	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.662	0.781	0.674	0.728	0.692	0.692	0.692	0.692	0.689	0.746	0.674	0.675	0.677
	IF	0.594	0.746	0.619	0.587	0.631	0.549	0.631	0.631	0.631	0.590	0.619	0.615	0.608
	ABOD	0.652	0.794	0.678	0.725	0.689	0.691	0.689	0.689	0.681	0.772	0.678	0.680	0.663
	COPOD	0.892	0.957	0.902	0.919	0.901	0.864	0.901	0.901	0.914	0.867	0.902	0.925	0.947
	AE	0.687	0.810	0.716	0.731	0.716	0.695	0.697	0.705	0.727	0.744	0.714	0.698	0.699
	OCSVM	0.577	0.768	0.577	0.648	0.576	0.584	0.576	0.576	0.581	0.659	0.577	0.585	0.638
Energy C	LOF	0.709	0.770	0.707	0.717	0.706	0.688	0.739	0.739	0.748	0.770	0.705	0.706	0.685
	IF	0.642	0.684	0.615	0.648	0.668	0.584	0.681	0.681	0.677	0.684	0.668	0.671	0.601
	ABOD	0.704	0.810	0.724	0.709	0.709	0.700	0.732	0.732	0.736	0.810	0.708	0.706	0.694
	COPOD	0.854	0.870	0.853	0.896	0.866	0.866	0.866	0.866	0.876	0.870	0.866	0.871	0.861
	AE	0.756	0.812	0.757	0.758	0.758	0.735	0.778	0.778	0.791	0.819	0.768	0.739	0.741
	OCSVM	0.573	0.672	0.575	0.714	0.572	0.590	0.571	0.571	0.632	0.672	0.572	0.572	0.623
Energy R	LOF	0.704	0.625	0.719	0.707	0.742	0.676	0.742	0.742	0.765	0.685	0.719	0.718	0.733
	IF	0.641	0.710	0.648	0.652	0.659	0.600	0.659	0.659	0.660	0.621	0.648	0.645	0.650
	ABOD	0.687	0.691	0.728	0.699	0.745	0.678	0.745	0.745	0.745	0.769	0.728	0.727	0.731
	COPOD	0.908	0.957	0.914	0.970	0.915	0.889	0.915	0.915	0.932	0.903	0.914	0.919	0.950
	AE	0.726	0.705	0.761	0.751	0.778	0.707	0.789	0.770	0.792	0.719	0.761	0.747	0.775
	OCSVM	0.579	0.659	0.579	0.700	0.579	0.589	0.579	0.579	0.597	0.691	0.579	0.580	0.667
NSLKDD A	LOF	0.598	0.693	0.732	0.415	0.633	0.664	0.625	0.623	0.551	0.691	0.634	0.630	0.586
	IF	0.835	0.839	0.615	0.730	0.798	0.825	0.792	0.792	0.898	0.786	0.789	0.815	0.890
	ABOD	0.780	0.764	0.875	0.595	0.763	0.735	0.765	0.736	0.750	0.774	0.758	0.744	0.764
	COPOD	0.740	0.602	0.676	0.623	0.679	0.693	0.692	0.688	0.729	0.719	0.691	0.683	0.724
	AE	0.882	0.857	0.829	0.787	0.859	0.867	0.847	0.845	0.887	0.789	0.823	0.843	0.898
	OCSVM	0.737	0.883	0.777	0.751	0.769	0.782	0.756	0.759	0.814	0.720	0.762	0.778	0.816
NSLKDD C	LOF	0.593	0.644	0.580	0.644	0.606	0.629	0.606	0.606	0.683	0.623	0.607	0.607	0.594
	IF	0.662	0.634	0.529	0.740	0.646	0.666	0.646	0.646	0.556	0.622	0.638	0.638	0.632
	ABOD	0.619	0.610	0.624	0.762	0.615	0.630	0.615	0.615	0.621	0.607	0.605	0.605	0.615
	COPOD	0.542	0.442	0.488	0.500	0.490	0.531	0.490	0.490	0.510	0.499	0.511	0.511	0.487
	AE	0.661	0.591	0.479	0.737	0.595	0.641	0.618	0.610	0.527	0.554	0.576	0.595	0.630
	OCSVM	0.604	0.625	0.505	0.778	0.609	0.627	0.609	0.609	0.555	0.610	0.594	0.594	0.624
NSLKDD R	LOF	0.613	0.600	0.702	0.568	0.640	0.626	0.624	0.643	0.625	0.631	0.627	0.627	0.559
	IF	0.684	0.671	0.696	0.711	0.679	0.671	0.671	0.678	0.659	0.686	0.655	0.655	0.678
	ABOD	0.683	0.712	0.720	0.704	0.679	0.666	0.704	0.698	0.675	0.690	0.678	0.678	0.670
	COPOD	0.518	0.439	0.502	0.450	0.484	0.482	0.488	0.496	0.528	0.493	0.490	0.490	0.469
	AE	0.737	0.733	0.710	0.831	0.736	0.712	0.721	0.712	0.697	0.663	0.699	0.691	0.727
	OCSVM	0.666	0.749	0.702	0.740	0.688	0.674	0.670	0.659	0.701	0.666	0.651	0.651	0.726

Table 1: Experimental results (naive strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.593	0.694	0.639	0.590	0.629	0.635	0.629	0.629	0.673	0.619	0.629	0.638	0.634
	IF	0.526	0.580	0.491	0.493	0.497	0.526	0.497	0.497	0.562	0.492	0.497	0.493	0.645
	ABOD	0.561	0.674	0.630	0.641	0.682	0.637	0.682	0.682	0.607	0.662	0.682	0.677	0.699
	COPOD	0.588	0.543	0.567	0.528	0.579	0.594	0.579	0.579	0.560	0.569	0.579	0.574	0.553
	AE	0.550	0.650	0.576	0.521	0.563	0.542	0.557	0.541	0.553	0.630	0.574	0.582	0.668
	OCSVM	0.552	0.569	0.521	0.496	0.549	0.535	0.549	0.549	0.550	0.521	0.549	0.549	0.624
UNSW C	LOF	0.629	0.732	0.725	0.592	0.700	0.717	0.700	0.700	0.691	0.695	0.700	0.698	0.694
	IF	0.489	0.526	0.437	0.477	0.459	0.481	0.459	0.459	0.582	0.470	0.459	0.450	0.659
	ABOD	0.557	0.677	0.653	0.651	0.701	0.641	0.701	0.701	0.727	0.654	0.701	0.711	0.725
	COPOD	0.272	0.212	0.261	0.335	0.259	0.295	0.259	0.259	0.291	0.245	0.259	0.249	0.246
	AE	0.555	0.681	0.537	0.482	0.598	0.584	0.550	0.606	0.658	0.611	0.589	0.566	0.627
	OCSVM	0.548	0.590	0.511	0.515	0.541	0.526	0.541	0.541	0.570	0.517	0.541	0.541	0.662
UNSW R	LOF	0.694	0.767	0.686	0.829	0.670	0.736	0.670	0.670	0.459	0.695	0.670	0.662	0.649
	IF	0.619	0.591	0.591	0.716	0.599	0.610	0.599	0.599	0.605	0.633	0.599	0.594	0.742
	ABOD	0.622	0.667	0.664	0.809	0.715	0.699	0.715	0.715	0.651	0.733	0.715	0.717	0.741
	COPOD	0.477	0.408	0.468	0.581	0.441	0.472	0.441	0.441	0.579	0.454	0.441	0.451	0.593
	AE	0.684	0.778	0.712	0.797	0.643	0.696	0.662	0.643	0.829	0.758	0.638	0.717	0.850
	OCSVM	0.592	0.637	0.599	0.671	0.581	0.601	0.581	0.581	0.621	0.589	0.581	0.581	0.620
Wind A	LOF	0.650	0.855	0.739	0.694	0.739	0.650	0.739	0.739	0.811	0.743	0.739	0.739	0.850
	IF	0.730	0.744	0.727	0.785	0.727	0.730	0.727	0.727	0.723	0.715	0.727	0.727	0.711
	ABOD	0.647	0.853	0.763	0.691	0.763	0.647	0.763	0.763	0.827	0.734	0.763	0.763	0.853
	COPOD	0.903	0.936	0.896	0.933	0.896	0.903	0.896	0.896	0.887	0.917	0.896	0.896	0.919
	AE	0.717	0.805	0.775	0.764	0.768	0.730	0.767	0.713	0.871	0.831	0.736	0.753	0.865
	OCSVM	0.626	0.747	0.629	0.667	0.629	0.626	0.629	0.629	0.687	0.664	0.629	0.629	0.680
Wind C	LOF	0.649	0.885	0.763	0.703	0.763	0.649	0.763	0.763	0.859	0.737	0.763	0.763	0.828
	IF	0.817	0.764	0.752	0.807	0.752	0.817	0.752	0.752	0.767	0.779	0.752	0.752	0.812
	ABOD	0.654	0.878	0.763	0.709	0.763	0.654	0.763	0.763	0.881	0.731	0.763	0.763	0.829
	COPOD	0.893	0.910	0.890	0.900	0.890	0.893	0.890	0.890	0.885	0.905	0.890	0.890	0.909
	AE	0.765	0.857	0.778	0.778	0.763	0.710	0.775	0.779	0.853	0.881	0.788	0.769	0.845
	OCSVM	0.621	0.815	0.626	0.727	0.626	0.621	0.626	0.626	0.683	0.632	0.626	0.626	0.704
Wind R	LOF	0.615	0.701	0.720	0.785	0.720	0.615	0.720	0.720	0.761	0.720	0.720	0.720	0.831
	IF	0.742	0.729	0.688	0.732	0.688	0.742	0.688	0.688	0.675	0.688	0.688	0.688	0.739
	ABOD	0.607	0.698	0.739	0.780	0.739	0.607	0.739	0.739	0.776	0.739	0.739	0.739	0.831
	COPOD	0.887	0.899	0.877	0.917	0.877	0.887	0.877	0.877	0.855	0.877	0.877	0.877	0.923
	AE	0.694	0.832	0.736	0.795	0.691	0.691	0.719	0.711	0.745	0.695	0.695	0.727	0.856
	OCSVM	0.622	0.644	0.629	0.667	0.629	0.622	0.629	0.629	0.685	0.629	0.629	0.629	0.699
CICIDS A	LOF	0.573	0.544	0.573	0.614	0.575	0.674	0.575	0.575	0.636	0.571	0.575	0.554	0.645
	IF	0.578	0.581	0.548	0.591	0.524	0.441	0.524	0.524	0.483	0.545	0.524	0.518	0.470
	COPOD	0.689	0.745	0.697	0.674	0.663	0.663	0.663	0.663	0.739	0.690	0.663	0.653	0.741
	AE	0.552	0.491	0.661	0.595	0.652	0.543	0.652	0.652	0.686	0.546	0.659	0.635	0.512
	OCSVM	0.532	0.500	0.539	0.384	0.527	0.483	0.527	0.527	0.556	0.523	0.527	0.524	0.559
CICIDS C	LOF	0.577	0.568	0.602	0.613	0.592	0.613	0.592	0.592	0.594	0.628	0.602	0.598	0.564
	IF	0.599	0.532	0.565	0.581	0.541	0.515	0.541	0.541	0.591	0.574	0.544	0.551	0.526
	COPOD	0.450	0.424	0.475	0.466	0.453	0.473	0.453	0.453	0.409	0.447	0.451	0.454	0.446
	AE	0.596	0.608	0.568	0.717	0.622	0.586	0.622	0.622	0.683	0.685	0.624	0.605	0.493
	OCSVM	0.553	0.524	0.573	0.439	0.568	0.521	0.568	0.568	0.544	0.575	0.568	0.576	0.522
CICIDS R	LOF	0.572	0.563	0.589	0.613	0.583	0.661	0.583	0.583	0.603	0.585	0.583	0.567	0.572
	IF	0.580	0.574	0.538	0.588	0.527	0.546	0.527	0.527	0.544	0.541	0.527	0.548	0.489
	COPOD	0.445	0.380	0.416	0.375	0.445	0.456	0.445	0.445	0.414	0.458	0.445	0.438	0.405
	AE	0.570	0.559	0.647	0.749	0.629	0.646	0.629	0.629	0.552	0.630	0.580	0.651	0.592
	OCSVM	0.573	0.587	0.578	0.526	0.586	0.540	0.586	0.586	0.556	0.567	0.586	0.593	0.603

