

# Multi-Modal Representation Learning for Retinal Imaging: Leveraging Self-Supervised Learning for Enhanced Clinical Predictions

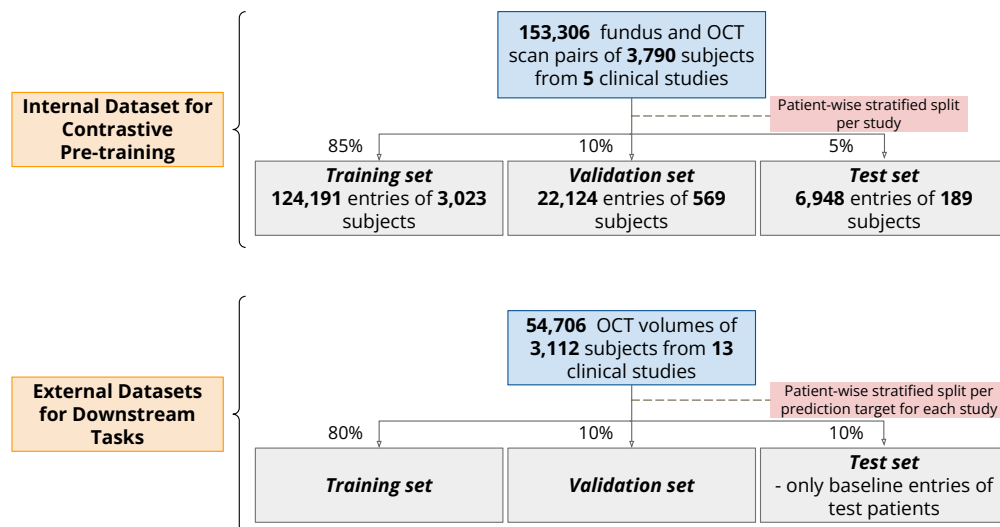
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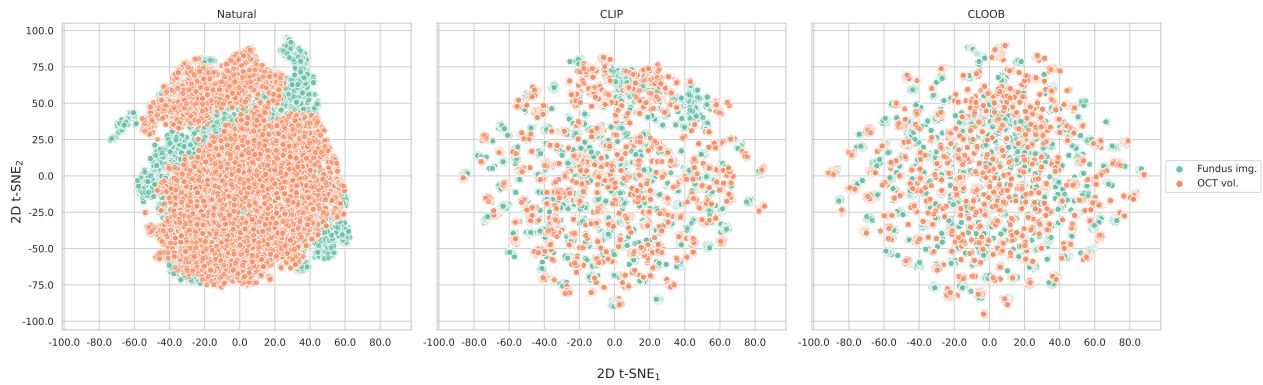
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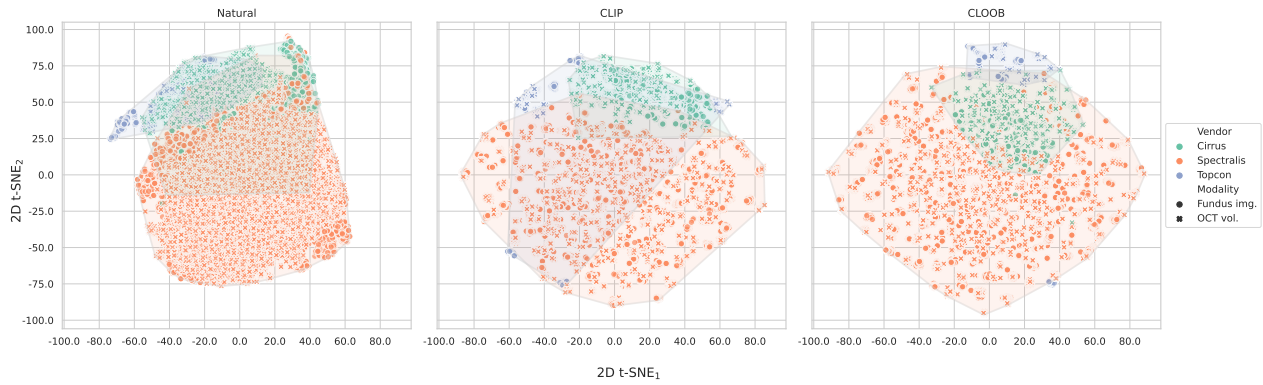
## Supplementary figures



