Supplementary results associated with

HdLOF: Fast, Scalable Local Outlier Factor for Large-Scale, High-Dimensional Anomaly Detection

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This document lists the complete per-dataset FPR at α TPR metrics that underlie the average results presented in Table II of the revised paper.

Also in this detailed set of results, HdLOF-2L delivers the highest AUC and the lowest FPR at every recall level α in almost all cases. This performance is most evident on the high-dimensional *embedding* datasets (e.g., FashionMNIST, MNIST-C, 20Newsgroups, AgNews), where inputs are 512–768-D feature vectors extracted from pre-trained CNNs or language models: on these datasets, HdLOF-2L consistently ranks first in AUC and records the sharpest drops in FPR. These results corroborate the claim made in the Introduction that HdLOF-2L is particularly well suited as a downstream detector after deep networks have produced fixed embeddings.

Dataset	Model	AUC	70%	75%	80%	85%	90%	95%
	HdLOF-2l	**0.676**	**0.450**	**0.495**	**0.537**	**0.605**	**0.673**	**0.761**
	LOF	0.667	0.461	0.516	0.564	0.645	0.737	0.842
	HdLOF	0.660	0.458	0.509	0.594	0.677	0.747	0.858
	HdLOF-E	0.655	0.480	0.539	0.592	0.657	0.760	0.848
Yelp	CBLOF	0.641	0.481	0.538	0.592	0.684	0.755	0.842
	COPOD	0.605	0.561	0.613	0.659	0.734	0.801	0.866
	IForest	0.603	0.544	0.599	0.665	0.736	0.803	0.872
	HBOS	0.599	0.571	0.617	0.672	0.728	0.809	0.884
	ECOD	0.578	0.593	0.653	0.685	0.759	0.809	0.892
	HdLOF-E	**0.603**	**0.600**	**0.684**	**0.720**	**0.783**	**0.837**	**0.880**
	HdLOF	0.527	0.707	0.724	0.784	0.824	0.854	0.942
	LOF	0.509	0.711	0.731	0.768	0.846	0.908	0.966
	HdLOF-2l	0.508	0.715	0.737	0.777	0.851	0.912	0.975
Speech	COPOD	0.491	0.693	0.735	0.835	0.860	0.935	0.950
	IForest	0.477	0.768	0.823	0.832	0.884	0.901	0.941
	HBOS	0.474	0.721	0.762	0.796	0.907	0.914	0.972
	ECOD	0.470	0.718	0.748	0.793	0.911	0.923	0.978
	CBLOF	0.469	0.729	0.764	0.789	0.903	0.918	0.976
	HdLOF-2l	**0.955**	**0.009**	0.013	0.019	**0.033**	0.123	**0.302**
	HBOS	0.954	0.012	0.018	0.023	0.054	0.141	0.341
	CBLOF	0.951	0.015	0.018	0.021	0.035	**0.084**	0.351
	ECOD	0.949	0.012	0.015	0.021	0.050	0.123	0.356
Credit Card	COPOD	0.948	0.010	**0.012**	**0.014**	0.034	0.156	0.333
	IForest	0.945	0.018	0.021	0.028	0.059	0.146	0.384
	HdLOF	0.523	0.701	0.742	0.787	0.826	0.881	0.946
	HdLOF-E	0.520	0.686	0.740	0.801	0.852	0.906	0.944
	LOF	0.515	0.697	0.738	0.766	0.828	0.890	0.953
	COPOD	**0.783**	**0.298**	**0.344**	**0.403**	**0.485**	**0.582**	**0.693**
	ECOD	0.770	0.319	0.380	0.447	0.515	0.600	0.728