Table 2: Experimental results (naive strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.965	0.781	0.947	0.919	0.945	0.913	0.946	0.944	0.957	0.833	0.947	0.948	0.961
	IF	0.748	0.746	0.736	0.717	0.734	0.729	0.735	0.731	0.745	0.675	0.729	0.736	0.743
	ABOD	0.959	0.794	0.941	0.908	0.941	0.915	0.941	0.941	0.950	0.836	0.943	0.941	0.955
	COPOD	0.929	0.957	0.922	0.929	0.924	0.932	0.923	0.923	0.926	0.907	0.921	0.924	0.931
	AE	0.912	0.816	0.902	0.833	0.891	0.871	0.892	0.899	0.903	0.788	0.901	0.896	0.911
	OCSVM	0.779	0.768	0.765	0.762	0.769	0.766	0.768	0.767	0.772	0.694	0.765	0.769	0.778
Energy C	LOF	0.938	0.837	0.928	0.932	0.926	0.912	0.927	0.925	0.938	0.839	0.930	0.928	0.891
	IF	0.817	0.752	0.803	0.816	0.799	0.818	0.800	0.798	0.808	0.759	0.799	0.811	0.799
	ABOD	0.951	0.865	0.941	0.948	0.940	0.928	0.939	0.941	0.948	0.869	0.941	0.942	0.907
	COPOD	0.901	0.889	0.899	0.902	0.898	0.903	0.898	0.898	0.897	0.889	0.898	0.898	0.903
	AE	0.910	0.861	0.896	0.904	0.894	0.895	0.898	0.894	0.904	0.875	0.900	0.904	0.889
	OCSVM	0.779	0.718	0.758	0.776	0.763	0.775	0.767	0.767	0.771	0.715	0.762	0.766	0.769
Energy R	LOF	0.954	0.625	0.934	0.953	0.929	0.897	0.931	0.929	0.934	0.791	0.937	0.935	0.942
	IF	0.785	0.710	0.771	0.780	0.766	0.752	0.767	0.765	0.779	0.698	0.768	0.775	0.781
	ABOD	0.967	0.691	0.949	0.967	0.945	0.908	0.944	0.943	0.948	0.811	0.950	0.950	0.956
	COPOD	0.935	0.957	0.929	0.934	0.929	0.935	0.929	0.929	0.933	0.920	0.929	0.932	0.936
	AE	0.926	0.698	0.920	0.924	0.902	0.861	0.903	0.899	0.917	0.814	0.908	0.920	0.921
	OCSVM	0.800	0.659	0.787	0.794	0.789	0.781	0.788	0.788	0.791	0.714	0.786	0.789	0.798
NSLKDD A	LOF	0.885	0.880	0.754	0.415	0.847	0.830	0.849	0.819	0.821	0.840	0.824	0.865	0.839
	IF	0.942	0.943	0.936	0.730	0.937	0.924	0.941	0.925	0.928	0.942	0.930	0.943	0.935
	ABOD	0.981	0.981	0.928	0.595	0.964	0.941	0.970	0.936	0.925	0.963	0.951	0.972	0.966
	COPOD	0.881	0.882	0.869	0.623	0.881	0.873	0.883	0.872	0.873	0.883	0.878	0.884	0.879
	AE	0.959	0.951	0.942	0.806	0.954	0.955	0.961	0.952	0.941	0.952	0.956	0.958	0.956
	OCSVM	0.792	0.791	0.808	0.751	0.801	0.793	0.801	0.795	0.799	0.796	0.796	0.799	0.799
NSLKDD C	LOF	0.886	0.878	0.697	0.644	0.872	0.837	0.874	0.869	0.789	0.858	0.876	0.868	0.887
	IF	0.860	0.849	0.844	0.740	0.849	0.840	0.847	0.849	0.843	0.844	0.849	0.849	0.848
	ABOD	0.932	0.924	0.828	0.762	0.928	0.899	0.923	0.925	0.887	0.916	0.922	0.921	0.917
	COPOD	0.697	0.691	0.604	0.500	0.698	0.695	0.697	0.697	0.686	0.691	0.695	0.695	0.700
	AE	0.847	0.846	0.851	0.807	0.841	0.858	0.844	0.836	0.866	0.842	0.848	0.849	0.838
	OCSVM	0.711	0.711	0.732	0.778	0.707	0.723	0.707	0.708	0.717	0.712	0.707	0.707	0.704
NSLKDD R	LOF	0.887	0.888	0.833	0.568	0.881	0.810	0.881	0.871	0.847	0.869	0.855	0.866	0.867
	IF	0.804	0.809	0.824	0.711	0.803	0.788	0.807	0.810	0.804	0.804	0.798	0.805	0.808
	ABOD	0.946	0.947	0.902	0.704	0.941	0.897	0.944	0.945	0.927	0.938	0.941	0.936	0.938
	COPOD	0.638	0.638	0.631	0.450	0.638	0.624	0.638	0.640	0.633	0.639	0.637	0.637	0.637
	AE	0.866	0.879	0.877	0.779	0.875	0.873	0.869	0.871	0.851	0.879	0.870	0.875	0.873
	OCSVM	0.756	0.756	0.758	0.740	0.760	0.753	0.760	0.758	0.771	0.764	0.759	0.760	0.760

Table 3: Experimental results (replay strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.778	0.657	0.723	0.617	0.731	0.724	0.705	0.696	0.740	0.724	0.709	0.721	0.674
	IF	0.489	0.519	0.502	0.463	0.509	0.503	0.512	0.517	0.480	0.494	0.505	0.519	0.493
	ABOD	0.804	0.695	0.787	0.677	0.767	0.775	0.765	0.766	0.758	0.757	0.765	0.779	0.692
	COPOD	0.547	0.537	0.554	0.510	0.557	0.556	0.556	0.557	0.542	0.549	0.557	0.556	0.539
	AE	0.579	0.533	0.549	0.526	0.536	0.531	0.581	0.560	0.561	0.526	0.602	0.596	0.496
	OCSVM	0.531	0.523	0.520	0.486	0.525	0.541	0.525	0.524	0.526	0.509	0.526	0.528	0.521
UNSW C	LOF	0.797	0.757	0.765	0.616	0.738	0.763	0.761	0.756	0.709	0.747	0.747	0.765	0.719
	IF	0.539	0.536	0.523	0.455	0.540	0.515	0.533	0.543	0.514	0.527	0.537	0.535	0.494
	ABOD	0.841	0.807	0.811	0.678	0.801	0.803	0.803	0.797	0.699	0.795	0.799	0.803	0.709
	COPOD	0.279	0.281	0.289	0.347	0.293	0.299	0.293	0.293	0.277	0.286	0.294	0.291	0.267
	AE	0.630	0.609	0.593	0.548	0.596	0.578	0.603	0.619	0.544	0.541	0.597	0.589	0.541
	OCSVM	0.579	0.564	0.559	0.515	0.554	0.579	0.555	0.555	0.578	0.548	0.555	0.563	0.573
UNSW R	LOF	0.873	0.839	0.849	0.882	0.816	0.839	0.820	0.808	0.749	0.822	0.811	0.841	0.769
	IF	0.707	0.692	0.695	0.703	0.688	0.689	0.695	0.681	0.687	0.688	0.695	0.694	0.677
	ABOD	0.967	0.923	0.953	0.861	0.931	0.936	0.928	0.927	0.812	0.917	0.926	0.939	0.881
	COPOD	0.555	0.548	0.551	0.606	0.541	0.555	0.541	0.542	0.561	0.549	0.542	0.549	0.571
	AE	0.771	0.822	0.780	0.802	0.782	0.860	0.804	0.803	0.685	0.804	0.796	0.759	0.787
	OCSVM	0.746	0.718	0.726	0.674	0.721	0.726	0.722	0.721	0.727	0.721	0.720	0.730	0.733
Wind A	LOF	0.973	0.855	0.927	0.971	0.927	0.973	0.927	0.926	0.822	0.954	0.927	0.921	0.889
	IF	0.906	0.744	0.825	0.887	0.831	0.882	0.841	0.823	0.737	0.848	0.832	0.836	0.864
	ABOD	0.975	0.853	0.939	0.974	0.941	0.974	0.939	0.939	0.835	0.950	0.937	0.933	0.895
	COPOD	0.948	0.936	0.933	0.946	0.933	0.947	0.933	0.933	0.885	0.935	0.933	0.933	0.951
	AE	0.939	0.790	0.917	0.945	0.903	0.943	0.915	0.891	0.818	0.927	0.893	0.927	0.932
	OCSVM	0.829	0.747	0.773	0.805	0.774	0.791	0.777	0.775	0.689	0.783	0.775	0.773	0.793
Wind C	LOF	0.968	0.885	0.933	0.955	0.936	0.969	0.936	0.934	0.870	0.955	0.936	0.935	0.889
	IF	0.903	0.764	0.858	0.887	0.866	0.886	0.860	0.856	0.773	0.876	0.867	0.873	0.873
	ABOD	0.969	0.878	0.947	0.958	0.941	0.968	0.941	0.943	0.886	0.955	0.941	0.949	0.901
	COPOD	0.933	0.910	0.919	0.931	0.919	0.930	0.919	0.921	0.888	0.925	0.919	0.919	0.925
	AE	0.945	0.873	0.915	0.938	0.915	0.941	0.913	0.909	0.874	0.920	0.922	0.903	0.917
	OCSVM	0.827	0.815	0.770	0.809	0.772	0.792	0.771	0.771	0.686	0.781	0.771	0.774	0.787
Wind R	LOF	0.968	0.943	0.908	0.926	0.905	0.967	0.911	0.907	0.781	0.907	0.907	0.906	0.845
	IF	0.875	0.831	0.793	0.811	0.807	0.861	0.801	0.799	0.679	0.808	0.805	0.804	0.779
	ABOD	0.975	0.944	0.928	0.922	0.928	0.970	0.923	0.922	0.790	0.924	0.918	0.925	0.867
	COPOD	0.923	0.903	0.901	0.925	0.903	0.916	0.901	0.903	0.853	0.907	0.898	0.902	0.921
	AE	0.937	0.900	0.896	0.930	0.886	0.944	0.873	0.878	0.834	0.874	0.875	0.870	0.831
	OCSVM	0.817	0.778	0.771	0.771	0.770	0.786	0.773	0.771	0.687	0.771	0.769	0.770	0.737
CICIDS A	LOF	0.995	0.995	0.984	0.614	0.974	0.903	0.974	0.974	0.956	0.979	0.976	0.967	0.961
	IF	0.779	0.788	0.791	0.591	0.786	0.793	0.786	0.786	0.794	0.791	0.781	0.778	0.793
	COPOD	0.614	0.614	0.615	0.674	0.616	0.620	0.616	0.616	0.624	0.611	0.616	0.615	0.623
	AE	0.966	0.975	0.947	0.687	0.915	0.903	0.915	0.915	0.938	0.956	0.953	0.951	0.952
	OCSVM	0.595	0.595	0.595	0.384	0.579	0.573	0.579	0.579	0.587	0.584	0.579	0.571	0.594
CICIDS C	LOF	0.996	0.983	0.944	0.613	0.976	0.934	0.976	0.976	0.965	0.974	0.976	0.984	0.976
	IF	0.654	0.649	0.701	0.581	0.671	0.651	0.671	0.671	0.677	0.662	0.662	0.662	0.651
	COPOD	0.449	0.450	0.437	0.466	0.442	0.451	0.442	0.442	0.470	0.455	0.441	0.442	0.447
	AE	0.968	0.943	0.912	0.557	0.945	0.950	0.945	0.945	0.965	0.972	0.965	0.951	0.942
	OCSVM	0.660	0.648	0.688	0.439	0.672	0.649	0.672	0.672	0.680	0.665	0.672	0.669	0.651
CICIDS R	LOF	0.996	0.996	0.983	0.613	0.978	0.922	0.978	0.978	0.939	0.974	0.979	0.969	0.974
	IF	0.683	0.693	0.690	0.588	0.688	0.648	0.688	0.688	0.664	0.679	0.682	0.676	0.679
	COPOD	0.426	0.427	0.431	0.375	0.449	0.421	0.449	0.449	0.439	0.435	0.449	0.446	0.437
	AE	0.982	0.975	0.952	0.538	0.961	0.907	0.961	0.961	0.929	0.978	0.966	0.961	0.921
	OCSVM	0.662	0.662	0.681	0.526	0.646	0.633	0.646	0.646	0.669	0.662	0.645	0.632	0.683

Table 4: Experimental results (replay strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.972	0.781	0.959	0.930	0.958	0.924	0.958	0.958	0.961	0.839	0.959	0.959	0.967
	IF	0.754	0.746	0.753	0.733	0.753	0.755	0.753	0.753	0.749	0.706	0.753	0.753	0.749
	ABOD	0.972	0.794	0.961	0.927	0.959	0.920	0.959	0.959	0.961	0.842	0.961	0.961	0.966
	COPOD	0.869	0.957	0.869	0.869	0.868	0.876	0.868	0.868	0.867	0.859	0.869	0.869	0.868
	AE	0.921	0.819	0.916	0.883	0.913	0.874	0.918	0.915	0.918	0.811	0.908	0.887	0.916
	OCSVM	0.723	0.768	0.725	0.718	0.727	0.729	0.727	0.727	0.725	0.686	0.725	0.725	0.724
Energy C	LOF	0.953	0.841	0.941	0.945	0.940	0.922	0.940	0.940	0.950	0.841	0.940	0.940	0.907
	IF	0.817	0.774	0.814	0.811	0.811	0.813	0.809	0.809	0.808	0.774	0.811	0.811	0.811
	ABOD	0.966	0.872	0.956	0.961	0.956	0.938	0.956	0.956	0.963	0.872	0.956	0.956	0.922
	COPOD	0.887	0.871	0.887	0.887	0.886	0.890	0.885	0.885	0.883	0.871	0.886	0.886	0.885
	AE	0.909	0.853	0.891	0.904	0.908	0.885	0.900	0.902	0.904	0.855	0.901	0.894	0.895
	OCSVM	0.715	0.684	0.710	0.714	0.716	0.715	0.717	0.717	0.716	0.684	0.716	0.716	0.707
Energy R	LOF	0.963	0.625	0.943	0.963	0.940	0.905	0.940	0.940	0.941	0.800	0.943	0.943	0.952
	IF	0.781	0.710	0.777	0.774	0.771	0.761	0.771	0.771	0.771	0.727	0.777	0.777	0.775
	ABOD	0.976	0.691	0.957	0.976	0.952	0.908	0.952	0.952	0.955	0.820	0.957	0.957	0.963
	COPOD	0.885	0.957	0.885	0.881	0.882	0.885	0.882	0.882	0.881	0.869	0.885	0.885	0.882
	AE	0.927	0.706	0.914	0.925	0.910	0.860	0.916	0.911	0.914	0.777	0.926	0.917	0.921
	OCSVM	0.738	0.659	0.738	0.734	0.739	0.738	0.739	0.739	0.738	0.694	0.738	0.738	0.738
NSLKDD A	LOF	0.901	0.901	0.782	0.415	0.863	0.843	0.862	0.833	0.832	0.852	0.841	0.875	0.860
	IF	0.942	0.942	0.940	0.730	0.936	0.923	0.942	0.923	0.929	0.942	0.930	0.942	0.934
	ABOD	0.988	0.987	0.927	0.595	0.966	0.948	0.970	0.944	0.939	0.963	0.955	0.975	0.975
	COPOD	0.921	0.921	0.914	0.623	0.913	0.901	0.919	0.901	0.905	0.918	0.908	0.919	0.913
	AE	0.964	0.965	0.945	0.730	0.963	0.941	0.959	0.952	0.947	0.955	0.960	0.959	0.960
	OCSVM	0.721	0.721	0.709	0.751	0.727	0.730	0.720	0.731	0.718	0.718	0.730	0.721	0.728
NSLKDD C	LOF	0.897	0.880	0.691	0.644	0.877	0.857	0.877	0.877	0.803	0.856	0.869	0.869	0.880
	IF	0.855	0.851	0.834	0.740	0.850	0.846	0.850	0.850	0.844	0.848	0.851	0.851	0.848
	ABOD	0.952	0.940	0.820	0.762	0.943	0.927	0.943	0.943	0.893	0.930	0.938	0.938	0.937
	COPOD	0.791	0.789	0.735	0.500	0.787	0.783	0.787	0.787	0.778	0.781	0.786	0.786	0.789
	AE	0.854	0.856	0.859	0.825	0.855	0.875	0.862	0.868	0.881	0.869	0.870	0.868	0.868
	OCSVM	0.670	0.671	0.636	0.778	0.668	0.682	0.668	0.668	0.675	0.670	0.668	0.668	0.665
NSLKDD R	LOF	0.900	0.900	0.857	0.568	0.889	0.846	0.890	0.887	0.859	0.880	0.881	0.881	0.881
	IF	0.805	0.803	0.815	0.711	0.806	0.794	0.807	0.807	0.804	0.808	0.808	0.808	0.810
	ABOD	0.960	0.960	0.919	0.704	0.953	0.927	0.954	0.952	0.927	0.949	0.951	0.951	0.945
	COPOD	0.721	0.721	0.714	0.450	0.720	0.701	0.720	0.720	0.715	0.719	0.719	0.719	0.720
	AE	0.881	0.872	0.864	0.762	0.881	0.849	0.890	0.885	0.866	0.884	0.872	0.867	0.876
	OCSVM	0.709	0.709	0.707	0.740	0.708	0.717	0.708	0.708	0.705	0.708	0.709	0.709	0.713