**Figure A1.** Flow chart of the data splits for the contrastive pre-training and external downstream task.



**(a)** t-SNE projections colored by imaging modality.



**(b)** t-SNE projections colored by imaging vendor.

**Figure A2.** Visualizations of latent representations using t-SNE projections created from the embeddings of two retinal imaging modalities in the hold-out test set. These visualizations compare embeddings obtained using natural image-based pre-trained weights with those obtained using CLIP and CLOOB contrastive weights for the 2D and 3D encoders.

## Supplementary tables

**Table A1.** Overview of the datasets used in this study.

Variable	Pre-Training	HARBOR	OLIVES	MIX
<b>Overall dataset information</b>				
<i>Patients, N</i>	3,790	1,094	96	1,922
<i>Eyes, N</i>	7,023	2,183	96	1,922
- Study eye	3,789	1,094	96	1,495
- Fellow eye	3,234	1,089	0	427
<i>Visits/patient, mean (SD)</i>	16 (8)	24 (5)	17 (6)	1 (0)
<i>Scans, N</i>	153,306	51,186	1,590	1,929
- Study eye	113,940	25,676	1,590	1,502
- Fellow eye	39,366	25,510	0	427
<i>Scanner used for imaging, N</i>				
- Cirrus	21,776	51,186	0	976
- Spectralis	111,407	0	1,590	953
- Topcon	17,552	0	0	0
- Nidek	377	0	0	0
<b>Baseline demographic and clinical information</b>				
<i>Gender, N</i>				
- Male	0 (n/a)	444	38	186
- Female	0 (n/a)	650	32	241
- Unknown/not reported	3,790	0	26	1,495
<i>Race, N</i>				
- White	0 (n/a)	1,058	36	745
- Black or African American	0 (n/a)	5	22	68
- Asian	0 (n/a)	16	0 (n/a)	7
- Other	0 (n/a)	6	12	11
- Unknown/not reported	3,790	9	26	1,102
<i>Age, mean (SD)</i>	75 (8)	78 (8)	55 (11)	71 (11)
<i>Disease, N</i>				
- nAMD	3,790	1,094	0	0
- iAMD	0	0	0	418
- DR	0	0	40	0
- DME	0	0	56	757
- GA	0	0	0	170
- RVO	0	0	0	534
- Healthy	0	0	0	43

**Table A2.** Hyper-parameters used for the cross-modal contrastive pre-training.

	<b>Hyper-parameter</b>	<b>Value</b>
Learning	Optimizer	AdamW
	Learning rate	0.005
	Scheduler	Cosine annealing with restarts
	Weight decay	0.2
	Warm-up iterations	10000
Image encoder	Image resolution	224x224
	Model	ResNet18
Volume encoder	OCT volume resolution	224x224x20
	Model	VideoResNet18
Embedding space	Number of dimensions	512
InfoNCE	$\tau^{-1}$ - initial inverse temperature parameter (learnable)	14.3
InfoLOOB	$\tau^{-1}$ - inverse temperature parameter (fixed)	30
Hopfield layers	$\beta$ - scaling parameter	14.3

**Table A3.** The mean performance of the predictive models with 95% confidence intervals on external downstream tasks using *linear probing*. These evaluations were conducted on the hold-out test set through bootstrapping-based validation. The highest performance for each training setup is highlighted in bold.

