

TABLE B1

MODEL HYPERPARAMETERS OF MEDM2T

Component	Model	Parameter	Value
Static Encoder	MLP	Hidden Dim Dropout	[128, 128] / [128, 128] / [512, 512] 0.1
Static Decoder	MLP	Hidden Dim Dropout	[64] / [64] / [256] 0.5
Labs Encoder	Time Window Embedding Layer	Embed Dim	128 / 512 / 512
	Bi-LSTM	Hidden Dim Num Layers	64 / 256 / 256 2
	MLP	Hidden Dim Dropout	[128, 128] / [512, 512] / [512, 512] 0.05
Labs Decoder	MLP	Hidden Dim Dropout	[64] / [256] / [256] 0.1
Vitals Encoder	Shared Encoder (1-Layer MLP)	Embed Dim Dropout	512 0.05
		Num Blocks Num Heads Dropout	1 64 0.1
	Bi-Modal Attention		
Vitals Decoder	MLP	Hidden Dim Dropout	[512] 0.1
Vitals(C) Encoder	Time Window Embedding Layer	Embed Dim	256
	Bi-LSTM	Hidden Dim Num Layers	128 2
	MLP	Hidden Dim Dropout	[256, 256] 0.1
Vitals(C) Decoder	MLP	Hidden Dim Dropout	[128] 0.1
Vitals (N) Encoder	Self-Attention (High-Freq 1)	Embed Dim Num Heads Dropout	8 4 0.05
	ResNet (High-Freq 1)	Blocks Dim Kernel Size Dropout	[[16, 12], [32, 6]] 3 0.3
	MLP (High-Freq 1)	Hidden Dim Dropout	[128] 0.1
Vitals (N) Encoder	Self-Attention (High-Freq 2)	Embed Dim Num Heads Dropout	8 4 0.05
	ResNet (High-Freq 2)	Blocks Dim Kernel Size Dropout	[[32, 24], [64, 12]] 3 0.3
	MLP (High-Freq 2)	Hidden Dim Dropout	[256] 0.1
Vitals (N) Encoder	ResNet (Low-Freq)	Blocks Dim Kernel Size Dropout	[[384, 24], [192, 12]] 3 0.3
	MLP (Low-Freq)	Hidden Dim Dropout	[256] 0.1
Vitals (N) Decoder	MLP	Hidden Dim	[128]
		Dropout	0.25

ECG Encoder	ResNet	Blocks Dim	[[384, 5]]
		Kernel Size	3
	MLP	Dropout	0.3
		Hidden Dim	[256] / [256] / [512]
ECG Decoder	MLP	Dropout	0.05
		Hidden Dim	[128] / [128] / [256]
ECG (T) Encoder	Embedding Layer	Dropout	0.1
		Embed Dim	256
	MLP	Hidden Dim	[256, 256]
		Dropout	0.25
ECG (T) Decoder	MLP	Hidden Dim	[128]
		Dropout	0.25
ECG (S) Encoder	ResNet	Blocks Dim	[[64, 640], [128, 320], [196, 160], [256, 40], [320, 20]]
		Kernel Size	5
		Dropout	0.3
	MLP	Hidden Dim	[640]
ECG (S) Decoder	MLP	Dropout	0.1
		Hidden Dim	[320]
ECG (F) Encoder	MLP	Dropout	0.1
		Hidden Dim	[512] / [128] / [256]
ECG (F) Decoder	MLP	Dropout	0.05
		Hidden Dim	[256] / [64] / [128]
ECG (Fusion) Encoder	Shared Encoder (1-Layer MLP)	Dropout	0.05
		Embed Dim	256
	Bi-Modal Attention	Num Blocks	1
		Num Heads	64
ECG (Fusion) Decoder	MLP	Dropout	0.1
		Hidden Dim	[768]
Multimodal Encoder	Shared Encoder (1-Layer MLP)	Dropout	0.1
		Embed Dim	512
	Bi-Modal Attention	Num Blocks	1
		Num Heads	64
Multimodal Decoder	MLP	Dropout	0.1
		Hidden Dim	[1536] / [3840] / [3840]

When values differ across tasks, they are reported in the format Task 1 / Task 2 / Task 3; Vitals (C), Vitals (N) denote categorical and numerical vitals; ECG (T), ECG (S), ECG (F) denote ECG text, signals and features; ECG (Fusion) is a fusion of ECG text, signals and features.