Table 5: Experimental results (cumulative strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.833	0.726	0.798	0.617	0.782	0.776	0.782	0.782	0.788	0.778	0.782	0.795	0.732
	IF	0.496	0.466	0.474	0.463	0.479	0.475	0.479	0.479	0.474	0.471	0.479	0.486	0.466
	ABOD	0.859	0.727	0.829	0.677	0.807	0.816	0.807	0.807	0.811	0.804	0.807	0.818	0.727
	COPOD	0.522	0.503	0.516	0.510	0.516	0.512	0.516	0.516	0.513	0.515	0.516	0.517	0.507
	AE	0.605	0.513	0.547	0.531	0.573	0.582	0.570	0.595	0.590	0.545	0.583	0.574	0.545
	OCSVM	0.526	0.507	0.510	0.486	0.516	0.522	0.516	0.516	0.516	0.511	0.516	0.517	0.510
UNSW C	LOF	0.837	0.803	0.801	0.616	0.791	0.779	0.791	0.791	0.738	0.783	0.857	0.800	0.739
	IF	0.521	0.520	0.501	0.455	0.511	0.503	0.511	0.511	0.498	0.505	0.686	0.511	0.483
	ABOD	0.885	0.854	0.851	0.678	0.848	0.842	0.848	0.848	0.746	0.842	0.927	0.849	0.751
	COPOD	0.430	0.424	0.413	0.347	0.418	0.415	0.418	0.418	0.404	0.414	0.651	0.418	0.396
	AE	0.599	0.593	0.575	0.498	0.586	0.576	0.597	0.590	0.543	0.574	0.747	0.566	0.560
	OCSVM	0.563	0.554	0.545	0.515	0.547	0.560	0.547	0.547	0.555	0.543	0.681	0.551	0.551
UNSW R	LOF	0.896	0.857	0.873	0.882	0.857	0.861	0.857	0.857	0.769	0.857	0.857	0.869	0.822
	IF	0.707	0.687	0.687	0.703	0.686	0.692	0.686	0.686	0.666	0.681	0.686	0.697	0.648
	ABOD	0.983	0.949	0.957	0.861	0.927	0.942	0.927	0.927	0.834	0.927	0.927	0.942	0.875
	COPOD	0.674	0.657	0.660	0.606	0.651	0.657	0.651	0.651	0.645	0.647	0.651	0.662	0.647
	AE	0.849	0.809	0.815	0.770	0.777	0.765	0.809	0.812	0.781	0.798	0.747	0.791	0.761
	OCSVM	0.695	0.676	0.682	0.674	0.681	0.684	0.681	0.681	0.670	0.679	0.681	0.684	0.677
Wind A	LOF	0.977	0.855	0.955	0.975	0.955	0.977	0.955	0.955	0.822	0.955	0.955	0.955	0.881
	IF	0.902	0.744	0.862	0.885	0.862	0.902	0.862	0.862	0.737	0.862	0.862	0.862	0.852
	ABOD	0.980	0.853	0.955	0.979	0.955	0.980	0.955	0.955	0.835	0.955	0.955	0.955	0.889
	COPOD	0.910	0.936	0.901	0.899	0.901	0.910	0.901	0.901	0.885	0.901	0.901	0.901	0.908
	AE	0.954	0.817	0.934	0.941	0.911	0.951	0.938	0.939	0.873	0.929	0.929	0.928	0.869
	OCSVM	0.754	0.747	0.747	0.753	0.747	0.754	0.747	0.747	0.689	0.747	0.747	0.747	0.717
Wind C	LOF	0.969	0.885	0.955	0.961	0.955	0.969	0.955	0.955	0.870	0.955	0.955	0.955	0.903
	IF	0.908	0.764	0.883	0.900	0.883	0.908	0.883	0.883	0.773	0.883	0.883	0.883	0.856
	ABOD	0.972	0.878	0.958	0.971	0.958	0.972	0.958	0.958	0.886	0.958	0.958	0.958	0.905
	COPOD	0.916	0.910	0.910	0.913	0.910	0.916	0.910	0.910	0.888	0.910	0.910	0.910	0.909
	AE	0.943	0.862	0.925	0.945	0.934	0.937	0.923	0.931	0.890	0.922	0.935	0.929	0.905
	OCSVM	0.752	0.815	0.745	0.737	0.745	0.752	0.745	0.745	0.686	0.745	0.745	0.745	0.697
Wind R	LOF	0.967	0.944	0.944	0.935	0.944	0.967	0.944	0.944	0.781	0.944	0.944	0.944	0.883
	IF	0.873	0.830	0.830	0.811	0.830	0.873	0.830	0.830	0.679	0.830	0.830	0.830	0.755
	ABOD	0.979	0.951	0.951	0.956	0.951	0.979	0.951	0.951	0.790	0.951	0.951	0.951	0.883
	COPOD	0.892	0.881	0.881	0.883	0.881	0.892	0.881	0.881	0.853	0.881	0.881	0.881	0.869
	AE	0.951	0.926	0.929	0.900	0.893	0.939	0.923	0.919	0.797	0.933	0.935	0.919	0.851
	OCSVM	0.747	0.743	0.743	0.713	0.743	0.747	0.743	0.743	0.687	0.743	0.743	0.743	0.693
CICIDS A	LOF	0.995	0.995	0.987	0.614	0.980	0.906	0.980	0.980	0.953	0.979	0.980	0.977	0.957
	IF	0.790	0.789	0.790	0.591	0.789	0.793	0.789	0.789	0.785	0.783	0.789	0.787	0.782
	COPOD	0.595	0.593	0.594	0.674	0.593	0.593	0.593	0.593	0.596	0.592	0.593	0.592	0.596
	AE	0.992	0.991	0.981	0.562	0.974	0.918	0.974	0.974	0.956	0.973	0.975	0.968	0.959
	OCSVM	0.566	0.568	0.572	0.384	0.559	0.560	0.559	0.559	0.561	0.560	0.559	0.556	0.563
CICIDS C	LOF	0.995	0.982	0.953	0.613	0.982	0.957	0.982	0.982	0.960	0.982	0.983	0.983	0.975
	IF	0.661	0.661	0.667	0.581	0.658	0.667	0.658	0.658	0.659	0.666	0.658	0.650	0.662
	COPOD	0.546	0.541	0.527	0.466	0.535	0.550	0.535	0.535	0.557	0.551	0.535	0.537	0.527
	AE	0.990	0.963	0.965	0.529	0.968	0.942	0.968	0.968	0.972	0.985	0.984	0.970	0.968
	OCSVM	0.623	0.625	0.625	0.439	0.623	0.640	0.623	0.623	0.629	0.623	0.623	0.622	0.620
CICIDS R	LOF	0.995	0.995	0.980	0.613	0.984	0.915	0.984	0.984	0.944	0.973	0.984	0.984	0.974
	IF	0.698	0.702	0.694	0.588	0.697	0.690	0.697	0.697	0.694	0.696	0.697	0.689	0.693
	COPOD	0.549	0.547	0.548	0.375	0.546	0.527	0.546	0.546	0.550	0.548	0.546	0.539	0.540
	AE	0.995	0.998	0.977	0.542	0.982	0.898	0.982	0.982	0.947	0.979	0.979	0.971	0.973
	OCSVM	0.634	0.634	0.650	0.526	0.619	0.587	0.619	0.619	0.629	0.628	0.619	0.621	0.646

Table 6: Experimental results (cumulative strategy): Anomaly detection performance (ROC-AUC) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.696	0.629	0.680	0.666	0.666	0.663	0.666	0.666	0.674	0.633	0.680	0.686	0.679
	IF	0.558	0.596	0.561	0.554	0.549	0.575	0.549	0.549	0.543	0.567	0.561	0.560	0.542
	ABOD	0.683	0.600	0.659	0.675	0.649	0.647	0.649	0.649	0.650	0.655	0.659	0.653	0.671
	COPOD	0.881	0.978	0.878	0.940	0.875	0.869	0.875	0.875	0.882	0.867	0.878	0.890	0.950
	AE	0.720	0.684	0.743	0.722	0.696	0.724	0.717	0.725	0.712	0.703	0.710	0.716	0.702
	OCSVM	0.488	0.670	0.488	0.644	0.488	0.488	0.488	0.488	0.503	0.561	0.488	0.497	0.630
Energy C	LOF	0.813	0.776	0.788	0.768	0.802	0.781	0.794	0.794	0.792	0.776	0.791	0.792	0.782
	IF	0.611	0.626	0.614	0.613	0.628	0.620	0.620	0.620	0.612	0.626	0.629	0.628	0.610
	ABOD	0.794	0.801	0.808	0.765	0.804	0.781	0.796	0.796	0.798	0.801	0.791	0.792	0.779
	COPOD	0.908	0.901	0.912	0.958	0.910	0.929	0.909	0.909	0.910	0.901	0.919	0.920	0.939
	AE	0.825	0.814	0.835	0.828	0.841	0.808	0.853	0.833	0.820	0.842	0.863	0.844	0.831
	OCSVM	0.505	0.583	0.510	0.825	0.503	0.562	0.503	0.503	0.538	0.583	0.550	0.553	0.659
Energy R	LOF	0.727	0.653	0.653	0.697	0.649	0.691	0.649	0.649	0.673	0.638	0.654	0.662	0.716
	IF	0.533	0.535	0.528	0.529	0.527	0.543	0.527	0.527	0.516	0.533	0.534	0.529	0.516
	ABOD	0.706	0.656	0.640	0.691	0.639	0.676	0.639	0.639	0.650	0.629	0.641	0.645	0.710
	COPOD	0.869	0.969	0.871	0.964	0.868	0.881	0.868	0.868	0.874	0.865	0.869	0.874	0.948
	AE	0.718	0.700	0.718	0.724	0.720	0.780	0.721	0.729	0.722	0.661	0.702	0.735	0.737
	OCSVM	0.485	0.690	0.485	0.706	0.484	0.485	0.484	0.484	0.502	0.551	0.485	0.486	0.564
NSLKDD A	LOF	0.505	0.699	0.444	0.361	0.515	0.499	0.488	0.494	0.334	0.556	0.494	0.518	0.529
	IF	0.791	0.794	0.723	0.718	0.712	0.728	0.768	0.700	0.827	0.758	0.720	0.776	0.794
	ABOD	0.703	0.758	0.727	0.582	0.666	0.648	0.677	0.657	0.556	0.723	0.662	0.695	0.660
	COPOD	0.679	0.550	0.656	0.539	0.598	0.603	0.666	0.598	0.637	0.716	0.622	0.667	0.609
	AE	0.865	0.804	0.873	0.772	0.791	0.803	0.871	0.816	0.854	0.854	0.810	0.860	0.824
	OCSVM	0.692	0.866	0.747	0.755	0.714	0.704	0.705	0.697	0.727	0.625	0.687	0.707	0.761
NSLKDD C	LOF	0.558	0.739	0.562	0.594	0.598	0.596	0.598	0.598	0.572	0.605	0.596	0.596	0.662
	IF	0.764	0.760	0.610	0.854	0.754	0.809	0.754	0.754	0.745	0.747	0.753	0.753	0.782
	ABOD	0.721	0.774	0.794	0.748	0.717	0.728	0.717	0.717	0.720	0.700	0.715	0.715	0.743
	COPOD	0.426	0.251	0.259	0.256	0.382	0.336	0.382	0.382	0.366	0.459	0.380	0.380	0.313
	AE	0.854	0.851	0.809	0.832	0.800	0.823	0.870	0.836	0.757	0.809	0.830	0.812	0.875
	OCSVM	0.701	0.863	0.750	0.865	0.701	0.770	0.701	0.701	0.706	0.638	0.700	0.700	0.822
NSLKDD R	LOF	0.544	0.666	0.555	0.577	0.571	0.568	0.531	0.541	0.540	0.537	0.528	0.528	0.495
	IF	0.704	0.686	0.705	0.688	0.698	0.681	0.681	0.683	0.712	0.682	0.686	0.686	0.721
	ABOD	0.671	0.697	0.662	0.656	0.648	0.663	0.639	0.656	0.628	0.652	0.637	0.637	0.624
	COPOD	0.433	0.317	0.395	0.317	0.387	0.350	0.396	0.422	0.354	0.395	0.399	0.399	0.371
	AE	0.738	0.724	0.703	0.718	0.718	0.671	0.707	0.719	0.703	0.718	0.707	0.719	0.749
	OCSVM	0.630	0.739	0.635	0.658	0.645	0.637	0.626	0.611	0.686	0.630	0.624	0.624	0.707

