

Table S1: Parameter settings for experiment results reported in Table 4 of the main paper

Dataset	Encoder layers	# Epoch	Mini-batch size	learning rate	p (%)	r
KDDCup	[60, 30, 10]	200	1024	0.001	20	10
MNIST	[1028, 512, 128, 60, 10]	500	1024	0.0005	20	5
MNIST (raw pixel)	[512, 256, 128, 60, 10]	300	128	0.001	10	10
CIFAR-10	[1028, 512, 128, 60, 10]	500	1024	0.001	10	5
CatVsDog	[1028, 512, 128, 60, 30]	500	500	0.001	25	5

Table S2: Parameter settings for experiment results reported in Table 6 of the main paper

Dataset	Encoder layers	# Epoch	Mini-batch size	learning rate	p (%)	r
Arson010	[1028, 512, 128, 60, 10]	200	128	0.0001	10	10
Arson022	[1028, 512, 128, 60, 10]	200	128	0.0001	5	20
Arson035	[1028, 512, 128, 60, 10]	200	64	0.0001	25	40
Arrest001	[1028, 512, 128, 60, 10]	200	128	0.0001	10	10
Arrest007	[1028, 512, 128, 60, 10]	250	128	0.0001	20	20
Burglary005	[1028, 512, 128, 60, 10]	200	200	0.0001	15	10
Burglary017	[1028, 512, 128, 60, 10]	200	64	0.0001	30	5
Burglary018	[1028, 512, 128, 60, 10]	200	32	0.0001	30	5
Burglary079	[1028, 512, 128, 60, 10]	200	128	0.0001	20	20
Fighting018	[1028, 512, 128, 60, 10]	200	64	0.0001	20	10
Fighting033	[1028, 512, 128, 60, 10]	200	32	0.0001	30	10
Fighting042	[1028, 512, 128, 60, 10]	200	64	0.0001	35	10

Table S3: Detailed AUROC for the 12 randomly selected videos from UCF-Crime dataset

Video	Crime scene	# Segment	Anomaly Ratio	AUROC (%)	Average AUROC (%)
Arson010	Arson	197	0.11	72.5 ± 1.4	67.8
Arson022	Arson	540	0.06	72.0 ± 2.2	
Arson035	Arson	89	0.21	60.0 ± 5.6	
Arrest001	Arrest	148	0.13	75.0 ± 1.1	70.6
Arrest007	Arrest	196	0.23	66.1 ± 2.8	
Burglary005	Burglary	483	0.21	83.0 ± 1.4	79.2
Burglary017	Burglary	132	0.21	70.0 ± 1.0	
Burglary018	Burglary	70	0.3	85.2 ± 1.4	
Burglary079	Burglary	928	0.20	78.7 ± 1.2	
Fighting018	Fighting	86	0.25	81.0 ± 0.4	77.1
Fighting033	Fighting	69	0.25	86.9 ± 5.2	
Fighting042	Fighting	139	0.28	63.4 ± 2.4	

Table S4: Parameter settings for experiment results reported in Table 5 of the main paper.

Dataset	Encoder layers	# Epoch	Mini-batch size	learning rate	p (%)	r
Abuse	[1028, 512, 128, 60, 10]	100	128	0.0001	25	10
Arrest	[1028, 512, 128, 60, 10]	100	16	0.0001	5	20
Arson	[1028, 512, 128, 60, 10]	100	64	0.0001	35	20
Assault	[1028, 512, 128, 60, 10]	100	32	0.0001	30	15
Burglary	[1028, 512, 128, 60, 10]	100	32	0.0001	30	20
Explosion	[1028, 512, 128, 60, 10]	100	128	0.0001	25	5
Fighting	[1028, 512, 128, 60, 10]	100	128	0.0001	25	5
Road Accident	[1028, 512, 128, 60, 10]	100	128	0.0001	20	30
Robbery	[1028, 512, 128, 60, 10]	100	64	0.0001	20	30
Shooting	[1028, 512, 128, 60, 10]	100	128	0.0001	10	10
Shoplifting	[1028, 512, 128, 60, 10]	100	128	0.0001	25	10
Stealing	[1028, 512, 128, 60, 10]	100	32	0.0001	25	15
Vandalism	[1028, 512, 128, 60, 10]	100	32	0.0001	25	15

Table S5: Parameters used for distribution clustering

Dataset	thres	min_clus	max_dist
MNIST	0.1	7	1.4
CIFAR-10	0.06	5	1.4
CatVsDog	0.06	5	1.4
UCF-Crime	0.05	4	1.5