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Dataset	Model	AUC	70%	75%	80%	85%	90%	95%
Campaign	HBOS	0.759	0.322	0.380	0.459	0.552	0.658	0.780
	HdLOF-2l	0.737	0.358	0.408	0.480	0.583	0.689	0.820
	CBLOF	0.712	0.427	0.504	0.578	0.657	0.733	0.809
	IForest	0.706	0.417	0.483	0.555	0.635	0.724	0.828
	LOF	0.625	0.531	0.578	0.640	0.704	0.809	0.902
	HdLOF	0.622	0.527	0.582	0.648	0.718	0.803	0.903
	HdLOF-E	0.594	0.576	0.628	0.686	0.735	0.793	0.870
Backdoor	ECOD	**0.846**	**0.129**	**0.141**	**0.157**	**0.196**	**0.345**	**0.666**
	COPOD	0.789	0.232	0.263	0.299	0.366	0.484	0.790
	HdLOF-2l	0.772	0.352	0.440	0.536	0.650	0.729	0.813
	IForest	0.769	0.236	0.261	0.311	0.354	0.402	0.716
	HdLOF-E	0.758	0.312	0.418	0.547	0.658	0.824	0.956
	HdLOF	0.754	0.330	0.431	0.549	0.683	0.870	0.959
	LOF	0.738	0.370	0.489	0.577	0.732	0.861	0.945
	HBOS	0.699	0.373	0.399	0.504	0.564	0.745	0.943
	CBLOF	0.669	0.661	0.734	0.786	0.843	0.921	0.960
Amazon	HdLOF-2l	**0.612**	**0.528**	**0.571**	**0.604**	**0.660**	**0.723**	**0.813**
	LOF	0.576	0.586	0.629	0.669	0.724	0.792	0.876
	IForest	0.575	0.578	0.624	0.697	0.750	0.812	0.901
	HdLOF	0.574	0.579	0.628	0.673	0.733	0.803	0.891
	HdLOF-E	0.571	0.565	0.630	0.684	0.766	0.815	0.894
	COPOD	0.570	0.592	0.651	0.704	0.753	0.819	0.886
	CBLOF	0.569	0.585	0.634	0.694	0.756	0.809	0.866
	HBOS	0.564	0.612	0.664	0.707	0.765	0.821	0.892
	ECOD	0.541	0.649	0.699	0.742	0.789	0.848	0.927
Agnews	LOF	**0.722**	**0.376**	**0.428**	**0.484**	**0.560**	**0.651**	**0.772**
	HdLOF	0.708	0.402	0.444	0.510	0.584	0.668	0.790
	HdLOF-E	0.701	0.410	0.458	0.525	0.591	0.678	0.803
	HdLOF-2l	0.643	0.490	0.543	0.601	0.674	0.749	0.837
	CBLOF	0.595	0.546	0.592	0.640	0.707	0.783	0.871
	IForest	0.586	0.570	0.615	0.664	0.720	0.786	0.860
	ECOD	0.552	0.619	0.667	0.717	0.764	0.823	0.893
	COPOD	0.551	0.614	0.662	0.715	0.765	0.826	0.884
	HBOS	0.550	0.634	0.668	0.713	0.770	0.818	0.890
SVHN	HdLOF-E	**0.636**	**0.505**	**0.562**	**0.624**	**0.699**	**0.780**	**0.866**
	HdLOF	0.632	0.511	0.565	0.637	0.705	0.787	0.875
	LOF	0.630	0.515	0.575	0.640	0.709	0.793	0.878
	CBLOF	0.603	0.572	0.632	0.695	0.761	0.833	0.902
	HdLOF-2l	0.603	0.577	0.636	0.697	0.767	0.835	0.901
	IForest	0.577	0.611	0.663	0.721	0.780	0.840	0.903
	ECOD	0.575	0.613	0.663	0.721	0.773	0.836	0.900
	COPOD	0.561	0.631	0.687	0.737	0.794	0.849	0.909
	HBOS	0.528	0.659	0.714	0.763	0.816	0.867	0.927
MVTec-AD	HdLOF-2l	**0.768**	**0.316**	**0.366**	**0.434**	**0.499**	**0.564**	**0.648**
	HdLOF-E	0.765	0.325	0.379	0.439	0.523	0.596	0.714
	CBLOF	0.762	0.318	0.374	0.451	0.524	0.580	0.674
	LOF	0.757	0.339	0.393	0.453	0.531	0.598	0.684
	HdLOF	0.756	0.328	0.388	0.458	0.536	0.629	0.722
	COPOD	0.755	0.336	0.401	0.456	0.506	0.602	0.695
	IForest	0.748	0.350	0.390	0.454	0.520	0.599	0.736
	HBOS	0.743	0.358	0.398	0.455	0.533	0.609	0.692