Table 7: Experimental results (naive strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.450	0.391	0.416	0.219	0.500	0.379	0.500	0.500	0.420	0.438	0.500	0.452	0.389
	IF	0.458	0.456	0.387	0.391	0.420	0.526	0.420	0.420	0.439	0.460	0.420	0.388	0.402
	ABOD	0.422	0.346	0.405	0.290	0.474	0.353	0.474	0.474	0.359	0.387	0.474	0.449	0.346
	COPOD	0.438	0.400	0.378	0.406	0.391	0.455	0.391	0.391	0.410	0.412	0.391	0.380	0.403
	AE	0.435	0.383	0.399	0.367	0.456	0.393	0.400	0.383	0.420	0.464	0.438	0.438	0.425
	OCSVM	0.477	0.463	0.424	0.366	0.442	0.481	0.442	0.442	0.384	0.473	0.442	0.442	0.406
UNSW C	LOF	0.424	0.388	0.357	0.171	0.437	0.348	0.437	0.437	0.306	0.391	0.437	0.399	0.355
	IF	0.422	0.470	0.381	0.335	0.353	0.503	0.353	0.353	0.480	0.415	0.353	0.377	0.410
	ABOD	0.401	0.322	0.412	0.255	0.441	0.343	0.441	0.441	0.370	0.349	0.441	0.443	0.301
	COPOD	0.276	0.224	0.234	0.205	0.239	0.273	0.239	0.239	0.199	0.258	0.239	0.245	0.215
	AE	0.498	0.449	0.401	0.312	0.455	0.431	0.438	0.458	0.404	0.427	0.455	0.469	0.379
	OCSVM	0.499	0.468	0.450	0.372	0.472	0.507	0.472	0.472	0.407	0.503	0.472	0.472	0.526
UNSW R	LOF	0.490	0.510	0.444	0.393	0.595	0.477	0.595	0.595	0.278	0.542	0.595	0.481	0.456
	IF	0.513	0.538	0.480	0.444	0.530	0.614	0.530	0.530	0.333	0.561	0.530	0.490	0.390
	ABOD	0.408	0.440	0.423	0.383	0.492	0.404	0.492	0.492	0.483	0.425	0.492	0.453	0.412
	COPOD	0.226	0.180	0.224	0.236	0.228	0.267	0.228	0.228	0.192	0.267	0.228	0.222	0.242
	AE	0.516	0.602	0.506	0.399	0.572	0.557	0.542	0.569	0.498	0.559	0.540	0.518	0.488
	OCSVM	0.485	0.537	0.444	0.441	0.468	0.508	0.468	0.468	0.470	0.500	0.468	0.467	0.432
Wind A	LOF	0.497	0.693	0.498	0.590	0.498	0.497	0.498	0.498	0.551	0.498	0.498	0.498	0.538
	IF	0.677	0.646	0.678	0.654	0.678	0.677	0.678	0.678	0.628	0.678	0.678	0.678	0.623
	ABOD	0.485	0.638	0.484	0.572	0.484	0.485	0.484	0.484	0.545	0.484	0.484	0.484	0.564
	COPOD	0.910	0.967	0.899	0.956	0.899	0.910	0.899	0.899	0.895	0.899	0.899	0.899	0.932
	AE	0.636	0.614	0.604	0.666	0.649	0.636	0.575	0.622	0.614	0.637	0.676	0.578	0.659
	OCSVM	0.500	0.613	0.497	0.528	0.497	0.500	0.497	0.497	0.496	0.497	0.497	0.497	0.505
Wind C	LOF	0.581	0.820	0.613	0.683	0.613	0.581	0.613	0.613	0.667	0.613	0.613	0.613	0.634
	IF	0.702	0.694	0.703	0.658	0.703	0.702	0.703	0.703	0.664	0.703	0.703	0.703	0.667
	ABOD	0.563	0.740	0.588	0.650	0.588	0.563	0.588	0.588	0.664	0.588	0.588	0.588	0.626
	COPOD	0.893	0.933	0.887	0.940	0.887	0.893	0.887	0.887	0.894	0.887	0.887	0.887	0.918
	AE	0.714	0.775	0.773	0.775	0.683	0.798	0.646	0.713	0.581	0.815	0.791	0.786	0.792
	OCSVM	0.506	0.747	0.500	0.678	0.500	0.506	0.500	0.500	0.500	0.500	0.500	0.500	0.549
Wind R	LOF	0.527	0.513	0.513	0.588	0.513	0.527	0.513	0.513	0.594	0.513	0.513	0.513	0.638
	IF	0.702	0.644	0.644	0.672	0.644	0.702	0.644	0.644	0.618	0.644	0.644	0.644	0.655
	ABOD	0.501	0.477	0.477	0.590	0.477	0.501	0.477	0.477	0.582	0.477	0.477	0.477	0.655
	COPOD	0.900	0.879	0.879	0.922	0.879	0.900	0.879	0.879	0.889	0.879	0.879	0.879	0.926
	AE	0.742	0.661	0.658	0.785	0.668	0.712	0.615	0.639	0.624	0.505	0.666	0.608	0.778
	OCSVM	0.503	0.496	0.496	0.542	0.496	0.503	0.496	0.496	0.496	0.496	0.496	0.496	0.605
CICIDS A	LOF	0.414	0.480	0.448	0.500	0.413	0.422	0.413	0.413	0.454	0.444	0.413	0.400	0.518
	IF	0.538	0.526	0.518	0.557	0.540	0.493	0.540	0.540	0.487	0.503	0.540	0.539	0.457
	COPOD	0.646	0.712	0.655	0.676	0.652	0.655	0.652	0.652	0.631	0.650	0.652	0.646	0.660
	AE	0.494	0.512	0.498	0.456	0.574	0.520	0.574	0.574	0.638	0.410	0.636	0.634	0.550
	OCSVM	0.478	0.449	0.496	0.408	0.470	0.492	0.470	0.470	0.452	0.481	0.470	0.464	0.469
CICIDS C	LOF	0.487	0.531	0.496	0.500	0.470	0.476	0.470	0.470	0.450	0.468	0.470	0.467	0.540
	IF	0.596	0.576	0.484	0.657	0.508	0.475	0.508	0.508	0.469	0.502	0.512	0.552	0.450
	COPOD	0.514	0.497	0.524	0.490	0.535	0.533	0.535	0.535	0.496	0.516	0.533	0.544	0.528
	AE	0.638	0.627	0.537	0.842	0.660	0.750	0.660	0.660	0.713	0.592	0.659	0.675	0.623
	OCSVM	0.538	0.680	0.542	0.636	0.539	0.571	0.539	0.539	0.548	0.539	0.543	0.544	0.603
CICIDS R	LOF	0.478	0.518	0.496	0.500	0.497	0.482	0.497	0.497	0.458	0.476	0.497	0.518	0.526
	IF	0.527	0.549	0.509	0.527	0.540	0.551	0.540	0.540	0.486	0.534	0.540	0.550	0.469
	COPOD	0.489	0.476	0.478	0.497	0.512	0.532	0.512	0.512	0.468	0.500	0.512	0.524	0.490
	AE	0.542	0.496	0.578	0.737	0.484	0.591	0.484	0.484	0.543	0.575	0.599	0.627	0.569
	OCSVM	0.503	0.538	0.535	0.615	0.508	0.527	0.508	0.508	0.519	0.508	0.508	0.501	0.518

Table 8: Experimental results (naive strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.608	0.629	0.612	0.605	0.608	0.604	0.610	0.612	0.605	0.641	0.612	0.607	0.606
	IF	0.581	0.596	0.566	0.583	0.565	0.592	0.568	0.567	0.567	0.574	0.567	0.574	0.579
	ABOD	0.626	0.600	0.630	0.622	0.626	0.627	0.619	0.621	0.630	0.649	0.624	0.631	0.618
	COPOD	0.930	0.978	0.901	0.937	0.900	0.918	0.901	0.901	0.913	0.894	0.901	0.901	0.930
	AE	0.663	0.693	0.630	0.716	0.635	0.721	0.669	0.661	0.675	0.689	0.670	0.675	0.642
	OCSVM	0.700	0.670	0.653	0.713	0.653	0.673	0.652	0.652	0.651	0.604	0.652	0.655	0.714
Energy C	LOF	0.781	0.793	0.773	0.772	0.782	0.767	0.782	0.784	0.785	0.795	0.784	0.776	0.761
	IF	0.643	0.613	0.644	0.632	0.634	0.655	0.635	0.632	0.632	0.620	0.638	0.649	0.639
	ABOD	0.792	0.797	0.791	0.789	0.804	0.792	0.808	0.807	0.810	0.803	0.787	0.798	0.798
	COPOD	0.939	0.916	0.936	0.941	0.922	0.943	0.922	0.922	0.923	0.916	0.931	0.932	0.941
	AE	0.853	0.844	0.832	0.841	0.829	0.835	0.794	0.846	0.838	0.842	0.859	0.855	0.852
	OCSVM	0.759	0.628	0.705	0.774	0.699	0.727	0.700	0.698	0.696	0.627	0.725	0.724	0.777
Energy R	LOF	0.622	0.653	0.619	0.611	0.632	0.632	0.632	0.625	0.625	0.642	0.626	0.626	0.622
	IF	0.527	0.535	0.508	0.518	0.510	0.544	0.512	0.513	0.503	0.508	0.516	0.519	0.511
	ABOD	0.630	0.656	0.622	0.628	0.628	0.639	0.630	0.627	0.619	0.628	0.631	0.628	0.617
	COPOD	0.922	0.969	0.908	0.923	0.893	0.911	0.894	0.893	0.909	0.884	0.894	0.910	0.921
	AE	0.665	0.702	0.663	0.660	0.669	0.688	0.666	0.660	0.670	0.673	0.670	0.651	0.670
	OCSVM	0.674	0.690	0.636	0.697	0.637	0.663	0.637	0.636	0.634	0.590	0.638	0.637	0.666
NSLKDD A	LOF	0.233	0.203	0.224	0.361	0.250	0.268	0.206	0.271	0.277	0.218	0.258	0.224	0.252
	IF	0.904	0.906	0.902	0.718	0.850	0.818	0.906	0.819	0.843	0.901	0.834	0.911	0.831
	ABOD	0.661	0.613	0.629	0.582	0.610	0.620	0.609	0.608	0.582	0.592	0.627	0.609	0.635
	COPOD	0.734	0.736	0.739	0.539	0.699	0.669	0.734	0.667	0.702	0.748	0.687	0.742	0.705
	AE	0.877	0.896	0.890	0.768	0.890	0.849	0.897	0.856	0.817	0.869	0.866	0.886	0.858
	OCSVM	0.820	0.820	0.824	0.755	0.787	0.766	0.829	0.769	0.773	0.787	0.770	0.812	0.781
NSLKDD C	LOF	0.375	0.377	0.453	0.594	0.372	0.443	0.344	0.356	0.401	0.381	0.366	0.363	0.378
	IF	0.913	0.920	0.895	0.854	0.911	0.889	0.909	0.904	0.896	0.890	0.905	0.906	0.912
	ABOD	0.686	0.693	0.705	0.748	0.687	0.716	0.665	0.670	0.708	0.672	0.664	0.696	0.685
	COPOD	0.565	0.569	0.490	0.256	0.576	0.501	0.575	0.576	0.560	0.573	0.574	0.574	0.548
	AE	0.914	0.925	0.892	0.855	0.930	0.917	0.920	0.911	0.919	0.923	0.925	0.920	0.921
	OCSVM	0.827	0.830	0.860	0.865	0.821	0.828	0.821	0.820	0.804	0.810	0.820	0.822	0.839
NSLKDD R	LOF	0.404	0.380	0.421	0.577	0.397	0.460	0.400	0.393	0.425	0.392	0.399	0.412	0.386
	IF	0.804	0.807	0.808	0.688	0.805	0.753	0.805	0.809	0.796	0.808	0.798	0.810	0.814
	ABOD	0.611	0.618	0.598	0.656	0.610	0.626	0.612	0.608	0.626	0.580	0.603	0.611	0.594
	COPOD	0.500	0.502	0.506	0.317	0.506	0.446	0.509	0.513	0.466	0.502	0.508	0.508	0.501
	AE	0.748	0.775	0.778	0.697	0.772	0.737	0.759	0.736	0.754	0.754	0.761	0.757	0.769
	OCSVM	0.733	0.731	0.724	0.658	0.723	0.693	0.720	0.713	0.708	0.722	0.720	0.720	0.727

Table 9: Experimental results (replay strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.283	0.315	0.290	0.219	0.296	0.289	0.292	0.287	0.276	0.299	0.290	0.297	0.313
	IF	0.351	0.383	0.341	0.391	0.350	0.407	0.356	0.348	0.356	0.363	0.344	0.340	0.353
	ABOD	0.271	0.311	0.270	0.290	0.284	0.295	0.280	0.280	0.256	0.281	0.280	0.279	0.272
	COPOD	0.428	0.391	0.392	0.406	0.398	0.414	0.398	0.398	0.416	0.402	0.398	0.392	0.425
	AE	0.361	0.354	0.327	0.315	0.302	0.386	0.304	0.320	0.311	0.310	0.325	0.331	0.338
	OCSVM	0.480	0.457	0.454	0.366	0.461	0.492	0.460	0.460	0.442	0.470	0.460	0.456	0.439
UNSW C	LOF	0.227	0.149	0.189	0.171	0.192	0.220	0.195	0.192	0.225	0.191	0.192	0.198	0.190
	IF	0.379	0.371	0.359	0.335	0.374	0.420	0.360	0.380	0.348	0.384	0.376	0.364	0.325
	ABOD	0.198	0.171	0.191	0.255	0.189	0.228	0.193	0.190	0.174	0.193	0.197	0.197	0.184
	COPOD	0.217	0.218	0.229	0.205	0.227	0.239	0.226	0.227	0.212	0.236	0.227	0.230	0.216
	AE	0.346	0.282	0.323	0.329	0.262	0.368	0.297	0.349	0.238	0.309	0.298	0.320	0.277
	OCSVM	0.565	0.526	0.544	0.372	0.547	0.578	0.546	0.550	0.512	0.567	0.548	0.544	0.513
UNSW R	LOF	0.410	0.394	0.405	0.393	0.402	0.482	0.402	0.396	0.371	0.411	0.427	0.396	0.411
	IF	0.444	0.473	0.421	0.444	0.435	0.533	0.446	0.440	0.435	0.447	0.442	0.416	0.421
	ABOD	0.416	0.408	0.378	0.383	0.377	0.400	0.380	0.382	0.413	0.380	0.380	0.379	0.409
	COPOD	0.206	0.220	0.220	0.236	0.223	0.256	0.224	0.223	0.197	0.231	0.224	0.221	0.244
	AE	0.400	0.419	0.422	0.490	0.386	0.467	0.440	0.404	0.413	0.456	0.415	0.394	0.448
	OCSVM	0.521	0.501	0.472	0.441	0.482	0.513	0.482	0.482	0.489	0.486	0.482	0.478	0.469
Wind A	LOF	0.584	0.693	0.553	0.573	0.550	0.552	0.550	0.549	0.551	0.551	0.551	0.551	0.586
	IF	0.640	0.646	0.656	0.641	0.637	0.661	0.650	0.655	0.628	0.639	0.644	0.648	0.622
	ABOD	0.566	0.638	0.540	0.562	0.540	0.539	0.546	0.542	0.545	0.542	0.543	0.543	0.552
	COPOD	0.958	0.967	0.908	0.960	0.908	0.923	0.908	0.908	0.895	0.908	0.908	0.908	0.957
	AE	0.703	0.618	0.638	0.647	0.646	0.611	0.637	0.614	0.614	0.607	0.620	0.590	0.684
	OCSVM	0.568	0.613	0.525	0.547	0.525	0.566	0.525	0.526	0.496	0.525	0.525	0.525	0.570
Wind C	LOF	0.657	0.820	0.651	0.668	0.654	0.648	0.655	0.651	0.667	0.649	0.649	0.649	0.672
	IF	0.747	0.694	0.711	0.737	0.704	0.749	0.706	0.699	0.664	0.712	0.708	0.708	0.719
	ABOD	0.636	0.740	0.638	0.625	0.637	0.622	0.637	0.639	0.664	0.632	0.631	0.642	0.635
	COPOD	0.942	0.933	0.904	0.941	0.905	0.920	0.904	0.905	0.894	0.906	0.904	0.904	0.918
	AE	0.775	0.763	0.730	0.850	0.659	0.745	0.748	0.775	0.831	0.727	0.739	0.736	0.798
	OCSVM	0.609	0.747	0.536	0.597	0.536	0.585	0.537	0.537	0.500	0.537	0.537	0.537	0.581
Wind R	LOF	0.636	0.588	0.587	0.631	0.585	0.602	0.598	0.589	0.594	0.586	0.585	0.590	0.636
	IF	0.687	0.639	0.647	0.660	0.651	0.703	0.647	0.646	0.618	0.657	0.652	0.647	0.625
	ABOD	0.587	0.561	0.564	0.589	0.560	0.571	0.560	0.563	0.582	0.565	0.558	0.561	0.617
	COPOD	0.963	0.895	0.895	0.924	0.896	0.920	0.895	0.896	0.889	0.895	0.895	0.895	0.926
	AE	0.778	0.655	0.619	0.721	0.685	0.632	0.525	0.668	0.723	0.618	0.671	0.569	0.732
	OCSVM	0.587	0.536	0.536	0.579	0.536	0.586	0.536	0.535	0.496	0.536	0.536	0.535	0.548
CICIDS A	LOF	0.459	0.460	0.452	0.500	0.441	0.442	0.441	0.441	0.447	0.428	0.458	0.442	0.460
	IF	0.629	0.646	0.643	0.557	0.636	0.632	0.636	0.636	0.616	0.607	0.635	0.633	0.627
	COPOD	0.641	0.640	0.640	0.676	0.635	0.638	0.635	0.635	0.620	0.627	0.636	0.638	0.632
	AE	0.606	0.538	0.514	0.625	0.464	0.592	0.464	0.464	0.456	0.526	0.557	0.545	0.490
	OCSVM	0.475	0.474	0.473	0.408	0.474	0.479	0.474	0.474	0.471	0.471	0.473	0.473	0.466
CICIDS C	LOF	0.490	0.518	0.541	0.500	0.514	0.511	0.514	0.514	0.512	0.519	0.514	0.534	0.533
	IF	0.660	0.642	0.669	0.657	0.663	0.647	0.663	0.663	0.646	0.645	0.649	0.668	0.633
	COPOD	0.585	0.580	0.588	0.490	0.588	0.584	0.588	0.588	0.594	0.588	0.588	0.588	0.581
	AE	0.708	0.782	0.686	0.772	0.711	0.790	0.711	0.711	0.677	0.716	0.734	0.702	0.743
	OCSVM	0.742	0.754	0.733	0.636	0.731	0.720	0.731	0.731	0.747	0.728	0.734	0.736	0.731
CICIDS R	LOF	0.421	0.416	0.429	0.500	0.447	0.455	0.447	0.447	0.444	0.439	0.450	0.413	0.446
	IF	0.662	0.642	0.651	0.527	0.633	0.641	0.633	0.633	0.624	0.640	0.641	0.644	0.639
	COPOD	0.525	0.526	0.518	0.497	0.524	0.522	0.524	0.524	0.530	0.524	0.524	0.531	0.529
	AE	0.580	0.588	0.634	0.499	0.606	0.560	0.606	0.606	0.546	0.612	0.619	0.588	0.598
	OCSVM	0.557	0.557	0.559	0.615	0.554	0.584	0.554	0.554	0.545	0.552	0.554	0.562	0.562

