06	33.09±5.43	29.57±1.99	33.22±0.72	27.20±3.53	20.36±0.00	29.11±3.83	59.13±1.75
I,G,C					48.59±5.44	53.86±3.84	48.99±2.59	26.88±9.21	54.31±0.88	61.82±0.21	61.07±1.04	51.33±1.38	61.30±1.07	61.98±1.04
I,G,B					55.46±2.05	54.82±4.18	51.80±0.99	28.19±8.29	53.70±2.43	52.46±1.64	52.54±0.88	52.80±1.92	52.75±0.91	59.45±3.14
I,C,B					25.53±4.83	61.34±2.48	51.80±0.99	27.87±9.08	52.64±1.49	50.14±0.84	52.03±2.22	52.41±1.31	50.61±0.47	61.60±1.46
G,C,B					24.95±6.49	52.84±4.04	60.57±2.64	25.99±9.90	26.86±1.99	40.40±6.88	29.38±0.79	31.59±1.93	27.99±2.13	64.15±1.69
I,G,C,B					49.76±1.95	57.93±2.04	51.80±0.99	53.64±9.09	57.27±0.44	59.58±0.77	61.38±1.32	53.26±3.30	59.55±1.60	64.73±2.01

< Performance on ADNI – AUC / ACC / F1 >

Modalities				Dataset: MIMIC / Metric: <u>AUC</u>					
	L	N	C	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
L,N				56.31±1.00	57.10±0.78	58.11±0.83	62.64±1.81	58.33±0.36	64.39 ± 0.28
L,C				60.43±0.76	65.12±2.19	60.75±0.20	65.14±0.34	62.52±0.39	66.27 ± 0.17
N,C				61.37±1.33	62.18±0.77	61.99±0.25	61.34±0.41	61.74±0.31	64.27 ± 0.87
L,N,C				60.66±0.65	67.35±0.18	61.29±0.32	65.18±0.60	61.67±0.15	69.87 ± 0.81

Modalities				Dataset: MIMIC / Metric: <u>ACC</u>					
	L	N	C	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
L,N				60.05±1.96	57.96±7.25	62.72±2.36	63.80±1.99	60.50±3.82	76.14 ± 0.73
L,C				64.13±3.39	62.47±2.01	60.13±1.97	64.89±1.46	63.31±3.21	75.15 ± 0.55
N,C				60.97±2.36	62.23±2.81	59.41±4.15	64.27±4.05	64.77±0.36	74.96 ± 1.59
L,N,C				63.11±2.17	64.62±0.44	62.87±2.50	61.61±2.37	63.90±1.72	76.81 ± 0.90

Modalities				Dataset: MIMIC / Metric: <u>F1</u>					
	L	N	C	TF	MuT	MAG	LIMoE	FuseMoE	Flex-MoE
L,N				50.81±0.47	50.61±2.77	53.46±0.26	55.19±1.52	52.79±1.32	51.29 ± 1.83
L,C				55.09±1.29	56.33±1.00	54.07±0.98	57.32±0.52	54.78±0.91	53.85 ± 1.43
N,C				54.37±0.41	55.33±1.04	54.15±1.79	54.59±0.65	55.54±0.60	53.02 ± 3.99
L,N,C				54.19±0.38	58.43±0.22	55.04±1.41	55.79±0.94	55.38±0.16	53.19 ± 1.28

< Performance on MIMIC – AUC / ACC / F1 >

Model	Configuration	Mean Time (s)	Variance	FLOPs	GFLOPs	Parameters
Flex-MoE	I-G	12.73	0.17	59,063,531,520	59.06	36,516,807
	I-G-C	14.53	0.05	59,065,107,968	59.06	36,685,511
	I-G-C-B	16.00	0.48	59,066,258,432	59.07	36,916,167
FuseMOE	I-G	18.68	0.53	59,524,507,708	59.52	188,493,251
	I-G-C	18.68	0.53	59,737,697,852	59.74	264,680,387
	I-G-C-B	20.71	0.30	59,761,718,332	59.76	340,929,475
MAGGate	I-G	11.64	0.39	59,063,069,184	59.06	36,400,963
	I-G-C	14.55	0.29	59,064,052,224	59.06	36,454,595
	I-G-C-B	16.04	0.18	59,064,347,136	59.06	36,504,643
MuT	I-G	12.85	0.29	59,235,887,104	59.24	37,343,683
	I-G-C	23.28	0.25	59,586,117,632	59.59	40,185,923
	I-G-C-B	38.70	2.17	60,118,246,400	60.12	46,409,667
TF	I-G	12.40	0.19	59,049,935,060	59.05	33,370,898
	I-G-C	13.80	0.04	59,054,191,028	59.05	34,424,162
	I-G-C-B	15.83	0.43	59,394,389,396	59.39	119,483,922
LiMOE	I-G	12.65	0.24	59,235,100,672	59.24	37,344,707
	I-G-C	14.64	0.33	59,322,461,696	59.32	37,960,643
	I-G-C-B	17.96	0.46	59,409,396,736	59.41	38,638,531

< Computational Efficiency and Scalability >