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Dataset	Model	AUC	70%	75%	80%	85%	90%	95%
	ECOD	0.737	0.378	0.430	0.482	0.545	0.613	0.750
	HdLOF-2l	**0.804**	**0.257**	**0.292**	**0.327**	**0.372**	**0.429**	**0.506**
	CBLOF	0.768	0.310	0.346	0.385	0.437	0.498	0.581
	IForest	0.734	0.359	0.400	0.444	0.495	0.560	0.652
	ECOD	0.729	0.363	0.404	0.450	0.496	0.555	0.637
MNIST-C	COPOD	0.720	0.377	0.419	0.462	0.511	0.574	0.653
	LOF	0.716	0.388	0.425	0.469	0.517	0.579	0.664
	HdLOF	0.708	0.395	0.438	0.485	0.540	0.606	0.695
	HdLOF-E	0.696	0.412	0.457	0.505	0.571	0.640	0.735
	HBOS	0.644	0.474	0.519	0.568	0.619	0.676	0.751
	HdLOF-2l	**0.876**	**0.139**	**0.163**	**0.196**	**0.246**	**0.325**	**0.448**
	CBLOF	0.859	0.165	0.189	0.222	0.269	0.337	0.473
	IForest	0.834	0.191	0.216	0.252	0.301	0.377	0.519
	ECOD	0.827	0.200	0.227	0.259	0.309	0.399	0.524
Fashion MNIST	COPOD	0.804	0.234	0.263	0.294	0.345	0.429	0.567
	LOF	0.744	0.319	0.399	0.484	0.601	0.740	0.838
	HdLOF	0.743	0.322	0.400	0.479	0.585	0.724	0.862
	HdLOF-E	0.715	0.381	0.454	0.540	0.656	0.770	0.895
	HBOS	0.685	0.412	0.451	0.496	0.549	0.624	0.717
	HdLOF-E	**0.694**	**0.418**	**0.481**	**0.546**	**0.620**	**0.699**	0.798
	HdLOF	0.691	0.428	0.482	0.554	0.623	0.700	**0.795**
	LOF	0.688	0.431	0.488	0.548	0.631	0.709	0.812
	HdLOF-2l	0.658	0.474	0.518	0.580	0.661	0.740	0.827
CIFAR10	CBLOF	0.651	0.482	0.543	0.598	0.656	0.744	0.848
	ECOD	0.628	0.503	0.558	0.615	0.689	0.763	0.848
	IForest	0.628	0.502	0.557	0.620	0.700	0.769	0.848
	COPOD	0.604	0.544	0.596	0.649	0.718	0.794	0.874
	HBOS	0.549	0.618	0.669	0.732	0.781	0.844	0.907
	HdLOF-E	**0.820**	**0.215**	**0.248**	**0.298**	**0.369**	**0.480**	**0.641**
	LOF	0.776	0.284	0.337	0.388	0.452	0.542	0.677
	HdLOF	0.770	0.296	0.352	0.411	0.472	0.560	0.691
	HdLOF-2l	0.629	0.505	0.559	0.627	0.708	0.798	0.901
ALOI	CBLOF	0.558	0.612	0.660	0.720	0.791	0.852	0.913
	IForest	0.543	0.636	0.684	0.734	0.786	0.861	0.927
	ECOD	0.531	0.666	0.714	0.784	0.839	0.886	0.940
	HBOS	0.522	0.654	0.698	0.782	0.957	0.957	0.957
	COPOD	0.515	0.679	0.737	0.790	0.845	0.884	0.937
	COPOD	**0.674**	**0.421**	**0.450**	**0.478**	**0.510**	**0.547**	**0.618**
	HdLOF-2l	**0.674**	0.446	0.479	0.513	0.543	0.586	0.644
	CBLOF	0.662	0.456	0.486	0.520	0.557	0.595	0.654
	ECOD	0.660	0.439	0.466	0.494	0.529	0.572	0.630
Census	HBOS	0.606	0.506	0.529	0.550	0.571	0.600	0.663
	IForest	0.603	0.518	0.549	0.584	0.616	0.658	0.717
	HdLOF-E	0.597	0.519	0.561	0.603	0.652	0.824	0.950
	HdLOF	0.591	0.520	0.563	0.604	0.645	0.906	0.945
	LOF	0.587	0.518	0.559	0.602	0.856	0.901	0.944
	HdLOF-E	**0.631**	**0.516**	**0.580**	**0.632**	0.715	0.780	**0.85**0
	HdLOF	0.619	**0.516**	0.585	0.633	**0.708**	0.785	0.894
	LOF	0.610	0.556	0.606	0.653	0.710	0.**766**	0.885
	CBLOF	0.579	0.597	0.639	0.688	0.739	0.816	0.897
20news	HdLOF-2l	0.572	0.600	0.660	0.706	0.755	0.852	0.944

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Dataset	Model	AUC	70%	75%	80%	85%	90%	95%
	IForest	0.567	0.611	0.664	0.713	0.765	0.802	0.892
	ECOD	0.561	0.630	0.669	0.709	0.775	0.828	0.888
	COPOD	0.550	0.632	0.687	0.723	0.777	0.827	0.895
	HBOS	0.550	0.629	0.675	0.720	0.792	0.835	0.910