Table 10: Experimental results (replay strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	0.614	0.629	0.617	0.608	0.618	0.607	0.618	0.618	0.618	0.648	0.617	0.617	0.607
	IF	0.589	0.596	0.571	0.576	0.570	0.581	0.570	0.570	0.570	0.549	0.571	0.571	0.578
	ABOD	0.628	0.600	0.629	0.626	0.629	0.627	0.629	0.629	0.629	0.652	0.629	0.629	0.624
	COPOD	0.832	0.978	0.832	0.853	0.831	0.841	0.831	0.831	0.829	0.842	0.832	0.832	0.846
	AE	0.644	0.704	0.660	0.675	0.680	0.687	0.612	0.654	0.651	0.698	0.663	0.652	0.658
	OCSVM	0.612	0.670	0.608	0.654	0.608	0.621	0.608	0.608	0.605	0.579	0.608	0.608	0.651
Energy C	LOF	0.782	0.788	0.777	0.763	0.782	0.776	0.782	0.782	0.786	0.788	0.782	0.782	0.764
	IF	0.642	0.618	0.636	0.632	0.638	0.630	0.637	0.637	0.629	0.618	0.638	0.638	0.630
	ABOD	0.799	0.802	0.797	0.785	0.800	0.795	0.800	0.800	0.801	0.802	0.800	0.800	0.787
	COPOD	0.892	0.884	0.890	0.910	0.891	0.892	0.891	0.891	0.888	0.884	0.891	0.891	0.898
	AE	0.821	0.821	0.829	0.814	0.840	0.825	0.846	0.840	0.820	0.808	0.820	0.848	0.826
	OCSVM	0.636	0.593	0.636	0.706	0.632	0.642	0.632	0.632	0.628	0.593	0.632	0.632	0.688
Energy R	LOF	0.644	0.653	0.640	0.622	0.639	0.648	0.639	0.639	0.643	0.648	0.640	0.640	0.645
	IF	0.514	0.535	0.523	0.523	0.521	0.535	0.521	0.521	0.522	0.512	0.523	0.523	0.527
	ABOD	0.631	0.656	0.627	0.625	0.626	0.634	0.626	0.626	0.628	0.631	0.627	0.627	0.632
	COPOD	0.828	0.969	0.829	0.847	0.828	0.836	0.828	0.828	0.824	0.836	0.829	0.829	0.829
	AE	0.654	0.716	0.638	0.647	0.654	0.702	0.659	0.653	0.663	0.637	0.617	0.652	0.642
	OCSVM	0.601	0.690	0.597	0.635	0.597	0.610	0.597	0.597	0.595	0.571	0.597	0.597	0.600
NSLKDD A	LOF	0.231	0.230	0.239	0.361	0.252	0.268	0.232	0.267	0.264	0.225	0.259	0.229	0.257
	IF	0.905	0.906	0.905	0.718	0.849	0.817	0.908	0.818	0.845	0.904	0.833	0.910	0.834
	ABOD	0.620	0.617	0.608	0.582	0.632	0.636	0.614	0.635	0.616	0.597	0.633	0.613	0.656
	COPOD	0.836	0.834	0.827	0.539	0.757	0.710	0.825	0.708	0.751	0.828	0.731	0.828	0.762
	AE	0.838	0.845	0.804	0.680	0.828	0.776	0.831	0.837	0.763	0.843	0.848	0.825	0.835
	OCSVM	0.658	0.660	0.654	0.755	0.679	0.698	0.675	0.699	0.668	0.665	0.689	0.667	0.675
NSLKDD C	LOF	0.345	0.353	0.428	0.594	0.329	0.426	0.329	0.329	0.385	0.345	0.329	0.329	0.343
	IF	0.909	0.912	0.908	0.854	0.902	0.890	0.902	0.902	0.897	0.894	0.902	0.902	0.919
	ABOD	0.669	0.673	0.671	0.748	0.653	0.717	0.653	0.653	0.699	0.654	0.653	0.653	0.661
	COPOD	0.777	0.775	0.704	0.256	0.762	0.595	0.762	0.762	0.664	0.734	0.761	0.761	0.747
	AE	0.906	0.893	0.908	0.906	0.899	0.910	0.920	0.898	0.873	0.919	0.932	0.895	0.918
	OCSVM	0.670	0.672	0.679	0.865	0.677	0.755	0.677	0.677	0.718	0.683	0.677	0.677	0.693
NSLKDD R	LOF	0.406	0.397	0.399	0.577	0.394	0.451	0.393	0.391	0.413	0.390	0.393	0.393	0.409
	IF	0.808	0.810	0.800	0.688	0.803	0.755	0.806	0.806	0.792	0.805	0.806	0.806	0.807
	ABOD	0.576	0.573	0.572	0.656	0.566	0.613	0.566	0.564	0.595	0.562	0.565	0.565	0.588
	COPOD	0.619	0.618	0.604	0.317	0.607	0.498	0.607	0.607	0.547	0.603	0.607	0.607	0.590
	AE	0.705	0.728	0.719	0.637	0.715	0.674	0.734	0.735	0.694	0.721	0.713	0.710	0.711
	OCSVM	0.626	0.625	0.629	0.658	0.630	0.643	0.630	0.630	0.631	0.630	0.630	0.630	0.641

Table 11: Experimental results (cumulative strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	0.347	0.355	0.332	0.219	0.332	0.333	0.332	0.332	0.339	0.332	0.332	0.332	0.300
	IF	0.346	0.364	0.335	0.391	0.342	0.396	0.342	0.342	0.354	0.342	0.342	0.336	0.357
	ABOD	0.291	0.314	0.282	0.290	0.283	0.298	0.283	0.283	0.283	0.283	0.283	0.282	0.278
	COPOD	0.384	0.377	0.371	0.406	0.380	0.394	0.380	0.380	0.380	0.379	0.380	0.372	0.397
	AE	0.304	0.302	0.310	0.333	0.321	0.434	0.312	0.307	0.287	0.318	0.315	0.299	0.305
	OCSVM	0.490	0.454	0.464	0.366	0.468	0.477	0.468	0.468	0.468	0.467	0.468	0.465	0.430
UNSW C	LOF	0.208	0.191	0.187	0.171	0.187	0.195	0.187	0.187	0.198	0.187	0.187	0.187	0.154
	IF	0.360	0.355	0.353	0.335	0.352	0.400	0.352	0.352	0.323	0.351	0.352	0.354	0.326
	ABOD	0.250	0.228	0.227	0.255	0.227	0.249	0.227	0.227	0.226	0.227	0.227	0.227	0.236
	COPOD	0.288	0.268	0.267	0.205	0.264	0.281	0.264	0.264	0.263	0.264	0.264	0.267	0.259
	AE	0.297	0.266	0.263	0.311	0.274	0.355	0.250	0.265	0.268	0.252	0.243	0.307	0.219
	OCSVM	0.571	0.550	0.544	0.372	0.545	0.555	0.545	0.545	0.546	0.545	0.545	0.544	0.533
UNSW R	LOF	0.515	0.533	0.491	0.393	0.492	0.485	0.492	0.492	0.456	0.492	0.492	0.491	0.480
	IF	0.433	0.465	0.417	0.444	0.436	0.513	0.436	0.436	0.447	0.436	0.436	0.417	0.450
	ABOD	0.374	0.369	0.349	0.383	0.350	0.367	0.350	0.350	0.398	0.350	0.350	0.349	0.388
	COPOD	0.302	0.306	0.294	0.236	0.303	0.319	0.303	0.303	0.283	0.303	0.303	0.294	0.290
	AE	0.411	0.404	0.384	0.361	0.369	0.414	0.376	0.412	0.442	0.398	0.438	0.397	0.427
	OCSVM	0.505	0.480	0.478	0.441	0.484	0.496	0.484	0.484	0.456	0.482	0.484	0.481	0.472
Wind A	LOF	0.519	0.693	0.530	0.538	0.530	0.519	0.530	0.530	0.551	0.530	0.530	0.530	0.534
	IF	0.654	0.646	0.645	0.633	0.645	0.654	0.645	0.645	0.628	0.645	0.645	0.645	0.612
	ABOD	0.507	0.638	0.528	0.523	0.528	0.507	0.528	0.528	0.545	0.528	0.528	0.528	0.524
	COPOD	0.893	0.967	0.891	0.914	0.891	0.893	0.891	0.891	0.895	0.891	0.891	0.891	0.912
	AE	0.688	0.654	0.547	0.619	0.652	0.708	0.678	0.646	0.739	0.636	0.612	0.591	0.623
	OCSVM	0.543	0.613	0.524	0.525	0.524	0.543	0.524	0.524	0.496	0.524	0.524	0.524	0.531
Wind C	LOF	0.599	0.820	0.625	0.601	0.625	0.599	0.625	0.625	0.667	0.625	0.625	0.625	0.621
	IF	0.748	0.694	0.711	0.710	0.711	0.748	0.711	0.711	0.664	0.711	0.711	0.711	0.684
	ABOD	0.589	0.740	0.621	0.591	0.621	0.589	0.621	0.621	0.664	0.621	0.621	0.621	0.611
	COPOD	0.905	0.933	0.898	0.903	0.898	0.905	0.898	0.898	0.894	0.898	0.898	0.898	0.899
	AE	0.660	0.761	0.754	0.742	0.780	0.686	0.739	0.645	0.762	0.714	0.854	0.741	0.733
	OCSVM	0.556	0.747	0.534	0.540	0.534	0.556	0.534	0.534	0.500	0.534	0.534	0.534	0.516
Wind R	LOF	0.574	0.564	0.564	0.587	0.564	0.574	0.564	0.564	0.594	0.564	0.564	0.564	0.601
	IF	0.682	0.659	0.659	0.661	0.659	0.682	0.659	0.659	0.618	0.659	0.659	0.659	0.618
	ABOD	0.544	0.545	0.545	0.567	0.545	0.544	0.545	0.545	0.582	0.545	0.545	0.545	0.577
	COPOD	0.892	0.888	0.888	0.903	0.888	0.892	0.888	0.888	0.889	0.888	0.888	0.888	0.897
	AE	0.632	0.605	0.662	0.705	0.680	0.600	0.614	0.640	0.603	0.569	0.652	0.686	0.659
	OCSVM	0.557	0.533	0.533	0.526	0.533	0.557	0.533	0.533	0.496	0.533	0.533	0.533	0.500
CICIDS A	LOF	0.458	0.460	0.458	0.500	0.460	0.463	0.460	0.460	0.445	0.446	0.460	0.460	0.461
	IF	0.639	0.640	0.640	0.557	0.637	0.634	0.637	0.637	0.618	0.610	0.637	0.641	0.614
	COPOD	0.588	0.587	0.588	0.676	0.587	0.590	0.587	0.587	0.582	0.580	0.587	0.590	0.584
	AE	0.568	0.492	0.557	0.533	0.570	0.544	0.570	0.570	0.512	0.531	0.532	0.525	0.524
	OCSVM	0.471	0.472	0.472	0.408	0.472	0.476	0.472	0.472	0.465	0.468	0.472	0.471	0.457
CICIDS C	LOF	0.522	0.524	0.539	0.500	0.539	0.568	0.539	0.539	0.524	0.520	0.539	0.532	0.555
	IF	0.651	0.641	0.635	0.657	0.637	0.636	0.637	0.637	0.647	0.642	0.637	0.638	0.646
	COPOD	0.631	0.627	0.631	0.490	0.630	0.625	0.630	0.630	0.634	0.631	0.630	0.630	0.627
	AE	0.744	0.716	0.716	0.463	0.694	0.683	0.694	0.694	0.729	0.733	0.751	0.718	0.738
	OCSVM	0.661	0.670	0.651	0.636	0.658	0.670	0.658	0.658	0.661	0.654	0.658	0.663	0.661
CICIDS R	LOF	0.452	0.451	0.452	0.500	0.465	0.485	0.465	0.465	0.468	0.456	0.465	0.460	0.473
	IF	0.641	0.641	0.642	0.527	0.639	0.638	0.639	0.639	0.645	0.639	0.639	0.643	0.634
	COPOD	0.549	0.549	0.549	0.497	0.545	0.543	0.545	0.545	0.552	0.545	0.545	0.547	0.549
	AE	0.636	0.566	0.560	0.513	0.596	0.576	0.596	0.596	0.564	0.647	0.644	0.653	0.578
	OCSVM	0.537	0.533	0.528	0.615	0.538	0.556	0.538	0.538	0.531	0.536	0.538	0.540	0.530

