Appendix A

Table 1

Details of the Parameterization of The Multiscale Hybrid Evolutionary Model at Various Scales

Layer name	Output Size	MSHEA-N	MSHEA-M	MSHEA-T	MSHEA-S
Stem	[256,250,64]	conv1d 3, 64 − d, BN	conv1d 3, 64 − d, BN	conv1d 3, 64 − d, BN	conv1d 3, 64 − d, BN
Stage 1	[256, 250, 64]	conv1d 2, 64 − d, LN [dim 64 sam.head 4 sam.ep.r 2] *1	conv1d 2, 64 − d, LN [dim 64 sam.head 4 sam.ep.r 2] *1	conv1d 2, 64 − d, LN [dim 64 sam.head 4 sam.ep.r 2] *2	conv1d 2, 64 − d, LN [dim 64 sam.head 4 sam.ep.r 2] *2
Stage 2	[256, 125, 128]	conv1d 3, 128-d, LN [dim 128 sam.head 4 sam.ep.r 2] *1	conv1d 3, 128-d, LN [dim 128 sam.head. 4 sam.ep r. 2] *1	conv1d 3, 128-d, LN [dim 128 sam.head. 4 sam.ep r. 2] *2	conv1d 3, 128-d, LN [dim 128 sam.head. 4 sam.ep r. 2] *2
Stage 3	[256, 63, 256]	conv1d 3, 256-d, LN [dim 256 sam.head 4 sam.ep.r 2 msa. head 8] *1	conv1d 3, 256-d, LN [dim 256 sam.head 4 sam.ep.r 2 msa. head 8] *3	conv1d 3, 256-d, LN [dim 256 sam.head 4 sam.ep.r 2 msa. head 8] *6	conv1d 3, 256-d, LN [dim 256 sam.head 4 sam.ep r 2 msa. head 8] *18
Stage 4	[256, 32, 512]	conv1d 3, 512-d, LN [dim 512 msa. head 16] *1	conv1d 3, 512-d, LN [dim 512 msa. head 16] *1	conv1d 3, 512-d, LN [dim 512 msa. head 16] *2	conv1d 3, 512-d, LN [dim 512 msa. head 16] *2
AdaptiveAvgPool1d, Flatten, 1-d, Sigmoid					

The model is composed of a Stem layer and Stage 1 through Stage 4. The Stem layer includes a 1D convolution with a stride of 3, a convolution layer with an output dimension of 64 (64-d), and a Batch Normalization (BN) layer. Stages 1-4 each consist of two MSFA blocks, one MSFA_MSA block, and one MSA block. "dim 64" denotes an embedding dimension of 64, and "sam.ep.r 2" indicates an expansion rate of 2 for the FA module.

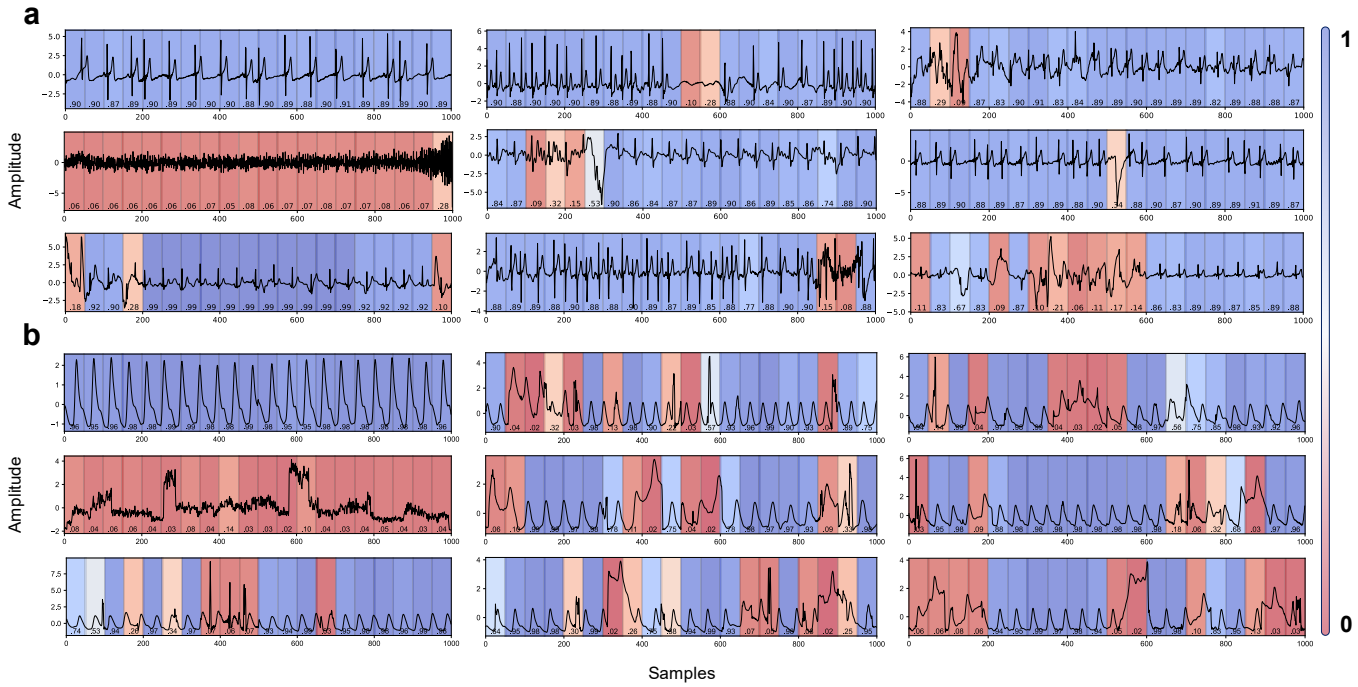

Fig. 1. Fine-grained scores from different quality segments. (a) ECG; (b) PPG.