TABLE I THE ARCHITECTURE OF FNIRS BRANCH AND EEG BRANCH IN GENERATOR. IN GBLOCK, WE LISTED THE DETAIL OF LAYERS IN ONE BRANCH AND THEN THOSE OF 3 BRANCHES AFTER CONCATENATING FOR SIMPLICITY.

Branch	Module	Layer	Kernel size	Padding size	Activation	Scale Factor	Mode	Align Corners
EEG	-	***Upsample1***	-	-	-	(2,2)	bilinear	False
		Conv1	(5,5)	(2,2)	Relu	-	-	-
	Gbloke	***Upsample***	-	-	-	(2,2)	bilinear	False
		Conv	(5,5)	(2,2)	-	-	-	-
		BatchNorm	-	-	Relu	-	-	-
		Upsample5	-	-	-	(1,4)	bilinear	False
	-	***Conv5***	(1,25)	(0,0)	-	-	-	-
		BatchNorm5	-	-	Relu	-	-	-
		Conv6	(3,1)	(0,0)	tanh	-	-	-
fNIRS	-	***Upsample1***	-	-	-	(2,2)	bilinear	False
		Conv1	(5,5)	(2,2)	Relu	-	-	-
	Gblock	***Upsample***	-	-	-	(2,2)	bilinear	False
		Conv	(5,5)	(2,2)	-	-	-	-
		BatchNorm	-	-	Relu	-	-	-
		Conv5	(1,10)	(0,4)	-	-	-	-
	-	***BatchNorm5***	-	-	Relu	-	-	-
		Conv6	(17,1)	(0,0)	tanh	-	-	-

TABLE II THE ARCHITECTURE OF FNIRS BRANCH AND EEG BRANCH IN DISCRIMINATOR.

Module	Layer	EEG		fNIRS	
		Kernel size	*Parameter*	*Kernel size*	*Parameter*
Spatio-temporal information extraction	***Conv2d***	(1, 65)	Padding	(1, 8)	Padding
	BatchNorm	-	-	-	-
	Conv2d	(62, 1)	-	(48, 1)	-
	BatchNorm	-	ELU	-	ELU
	AvgPool	(1, 8)	-	(1, 3)	-
	Dropout	-	P=0.5	-	P=0.5
Depthwise separable convolution	***Depth Conv***	(1, 33)	-	(1, 2)	-
	Point Conv	(1, 1)	-	(1, 1)	-
	BatchNorm	-	ELU	-	ELU
	AvgPool	(1, 16)	P=0.5	(1, 3)	P=0.5
Output features	***Output dimension***	(16, 7)		(16, 4)	
	Flatten	(1, 112)		(1, 64)	