Table 12: Experimental results (cumulative strategy): Anomaly detection performance (forward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	-0.407	0.048	-0.326	-0.075	-0.304	-0.108	-0.304	-0.304	-0.320	0.088	-0.326	-0.333	-0.362
	IF	-0.459	-0.008	-0.319	-0.095	-0.257	-0.219	-0.257	-0.257	-0.269	-0.112	-0.319	-0.323	-0.395
	ABOD	-0.424	0.048	-0.336	-0.086	-0.319	-0.142	-0.319	-0.319	-0.330	0.038	-0.336	-0.333	-0.384
	COPOD	-0.112	-0.025	-0.077	-0.004	-0.068	-0.055	-0.068	-0.068	-0.055	-0.020	-0.077	-0.052	-0.045
	AE	-0.374	0.022	-0.296	-0.095	-0.286	-0.146	-0.296	-0.293	-0.297	0.042	-0.281	-0.320	-0.336
	OCSVM	-0.506	-0.015	-0.399	-0.104	-0.366	-0.167	-0.366	-0.366	-0.401	-0.018	-0.399	-0.401	-0.414
Energy C	LOF	-0.307	0.066	-0.252	-0.215	-0.249	-0.206	-0.208	-0.208	-0.244	0.066	-0.245	-0.249	-0.214
	IF	-0.290	-0.071	-0.228	-0.253	-0.194	-0.262	-0.138	-0.138	-0.157	-0.071	-0.194	-0.186	-0.267
	ABOD	-0.325	0.034	-0.233	-0.270	-0.263	-0.207	-0.235	-0.235	-0.249	0.034	-0.257	-0.264	-0.237
	COPOD	-0.073	-0.010	-0.060	-0.015	-0.054	-0.038	-0.047	-0.047	-0.035	-0.010	-0.054	-0.047	-0.048
	AE	-0.206	0.010	-0.163	-0.168	-0.180	-0.139	-0.152	-0.139	-0.154	0.016	-0.173	-0.198	-0.136
	OCSVM	-0.439	0.005	-0.296	-0.229	-0.339	-0.272	-0.306	-0.306	-0.273	0.005	-0.339	-0.342	-0.265
Energy R	LOF	-0.355	0.072	-0.242	-0.345	-0.213	-0.080	-0.213	-0.213	-0.219	0.135	-0.242	-0.250	-0.281
	IF	-0.408	0.013	-0.246	-0.393	-0.171	-0.233	-0.171	-0.171	-0.188	-0.127	-0.246	-0.247	-0.336
	ABOD	-0.377	0.064	-0.220	-0.358	-0.198	-0.136	-0.198	-0.198	-0.211	0.060	-0.220	-0.226	-0.295
	COPOD	-0.092	-0.024	-0.030	-0.012	-0.006	-0.040	-0.006	-0.006	0.013	0.002	-0.030	-0.026	-0.034
	AE	-0.319	0.045	-0.181	-0.289	-0.144	-0.165	-0.148	-0.155	-0.146	0.109	-0.208	-0.211	-0.209
	OCSVM	-0.494	0.009	-0.372	-0.351	-0.339	-0.180	-0.339	-0.339	-0.354	0.028	-0.372	-0.373	-0.349
NSLKDD A	LOF	-0.404	-0.307	-0.038	0.051	-0.124	0.032	-0.165	-0.023	-0.014	-0.111	-0.064	-0.225	-0.146
	IF	-0.177	-0.171	-0.128	0.023	-0.069	-0.009	-0.145	-0.007	0.073	-0.088	-0.035	-0.152	0.022
	ABOD	-0.240	-0.255	0.004	0.040	-0.076	-0.005	-0.195	-0.008	0.166	-0.153	-0.035	-0.224	-0.139
	COPOD	-0.084	-0.049	-0.042	0.036	-0.075	-0.015	-0.095	-0.009	0.022	-0.097	-0.050	-0.104	-0.040
	AE	-0.127	-0.154	-0.032	0.017	-0.101	-0.046	-0.128	-0.048	-0.003	-0.147	-0.121	-0.112	-0.086
	OCSVM	-0.286	-0.125	-0.002	-0.005	-0.160	-0.089	-0.130	-0.081	0.021	-0.018	-0.082	-0.110	-0.115
NSLKDD C	LOF	-0.418	-0.330	-0.147	0.027	-0.275	-0.128	-0.275	-0.275	-0.104	-0.101	-0.273	-0.273	-0.307
	IF	-0.341	-0.307	-0.262	0.009	-0.216	-0.083	-0.216	-0.216	-0.130	-0.128	-0.216	-0.216	-0.206
	ABOD	-0.415	-0.347	-0.202	0.022	-0.306	-0.210	-0.306	-0.306	-0.221	-0.256	-0.308	-0.308	-0.395
	COPOD	-0.136	-0.029	0.014	0.048	-0.145	-0.013	-0.145	-0.145	-0.045	-0.081	-0.121	-0.121	-0.085
	AE	-0.354	-0.358	-0.301	0.011	-0.239	-0.176	-0.274	-0.299	-0.198	-0.177	-0.321	-0.306	-0.339
	OCSVM	-0.424	-0.356	-0.284	-0.015	-0.280	-0.218	-0.280	-0.280	-0.203	-0.115	-0.287	-0.287	-0.348
NSLKDD R	LOF	-0.395	-0.393	-0.124	0.031	-0.319	-0.080	-0.247	-0.215	-0.047	-0.181	-0.240	-0.240	-0.286
	IF	-0.303	-0.318	-0.265	0.009	-0.278	-0.097	-0.272	-0.239	-0.109	-0.196	-0.278	-0.278	-0.261
	ABOD	-0.329	-0.282	-0.209	0.029	-0.295	-0.108	-0.262	-0.265	-0.081	-0.299	-0.282	-0.282	-0.231
	COPOD	-0.116	-0.043	-0.056	0.037	-0.087	0.014	-0.089	-0.124	0.021	-0.065	-0.089	-0.089	-0.052
	AE	-0.243	-0.214	-0.232	0.004	-0.195	-0.157	-0.230	-0.229	-0.105	-0.289	-0.256	-0.257	-0.268
	OCSVM	-0.347	-0.256	-0.136	-0.001	-0.211	-0.144	-0.184	-0.153	-0.081	-0.201	-0.193	-0.193	-0.278

Table 13: Experimental results (naive strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	-0.454	0.149	-0.081	0.272	0.030	0.077	0.030	0.030	-0.076	0.056	0.030	-0.075	0.041
	IF	-0.458	0.159	-0.204	0.081	-0.121	-0.112	-0.121	-0.121	-0.035	-0.141	-0.121	-0.211	0.112
	ABOD	-0.512	0.118	-0.162	0.208	-0.080	0.014	-0.080	-0.080	-0.192	-0.045	-0.080	-0.115	0.115
	COPOD	-0.207	0.121	-0.059	0.033	-0.040	-0.015	-0.040	-0.040	-0.008	-0.047	-0.040	-0.063	0.028
	AE	-0.468	0.195	-0.123	0.094	-0.005	0.043	0.002	-0.013	-0.101	-0.013	0.015	-0.096	0.113
	OCSVM	-0.405	0.130	-0.173	0.100	-0.081	-0.053	-0.081	-0.081	-0.121	-0.076	-0.081	-0.142	0.129
UNSW C	LOF	-0.347	-0.068	-0.068	0.273	-0.026	0.160	-0.026	-0.026	0.146	0.068	-0.026	-0.104	0.069
	IF	-0.301	-0.123	-0.221	0.131	-0.134	-0.207	-0.134	-0.134	0.004	-0.182	-0.134	-0.196	0.039
	ABOD	-0.455	-0.168	-0.198	0.210	-0.145	-0.045	-0.145	-0.145	-0.053	-0.074	-0.145	-0.134	0.005
	COPOD	-0.191	-0.061	-0.118	0.124	-0.088	-0.104	-0.088	-0.088	0.051	-0.137	-0.088	-0.113	0.016
	AE	-0.320	0.039	-0.141	0.101	-0.013	-0.050	-0.063	-0.035	0.060	-0.099	-0.072	-0.062	0.011
	OCSVM	-0.262	-0.065	-0.110	0.091	-0.002	-0.049	-0.002	-0.002	0.034	-0.017	-0.002	-0.064	0.082
UNSW R	LOF	-0.354	-0.137	-0.076	-0.053	0.016	0.117	0.016	0.016	-0.059	0.047	0.016	-0.126	-0.035
	IF	-0.396	-0.215	-0.215	-0.011	-0.123	-0.121	-0.123	-0.123	-0.019	-0.054	-0.123	-0.233	-0.009
	ABOD	-0.462	-0.260	-0.165	0.068	-0.005	0.000	-0.005	-0.005	-0.109	0.017	-0.005	-0.086	-0.090
	COPOD	-0.238	-0.045	-0.082	0.061	-0.103	-0.043	-0.103	-0.103	0.118	-0.073	-0.103	-0.120	0.067
	AE	-0.353	-0.214	-0.127	-0.019	-0.081	-0.006	-0.070	-0.111	-0.047	0.055	-0.048	-0.129	-0.062
	OCSVM	-0.442	-0.222	-0.179	0.006	-0.134	-0.070	-0.134	-0.134	-0.088	-0.113	-0.134	-0.196	-0.088
Wind A	LOF	-0.518	0.072	-0.245	-0.440	-0.245	-0.518	-0.245	-0.245	0.084	-0.241	-0.245	-0.245	0.009
	IF	-0.329	0.081	-0.063	-0.175	-0.063	-0.329	-0.063	-0.063	0.063	-0.066	-0.063	-0.063	-0.222
	ABOD	-0.522	0.075	-0.197	-0.452	-0.197	-0.522	-0.197	-0.197	0.078	-0.240	-0.197	-0.197	-0.001
	COPOD	-0.104	-0.043	-0.031	-0.020	-0.031	-0.104	-0.031	-0.031	-0.012	0.001	-0.031	-0.031	-0.067
	AE	-0.405	0.084	-0.201	-0.320	-0.166	-0.391	-0.160	-0.255	0.047	-0.038	-0.250	-0.220	-0.082
	OCSVM	-0.414	0.003	-0.257	-0.243	-0.257	-0.414	-0.257	-0.257	0.045	-0.219	-0.257	-0.257	-0.159
Wind C	LOF	-0.494	0.046	-0.235	-0.400	-0.235	-0.494	-0.235	-0.235	0.046	-0.275	-0.235	-0.235	-0.086
	IF	-0.091	0.080	-0.064	-0.069	-0.064	-0.091	-0.064	-0.064	0.065	-0.016	-0.064	-0.064	-0.030
	ABOD	-0.486	0.053	-0.238	-0.397	-0.238	-0.486	-0.238	-0.238	0.044	-0.287	-0.238	-0.238	-0.090
	COPOD	-0.050	-0.011	-0.023	-0.014	-0.023	-0.050	-0.023	-0.023	-0.002	0.000	-0.023	-0.023	-0.017
	AE	-0.291	0.016	-0.218	-0.274	-0.195	-0.385	-0.151	-0.206	0.008	-0.066	-0.207	-0.206	-0.053
	OCSVM	-0.385	-0.044	-0.241	-0.228	-0.241	-0.385	-0.241	-0.241	0.044	-0.247	-0.241	-0.241	-0.132
Wind R	LOF	-0.570	-0.288	-0.260	-0.297	-0.260	-0.570	-0.260	-0.260	0.083	-0.260	-0.260	-0.260	-0.030
	IF	-0.324	-0.014	-0.083	-0.270	-0.083	-0.324	-0.083	-0.083	0.096	-0.083	-0.083	-0.083	-0.266
	ABOD	-0.589	-0.281	-0.220	-0.294	-0.220	-0.589	-0.220	-0.220	0.091	-0.220	-0.220	-0.220	-0.055
	COPOD	-0.115	0.005	-0.028	-0.040	-0.028	-0.115	-0.028	-0.028	0.009	-0.028	-0.028	-0.028	-0.031
	AE	-0.447	-0.145	-0.196	-0.217	-0.364	-0.464	-0.294	-0.238	0.031	-0.189	-0.242	-0.221	-0.129
	OCSVM	-0.430	-0.256	-0.263	-0.203	-0.263	-0.430	-0.263	-0.263	0.044	-0.263	-0.263	-0.263	-0.236
CICIDS A	LOF	-0.481	-0.515	-0.431	0.058	-0.400	-0.247	-0.400	-0.400	-0.196	-0.373	-0.400	-0.346	-0.212
	IF	-0.471	-0.471	-0.452	0.008	-0.444	-0.459	-0.444	-0.444	-0.326	-0.319	-0.444	-0.385	-0.303
	COPOD	-0.333	-0.189	-0.302	-0.014	-0.298	-0.252	-0.298	-0.298	-0.085	-0.193	-0.298	-0.256	-0.058
	AE	-0.506	-0.565	-0.306	0.056	-0.303	-0.316	-0.303	-0.303	-0.140	-0.228	-0.299	-0.216	-0.293
	OCSVM	-0.531	-0.567	-0.483	0.019	-0.452	-0.432	-0.452	-0.452	-0.237	-0.362	-0.452	-0.401	-0.259
CICIDS C	LOF	-0.475	-0.347	-0.332	0.058	-0.363	-0.263	-0.363	-0.363	-0.290	-0.343	-0.352	-0.316	-0.324
	IF	-0.443	-0.376	-0.357	-0.003	-0.379	-0.371	-0.379	-0.379	-0.223	-0.419	-0.386	-0.443	-0.303
	COPOD	-0.515	-0.162	-0.354	0.013	-0.381	-0.358	-0.381	-0.381	-0.262	-0.454	-0.382	-0.386	-0.320
	AE	-0.443	-0.234	-0.211	0.031	-0.263	-0.336	-0.263	-0.263	-0.219	-0.224	-0.250	-0.207	-0.443
	OCSVM	-0.507	-0.414	-0.384	0.017	-0.418	-0.422	-0.418	-0.418	-0.379	-0.444	-0.419	-0.368	-0.425
CICIDS R	LOF	-0.484	-0.495	-0.402	0.058	-0.363	-0.225	-0.363	-0.363	-0.218	-0.324	-0.364	-0.314	-0.368
	IF	-0.450	-0.456	-0.428	0.010	-0.431	-0.407	-0.431	-0.431	-0.445	-0.420	-0.431	-0.327	-0.346
	COPOD	-0.511	-0.200	-0.462	0.018	-0.444	-0.348	-0.444	-0.444	-0.435	-0.439	-0.444	-0.377	-0.382
	AE	-0.431	-0.406	-0.365	0.027	-0.305	-0.252	-0.305	-0.305	-0.389	-0.335	-0.408	-0.207	-0.371
	OCSVM	-0.484	-0.469	-0.387	0.001	-0.378	-0.321	-0.378	-0.378	-0.288	-0.370	-0.378	-0.329	-0.333

