

Table. Task reproduction

Index	Illustration	Task (number of repetitions)	Dataset(Proportion of positive and negative samples)	Model	Epoch	Learning rate	Batch	
A	Fig. 2a	Alignment of label& IS and AS (1)	2-3:3600 samples(1:1)	RDNet41	100	2×10^{-4}	512	
B	Figs. 2c-f Supplementary Fig. 13	Alignment of label&OS and AS (1)	2-3:9000 samples(1:1)					
C	Supplementary Figs. 14a-f Supplementary Figs. 19	Alignment of label&OS and AS (3)						
D	Figs. 2g, 2i	Alignment of label&OS and AS(transfer training final layer) (1)	2-2:500 samples(1:1)		1000	8×10^{-2}		
E	Supplementary Figs. 11h-j	Alignment of label&OS and AS(transfer training final layer) (3)						
F	Figs. 2g, 2 h	Alignment of label&OS and AS (training from start) (1)						
G	Fig. 2g	Alignment of label&OS and AS (globally transfer training) (1)			500	1×10^{-6}		
H	Supplementary Figs. 15a-e	Alignment of label&OS and AS (3)						
I	Supplementary Figs. 15f-j							3-1:10000 samples(1:1)
J	Supplementary Figs. 16c-h		3-2:14000 samples(1:1)					
K	Supplementary Fig. 20d	Arc detection based on OS (1)	2-2:508 samples(1:1)+ 2-3:9626 samples(1:1)	RSNet1	100	1×10^{-6}	128	
L	Supplementary Fig. 20e					1×10^{-5}		256
M	Supplementary Fig. 20f							
N	Figs. 3a-c	Alignment of label&OS and AS (3)	2-3:9000 samples(1:1)	RRNet18 RRNet10 RMNet MNet4 MNet3 RDNet41 RDNet13 MNet2_64 MNet2_32 MNet2_16 MNet2_8 MNet2_4 MNet2_2 MNet2_1		2×10^{-4}	512	
O	Figs. 3d-f Fig. 4a			2-3:50-9000 samples(1:1)				RDNet13
P	Supplementary Fig. 24		MNet2_1					2×10^{-4} 2×10^{-2} 1×10^{-1} 5×10^{-1}
Q	Figs. 3g-i		2-3:5000 samples(1:8 - 8:1)					RDNet41
R	Supplementary Fig. 26 Fig. 4a		2-3:50-9000 samples(1:1)	/		/	/	/
S	Figs. 4b-c Supplementary Fig. 28	Alignment of label&AS and AS (3)	Generated data: 9000 samples(1:1)	GRU		200	1×10^{-2}	512
T	Supplementary Figs. 30a-c	Alignment of label&IS and IS (3)	2-3: 5000 samples(1:1)	RSNet1		100	2×10^{-3}	128
U	Supplementary Figs. 30d-f	Alignment of label&OS and OS (3)	2-3: 9000 samples(1:1)		MLP		1×10^{-3}	
V	Supplementary Figs. 30g-i	Alignment of label&OS and OS feature (3)						
W	Figs. 4d-f Supplementary Figs. 30j-l	Alignment of label&function output and function input (3)	Generated data: 500(1:1)	SVM	/	/	/	
X	Supplementary Fig. 31	Alignment of function output and function input (3)	Generated data: 500		/	/	/	
Y	Figs. 4g-I Supplementary Fig. 29	Alignment of feature vector&OS and OS (3)	2-3: 9000 samples(1:1)	RANet	50	1×10^{-4}	128	