Table 14: Experimental results (naive strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	-0.018	0.048	0.037	0.098	0.041	0.147	0.043	0.048	0.031	0.138	0.038	0.034	-0.005
	IF	-0.186	-0.008	-0.151	-0.019	-0.118	-0.086	-0.134	-0.125	-0.104	-0.026	-0.152	-0.144	-0.123
	ABOD	-0.020	0.048	0.030	0.108	0.037	0.113	0.033	0.035	0.028	0.114	0.034	0.027	-0.004
	COPOD	-0.039	-0.025	-0.040	-0.021	-0.033	-0.028	-0.035	-0.034	-0.030	-0.018	-0.039	-0.033	-0.036
	AE	-0.048	0.024	-0.007	0.115	0.004	0.060	0.006	-0.007	-0.002	0.105	-0.014	-0.030	-0.039
	OCSVM	-0.128	-0.015	-0.126	-0.037	-0.118	-0.094	-0.118	-0.118	-0.111	-0.005	-0.127	-0.119	-0.099
Energy C	LOF	-0.012	0.099	0.058	0.049	0.025	0.102	0.030	0.025	-0.004	0.099	0.030	0.035	0.037
	IF	-0.055	0.020	-0.039	-0.021	-0.033	-0.012	-0.021	-0.022	-0.029	0.018	-0.043	-0.029	-0.030
	ABOD	-0.007	0.078	0.050	0.020	0.031	0.066	0.033	0.030	0.005	0.078	0.034	0.034	0.028
	COPOD	-0.007	-0.003	-0.003	-0.004	-0.005	-0.004	-0.003	-0.002	-0.006	-0.003	-0.004	-0.003	-0.007
	AE	-0.025	0.043	0.039	0.008	-0.003	0.054	0.000	0.013	-0.002	0.065	0.008	-0.003	-0.014
	OCSVM	-0.094	0.017	-0.074	-0.066	-0.087	-0.067	-0.075	-0.078	-0.082	0.016	-0.087	-0.080	-0.081
Energy R	LOF	-0.009	0.072	0.087	-0.010	0.100	0.181	0.107	0.105	0.081	0.158	0.087	0.085	0.020
	IF	-0.131	0.013	-0.069	-0.091	-0.038	-0.047	-0.040	-0.036	-0.043	-0.024	-0.072	-0.067	-0.129
	ABOD	-0.008	0.064	0.078	-0.010	0.093	0.188	0.090	0.092	0.074	0.110	0.075	0.074	0.023
	COPOD	-0.027	-0.024	-0.025	-0.018	-0.018	-0.010	-0.018	-0.018	-0.017	-0.005	-0.025	-0.021	-0.025
	AE	-0.018	0.042	0.027	-0.032	0.064	0.181	0.075	0.043	0.045	0.140	0.043	0.024	0.003
	OCSVM	-0.088	0.009	-0.080	-0.057	-0.069	-0.053	-0.068	-0.068	-0.067	0.044	-0.079	-0.076	-0.106
NSLKDD A	LOF	-0.014	-0.009	0.213	0.051	0.272	0.313	0.285	0.365	0.349	0.359	0.333	0.169	0.290
	IF	-0.033	-0.032	-0.002	0.023	0.048	0.095	-0.027	0.097	0.075	-0.010	0.078	-0.026	0.076
	ABOD	-0.008	-0.010	0.098	0.040	0.137	0.220	0.057	0.243	0.272	0.151	0.174	0.082	0.096
	COPOD	0.063	0.056	0.058	0.036	0.058	0.125	0.039	0.122	0.080	0.058	0.081	0.041	0.062
	AE	-0.024	-0.026	0.035	0.017	-0.024	0.033	-0.004	0.030	0.063	0.052	-0.008	-0.021	-0.018
	OCSVM	-0.088	-0.093	-0.066	-0.005	-0.114	-0.036	-0.119	-0.041	-0.028	-0.047	-0.048	-0.122	-0.080
NSLKDD C	LOF	-0.055	0.004	0.056	0.027	0.106	0.201	0.093	0.075	0.168	0.207	0.114	0.080	0.014
	IF	-0.114	-0.085	-0.085	0.009	-0.051	0.016	-0.078	-0.053	0.058	0.015	-0.033	-0.082	0.014
	ABOD	-0.065	-0.033	-0.018	0.022	-0.007	0.053	0.070	0.020	0.099	0.083	-0.002	0.005	0.045
	COPOD	0.025	0.024	0.017	0.048	0.015	0.037	0.016	0.018	0.054	0.060	0.014	0.015	0.011
	AE	-0.139	-0.125	-0.081	0.004	-0.079	0.007	-0.098	-0.113	-0.020	-0.033	-0.098	-0.088	-0.106
	OCSVM	-0.128	-0.114	-0.163	-0.015	-0.137	-0.076	-0.138	-0.135	-0.068	-0.086	-0.138	-0.137	-0.117
NSLKDD R	LOF	-0.010	-0.041	0.086	0.031	0.105	0.157	0.110	0.136	0.226	0.215	0.124	0.127	0.146
	IF	-0.090	-0.097	-0.098	0.009	-0.108	0.046	-0.106	-0.108	0.010	-0.047	-0.110	-0.103	-0.097
	ABOD	-0.026	-0.017	0.024	0.029	0.074	0.158	0.023	0.036	0.134	0.169	0.087	0.001	0.105
	COPOD	0.027	0.026	0.014	0.037	0.019	0.075	0.018	0.008	0.068	0.024	0.018	0.017	0.039
	AE	-0.072	-0.050	-0.034	0.007	-0.034	0.019	-0.089	-0.041	-0.009	-0.019	-0.035	-0.071	-0.080
	OCSVM	-0.104	-0.111	-0.145	-0.001	-0.142	-0.048	-0.142	-0.107	-0.075	-0.110	-0.144	-0.144	-0.119

Table 15: Experimental results (replay strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	-0.062	0.254	0.144	0.306	0.232	0.212	0.234	0.238	0.161	0.277	0.256	0.157	0.197
	IF	-0.070	0.188	0.012	0.057	0.059	0.112	0.054	0.077	0.029	0.049	0.060	0.014	0.114
	ABOD	-0.041	0.230	0.129	0.255	0.236	0.260	0.239	0.222	0.210	0.237	0.225	0.162	0.204
	COPOD	-0.015	0.070	-0.007	0.017	0.002	0.021	0.002	0.003	0.001	-0.007	0.002	-0.005	0.005
	AE	0.114	0.142	0.024	0.089	0.131	0.073	0.186	0.131	0.104	0.156	0.214	0.073	0.203
	OCSVM	-0.093	0.133	0.021	0.093	0.057	0.048	0.058	0.056	-0.004	0.046	0.058	0.028	0.145
UNSW C	LOF	0.005	0.259	0.180	0.305	0.258	0.225	0.225	0.247	0.094	0.278	0.249	0.209	0.136
	IF	-0.013	0.005	0.066	0.115	0.033	0.131	0.064	0.037	0.032	0.025	0.030	0.043	0.141
	ABOD	-0.004	0.170	0.182	0.249	0.212	0.227	0.219	0.229	0.211	0.234	0.224	0.212	0.174
	COPOD	0.020	0.021	-0.020	0.153	-0.011	0.007	-0.010	-0.010	0.027	-0.026	-0.010	-0.016	0.035
	AE	0.034	0.006	0.087	0.113	0.168	0.154	0.237	0.116	0.126	0.160	0.184	0.107	0.050
	OCSVM	-0.041	0.060	0.105	0.095	0.137	0.046	0.138	0.138	0.084	0.127	0.138	0.110	0.079
UNSW R	LOF	0.004	0.167	0.183	0.014	0.290	0.137	0.292	0.290	0.085	0.286	0.281	0.220	0.205
	IF	-0.015	0.072	0.055	-0.007	0.116	0.043	0.109	0.110	0.040	0.141	0.126	0.036	0.144
	ABOD	0.000	0.243	0.194	0.142	0.304	0.297	0.314	0.324	0.206	0.318	0.302	0.219	0.127
	COPOD	0.023	0.065	-0.002	0.092	0.026	0.028	0.026	0.026	0.102	0.037	0.027	-0.005	0.059
	AE	-0.021	0.016	0.178	-0.032	0.096	0.124	0.169	0.170	0.030	0.163	0.187	0.110	0.065
	OCSVM	-0.038	0.132	0.084	0.021	0.124	0.073	0.124	0.124	0.082	0.136	0.122	0.087	0.161
Wind A	LOF	-0.021	0.072	0.042	-0.019	0.042	-0.023	0.041	0.040	0.101	0.082	0.041	0.034	0.058
	IF	-0.059	0.081	0.062	-0.004	0.069	-0.121	0.083	0.058	0.088	0.101	0.070	0.075	-0.001
	ABOD	-0.022	0.075	0.072	-0.017	0.074	-0.027	0.072	0.071	0.091	0.089	0.069	0.062	0.061
	COPOD	-0.024	-0.043	0.026	-0.016	0.026	-0.034	0.025	0.025	-0.014	0.029	0.026	0.025	-0.016
	AE	-0.051	0.072	0.025	-0.038	0.014	-0.054	0.057	-0.025	0.083	0.082	-0.051	0.030	0.013
	OCSVM	-0.105	0.003	-0.045	-0.021	-0.044	-0.151	-0.043	-0.042	0.053	-0.021	-0.043	-0.045	-0.060
Wind C	LOF	-0.008	0.046	0.023	0.032	0.030	-0.009	0.028	0.025	0.063	0.056	0.028	0.026	0.019
	IF	-0.012	0.080	0.043	0.005	0.055	-0.051	0.048	0.044	0.078	0.076	0.061	0.063	0.020
	ABOD	-0.009	0.053	0.036	0.011	0.028	-0.015	0.026	0.032	0.052	0.050	0.028	0.039	0.012
	COPOD	0.003	-0.011	0.017	0.002	0.017	-0.011	0.017	0.019	0.002	0.026	0.017	0.017	-0.004
	AE	-0.011	0.014	0.044	0.019	0.062	-0.019	0.024	0.026	0.037	0.049	0.011	0.046	-0.043
	OCSVM	-0.105	-0.044	-0.051	-0.054	-0.046	-0.133	-0.049	-0.047	0.054	-0.026	-0.047	-0.046	-0.013
Wind R	LOF	-0.038	0.080	0.028	0.001	0.024	-0.032	0.032	0.026	0.113	0.027	0.027	0.028	-0.027
	IF	-0.086	0.100	0.038	0.003	0.058	-0.141	0.050	0.047	0.103	0.063	0.056	0.054	0.024
	ABOD	-0.032	0.091	0.067	0.008	0.067	-0.038	0.059	0.058	0.112	0.061	0.055	0.062	0.005
	COPOD	-0.035	0.019	0.017	-0.020	0.019	-0.053	0.017	0.019	0.004	0.026	0.012	0.018	-0.025
	AE	-0.069	0.018	0.010	0.003	-0.052	-0.070	0.075	0.014	0.072	0.078	-0.033	0.063	-0.021
	OCSVM	-0.095	-0.036	-0.052	0.010	-0.056	-0.145	-0.052	-0.055	0.052	-0.054	-0.055	-0.056	0.041
CICIDS A	LOF	-0.001	-0.002	0.055	0.058	0.083	0.083	0.083	0.083	0.157	0.103	0.066	0.158	0.110
	IF	-0.124	-0.133	-0.148	0.008	-0.127	-0.098	-0.127	-0.127	0.023	-0.016	-0.129	-0.065	0.028
	COPOD	-0.074	-0.081	-0.131	-0.014	-0.134	-0.119	-0.134	-0.134	-0.039	-0.066	-0.134	-0.122	-0.028
	AE	-0.021	-0.008	0.008	0.044	0.022	0.025	0.022	0.022	0.222	0.116	0.041	0.117	0.178
	OCSVM	-0.136	-0.138	-0.122	0.019	-0.110	-0.140	-0.110	-0.110	0.041	-0.003	-0.109	-0.076	-0.011
CICIDS C	LOF	-0.002	0.094	0.092	0.058	0.072	0.084	0.072	0.072	0.082	0.083	0.072	0.012	0.065
	IF	-0.252	-0.166	-0.183	-0.003	-0.213	-0.222	-0.213	-0.213	-0.144	-0.336	-0.226	-0.214	-0.202
	COPOD	-0.093	-0.104	-0.133	0.013	-0.138	-0.170	-0.138	-0.138	-0.100	-0.161	-0.138	-0.128	-0.136
	AE	-0.015	0.043	0.096	0.049	0.060	0.050	0.060	0.060	0.042	0.032	0.029	0.065	0.043
	OCSVM	-0.018	0.014	-0.051	0.017	-0.074	-0.024	-0.074	-0.074	-0.076	-0.040	-0.073	-0.035	-0.045
CICIDS R	LOF	-0.002	-0.002	0.073	0.058	0.046	0.058	0.046	0.046	0.132	0.081	0.048	0.132	0.067
	IF	-0.253	-0.263	-0.261	0.010	-0.247	-0.265	-0.247	-0.247	-0.289	-0.246	-0.249	-0.170	-0.212
	COPOD	-0.024	-0.033	-0.103	0.018	-0.182	-0.092	-0.182	-0.182	-0.162	-0.187	-0.184	-0.156	-0.090
	AE	-0.013	0.014	0.019	0.058	0.072	0.026	0.072	0.072	0.074	0.114	0.031	0.090	0.026
	OCSVM	-0.100	-0.107	-0.138	0.001	-0.142	-0.159	-0.142	-0.142	-0.062	-0.114	-0.145	-0.078	-0.126

Table 16: Experimental results (replay strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
Energy A	LOF	-0.016	0.048	0.054	0.111	0.055	0.121	0.055	0.055	0.037	0.139	0.054	0.054	-0.002
	IF	-0.180	-0.008	-0.094	-0.012	-0.076	-0.067	-0.076	-0.076	-0.080	0.003	-0.094	-0.094	-0.091
	ABOD	-0.017	0.048	0.043	0.136	0.048	0.132	0.048	0.048	0.033	0.118	0.043	0.043	0.002
	COPOD	-0.062	-0.025	-0.040	-0.019	-0.038	-0.038	-0.038	-0.038	-0.035	-0.027	-0.040	-0.040	-0.036
	AE	-0.052	0.022	-0.019	0.096	0.002	0.122	-0.011	0.015	0.000	0.102	0.006	-0.014	-0.023
	OCSVM	-0.141	-0.015	-0.110	-0.048	-0.105	-0.074	-0.105	-0.105	-0.098	0.003	-0.110	-0.110	-0.085
Energy C	LOF	-0.009	0.110	0.058	0.056	0.049	0.100	0.049	0.049	0.010	0.110	0.049	0.049	0.052
	IF	-0.060	0.030	-0.018	-0.021	-0.013	-0.001	0.001	0.001	-0.009	0.030	-0.013	-0.013	-0.010
	ABOD	-0.005	0.085	0.052	0.031	0.041	0.085	0.041	0.041	0.015	0.085	0.041	0.041	0.052
	COPOD	-0.015	-0.007	-0.011	-0.010	-0.008	-0.001	-0.006	-0.006	-0.009	-0.007	-0.008	-0.008	-0.009
	AE	-0.018	0.069	0.040	0.006	-0.004	0.048	-0.004	0.015	0.000	0.045	0.025	0.048	-0.005
	OCSVM	-0.115	0.012	-0.061	-0.063	-0.081	-0.054	-0.076	-0.076	-0.074	0.012	-0.081	-0.081	-0.062
Energy R	LOF	-0.010	0.072	0.095	-0.010	0.100	0.172	0.100	0.100	0.090	0.161	0.095	0.095	0.019
	IF	-0.134	0.013	-0.041	-0.076	-0.015	-0.018	-0.015	-0.015	-0.021	-0.003	-0.041	-0.041	-0.101
	ABOD	-0.006	0.064	0.086	-0.006	0.100	0.200	0.100	0.100	0.082	0.112	0.086	0.086	0.028
	COPOD	-0.038	-0.024	-0.010	-0.012	-0.004	-0.025	-0.004	-0.004	-0.005	-0.005	-0.010	-0.010	-0.031
	AE	-0.013	0.044	0.048	-0.043	0.054	0.190	0.054	0.062	0.040	0.171	0.013	0.025	0.020
	OCSVM	-0.122	0.009	-0.086	-0.077	-0.079	-0.040	-0.079	-0.079	-0.073	0.036	-0.086	-0.086	-0.100
NSLKDD A	LOF	-0.018	-0.008	0.235	0.051	0.285	0.313	0.265	0.386	0.362	0.335	0.344	0.158	0.281
	IF	-0.034	-0.030	0.000	0.023	0.054	0.101	-0.016	0.102	0.065	-0.003	0.084	-0.019	0.080
	ABOD	-0.006	-0.006	0.169	0.040	0.169	0.220	0.125	0.249	0.252	0.224	0.201	0.113	0.088
	COPOD	0.037	0.040	0.051	0.036	0.057	0.128	0.036	0.128	0.073	0.043	0.089	0.039	0.056
	AE	-0.018	-0.014	0.050	0.024	-0.004	0.108	-0.008	0.064	0.097	0.071	0.004	-0.016	-0.010
	OCSVM	-0.053	-0.053	0.043	-0.005	-0.030	-0.018	0.002	-0.018	0.011	0.010	-0.027	0.002	-0.027
NSLKDD C	LOF	-0.060	-0.022	0.052	0.027	0.120	0.190	0.120	0.120	0.166	0.212	0.120	0.120	0.072
	IF	-0.115	-0.080	-0.080	0.009	-0.044	0.024	-0.044	-0.044	0.055	-0.009	-0.043	-0.043	0.008
	ABOD	-0.046	-0.008	0.012	0.022	0.047	0.098	0.047	0.047	0.120	0.088	0.045	0.045	0.045
	COPOD	0.003	0.016	0.008	0.048	0.031	0.062	0.031	0.031	0.042	0.053	0.030	0.030	0.030
	AE	-0.142	-0.105	-0.061	0.004	-0.079	0.032	-0.050	-0.059	-0.025	0.003	-0.093	-0.081	-0.055
	OCSVM	-0.111	-0.106	-0.078	-0.015	-0.046	-0.040	-0.046	-0.046	-0.026	-0.032	-0.046	-0.046	-0.047
NSLKDD R	LOF	-0.048	-0.048	0.096	0.031	0.080	0.189	0.090	0.114	0.239	0.173	0.109	0.109	0.127
	IF	-0.090	-0.086	-0.083	0.009	-0.087	0.067	-0.086	-0.086	0.005	-0.034	-0.084	-0.084	-0.088
	ABOD	-0.018	-0.018	0.116	0.029	0.096	0.189	0.098	0.124	0.171	0.161	0.101	0.101	0.115
	COPOD	-0.021	-0.015	-0.018	0.037	-0.020	0.105	-0.020	-0.010	0.038	-0.002	-0.020	-0.020	-0.009
	AE	-0.030	-0.036	-0.006	0.017	-0.041	0.091	-0.019	-0.031	-0.052	-0.004	-0.019	-0.040	-0.027
	OCSVM	-0.053	-0.054	-0.002	-0.001	-0.004	-0.012	-0.002	-0.002	0.009	0.005	-0.001	-0.001	-0.044

Table 17: Experimental results (cumulative strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (Energy, NSLKDD), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).

	Model	CI	Bha	Can	Cheb	Czek	KD	Kul	Man	Ney	NI	SChi	SCho	VicCS
UNSW A	LOF	-0.049	0.287	0.206	0.306	0.301	0.279	0.301	0.301	0.224	0.305	0.301	0.223	0.242
	IF	-0.072	0.138	0.054	0.057	0.092	0.116	0.092	0.092	0.019	0.090	0.092	0.048	0.136
	ABOD	-0.039	0.264	0.164	0.255	0.264	0.273	0.264	0.264	0.201	0.268	0.264	0.197	0.232
	COPOD	-0.047	0.066	0.001	0.017	0.018	0.052	0.018	0.018	0.005	0.020	0.018	0.001	0.019
	AE	-0.160	0.178	0.023	0.139	0.135	0.152	0.189	0.168	0.047	0.123	0.134	0.155	0.182
	OCSVM	-0.066	0.084	0.023	0.093	0.032	0.016	0.032	0.032	-0.019	0.029	0.032	0.026	0.100
UNSW C	LOF	-0.003	0.189	0.208	0.305	0.282	0.311	0.282	0.282	0.208	0.291	0.282	0.226	0.224
	IF	-0.025	0.010	0.079	0.115	0.086	0.132	0.086	0.086	0.050	0.086	0.086	0.070	0.123
	ABOD	-0.004	0.174	0.204	0.249	0.226	0.237	0.226	0.226	0.203	0.233	0.226	0.222	0.191
	COPOD	0.001	0.053	0.074	0.153	0.085	0.123	0.085	0.085	0.041	0.082	0.085	0.080	0.084
	AE	-0.066	0.098	0.057	0.128	0.109	0.175	0.183	0.152	0.073	0.187	0.126	0.085	0.073
	OCSVM	-0.011	0.047	0.094	0.095	0.102	0.028	0.102	0.102	0.054	0.100	0.102	0.098	0.108
UNSW R	LOF	-0.003	0.192	0.190	0.014	0.273	0.263	0.273	0.273	0.169	0.273	0.273	0.201	0.186
	IF	-0.010	0.089	0.086	-0.007	0.130	0.059	0.130	0.130	0.041	0.129	0.130	0.082	0.120
	ABOD	-0.003	0.182	0.206	0.142	0.334	0.298	0.334	0.334	0.190	0.334	0.334	0.242	0.139
	COPOD	0.000	0.072	0.050	0.092	0.095	0.090	0.095	0.095	0.100	0.102	0.095	0.046	0.112
	AE	-0.059	0.065	0.042	-0.024	0.251	0.130	0.157	0.185	-0.017	0.260	0.151	0.138	0.038
	OCSVM	-0.027	0.087	0.072	0.021	0.081	0.032	0.081	0.081	0.088	0.082	0.081	0.071	0.115
Wind A	LOF	-0.020	0.072	0.083	-0.018	0.083	-0.020	0.083	0.083	0.101	0.083	0.083	0.083	0.072
	IF	-0.050	0.081	0.130	0.034	0.130	-0.050	0.130	0.130	0.088	0.130	0.130	0.130	0.026
	ABOD	-0.018	0.075	0.096	-0.013	0.096	-0.018	0.096	0.096	0.091	0.096	0.096	0.096	0.072
	COPOD	-0.055	-0.043	-0.009	-0.016	-0.009	-0.055	-0.009	-0.009	-0.014	-0.009	-0.009	-0.009	-0.027
	AE	-0.030	0.068	0.075	-0.048	0.031	-0.036	0.058	0.032	0.049	0.070	0.058	0.073	0.049
	OCSVM	-0.089	0.003	-0.019	-0.031	-0.019	-0.089	-0.019	-0.019	0.053	-0.019	-0.019	-0.019	-0.002
Wind C	LOF	-0.010	0.046	0.056	0.019	0.056	-0.010	0.056	0.056	0.063	0.056	0.056	0.056	0.057
	IF	-0.007	0.080	0.087	0.017	0.087	-0.007	0.087	0.087	0.078	0.087	0.087	0.087	0.045
	ABOD	-0.009	0.053	0.054	-0.008	0.054	-0.009	0.054	0.054	0.052	0.054	0.054	0.054	0.054
	COPOD	-0.011	-0.011	0.008	-0.007	0.008	-0.011	0.008	0.008	0.002	0.008	0.008	0.008	-0.002
	AE	-0.016	0.021	0.050	0.012	0.010	-0.035	0.025	0.062	0.018	0.106	0.059	0.079	0.006
	OCSVM	-0.081	-0.044	-0.019	-0.007	-0.019	-0.081	-0.019	-0.019	0.054	-0.019	-0.019	-0.019	0.039
Wind R	LOF	-0.035	0.082	0.082	0.001	0.082	-0.035	0.082	0.082	0.113	0.082	0.082	0.082	0.041
	IF	-0.073	0.113	0.113	0.070	0.113	-0.073	0.113	0.113	0.103	0.113	0.113	0.113	0.057
	ABOD	-0.026	0.104	0.104	0.012	0.104	-0.026	0.104	0.104	0.112	0.104	0.104	0.104	0.060
	COPOD	-0.061	-0.006	-0.006	0.025	-0.006	-0.061	-0.006	-0.006	0.004	-0.006	-0.006	-0.006	-0.007
	AE	-0.060	0.050	0.007	0.004	0.130	-0.065	0.051	0.015	0.090	0.034	0.009	0.040	0.041
	OCSVM	-0.084	-0.026	-0.026	0.036	-0.026	-0.084	-0.026	-0.026	0.052	-0.026	-0.026	-0.026	0.056
CICIDS A	LOF	-0.001	-0.	0.047	0.058	0.073	0.089	0.073	0.073	0.170	0.114	0.073	0.095	0.118
	IF	-0.133	-0.123	-0.113	0.008	-0.093	-0.076	-0.093	-0.093	0.032	0.007	-0.093	-0.068	0.080
	COPOD	-0.097	-0.078	-0.088	-0.014	-0.081	-0.073	-0.081	-0.081	-0.030	-0.056	-0.081	-0.060	-0.017
	AE	0.000	-0.006	0.078	0.059	0.060	0.051	0.060	0.060	0.230	0.148	0.061	0.132	0.208
	OCSVM	-0.164	-0.166	-0.140	0.019	-0.150	-0.162	-0.150	-0.150	-0.011	-0.052	-0.150	-0.137	-0.034
CICIDS C	LOF	-0.001	0.091	0.107	0.058	0.082	0.080	0.082	0.082	0.131	0.058	0.082	0.082	0.067
	IF	-0.237	-0.157	-0.148	-0.003	-0.157	-0.151	-0.157	-0.157	-0.099	-0.221	-0.157	-0.093	-0.121
	COPOD	-0.159	-0.138	-0.096	0.013	-0.110	-0.135	-0.110	-0.110	-0.053	-0.125	-0.110	-0.104	-0.125
	AE	-0.011	0.091	0.126	0.071	0.123	0.071	0.123	0.123	0.043	0.089	0.080	0.078	0.161
	OCSVM	-0.046	-0.031	-0.028	0.017	-0.064	-0.042	-0.064	-0.064	0.017	-0.008	-0.064	-0.035	-0.037
CICIDS R	LOF	-0.001	-0.002	0.073	0.058	0.057	0.061	0.057	0.057	0.167	0.082	0.057	0.057	0.064
	IF	-0.256	-0.247	-0.236	0.010	-0.209	-0.196	-0.209	-0.209	-0.229	-0.208	-0.209	-0.136	-0.132
	COPOD	-0.078	-0.064	-0.064	0.018	-0.057	-0.048	-0.057	-0.057	-0.047	-0.045	-0.057	-0.028	-0.064
	AE	-0.006	-0.003	0.075	0.065	0.101	0.033	0.101	0.101	0.078	0.092	0.069	0.148	0.073
	OCSVM	-0.112	-0.104	-0.092	0.001	-0.109	-0.146	-0.109	-0.109	-0.048	-0.091	-0.109	-0.079	-0.092

Table 18: Experimental results (cumulative strategy): Anomaly detection performance (backward transfer) in two learning settings: Concept-Incremental (CI) and Concept-Agnostic with different distance measures (columns), datasets (UNSW, Wind, CICIDS), scenarios (A, C, R), and models (LOF, IF, COPOD, AE, OCSVM).