(a) Regression tasks

Dataset	Target	Encoder initialization	Model input				
			Fundus (2D)		OCT (3D)		
			RMSE	R <sup>2</sup>	RMSE	R <sup>2</sup>	
HARBOR	BCVA	Natural	20.167 (18.395, 21.843)	-0.011 (-0.126, 0.082)	16.848 (15.469, 18.294)	0.294 (0.203, 0.373)	
		SimCLR	20.240 (18.489, 21.893)	-0.018 (-0.139, 0.079)	16.776 (15.344, 18.176)	0.300 (0.195, 0.390)	
		BYOL	20.295 (18.558, 21.886)	-0.024 (-0.123, 0.062)	19.091 (17.394, 20.671)	0.094 (0.003, 0.171)	
		VICReg	20.552 (18.731, 22.233)	-0.050 (-0.163, 0.046)	17.026 (15.549, 18.502)	0.279 (0.186, 0.360)	
		CLIP	<b>16.688 (15.252, 18.110)</b>	<b>0.308 (0.171, 0.415)</b>	<b>14.715 (13.415, 15.957)</b>	<b>0.462 (0.362, 0.545)</b>	
		CLOOB	16.914 (15.506, 18.275)	0.289 (0.166, 0.394)	16.814 (15.504, 18.118)	0.297 (0.144, 0.417)	
	CST [μm]	Natural	129.552 (115.325, 143.722)	-0.428 (-0.554, -0.320)	107.613 (96.384, 118.832)	0.015 (-0.083, 0.107)	
		SimCLR	128.594 (114.808, 142.596)	-0.407 (-0.531, -0.298)	108.687 (97.101, 120.399)	-0.005 (-0.117, 0.096)	
		BYOL	127.265 (112.782, 141.794)	-0.378 (-0.503, -0.270)	127.743 (113.303, 142.212)	-0.388 (-0.497, -0.293)	
		VICReg	123.926 (109.984, 137.848)	-0.306 (-0.420, -0.207)	113.371 (101.325, 125.538)	-0.094 (-0.211, 0.010)	
		CLIP	120.337 (107.494, 133.509)	-0.232 (-0.351, -0.135)	91.724 (81.937, 101.910)	0.284 (0.208, 0.351)	
		CLOOB	<b>116.597 (104.048, 129.646)</b>	<b>-0.157 (-0.283, -0.055)</b>	<b>81.800 (73.921, 89.474)</b>	<b>0.431 (0.348, 0.497)</b>	
	OLIVES	BCVA	Natural	15.238 (11.127, 18.631)	-1.360 (-4.330, -0.236)	8.016 (5.783, 9.925)	0.347 (-0.386, 0.579)
			SimCLR	11.383 (6.562, 15.500)	-0.317 (-1.788, 0.420)	9.042 (5.884, 11.640)	0.169 (-0.266, 0.373)
BYOL			<b>9.804 (5.612, 13.449)</b>	<b>0.023 (-0.865, 0.471)</b>	8.178 (5.717, 10.335)	0.320 (-0.020, 0.438)	
VICReg			10.648 (6.851, 13.993)	-0.152 (-1.293, 0.366)	8.182 (4.886, 11.197)	0.320 (-0.244, 0.587)	
CLIP			13.010 (9.179, 16.500)	-0.720 (-3.320, 0.159)	9.956 (7.062, 12.657)	-0.007 (-2.117, 0.605)	
CLOOB			11.116 (6.685, 14.904)	-0.256 (-1.727, 0.439)	<b>7.910 (6.052, 9.516)</b>	<b>0.364 (-0.532, 0.628)</b>	
CST [μm]		Natural	152.908 (107.051, 193.098)	-0.095 (-0.866, 0.276)	128.607 (78.947, 172.238)	0.226 (-0.305, 0.526)	
		SimCLR	202.449 (127.550, 264.305)	-0.919 (-2.118, -0.078)	132.526 (84.129, 173.050)	0.178 (-0.248, 0.444)	
		BYOL	169.763 (110.201, 220.100)	-0.349 (-1.152, 0.061)	130.553 (73.208, 175.565)	0.202 (-0.328, 0.558)	
		VICReg	158.861 (104.134, 204.929)	-0.182 (-0.851, 0.118)	131.744 (84.352, 171.721)	0.187 (-0.355, 0.478)	
		CLIP	<b>123.492 (78.700, 160.497)</b>	<b>0.286 (-0.200, 0.598)</b>	80.782 (54.066, 103.429)	0.694 (0.553, 0.787)	
		CLOOB	150.215 (105.563, 187.405)	-0.056 (-0.895, 0.322)	<b>53.995 (35.282, 73.430)</b>	<b>0.864 (0.748, 0.930)</b>	

(b) Classification and forecasting tasks

Dataset	Target	Encoder initialization	Model input			
			Fundus (2D)		OCT (3D)	
			AUROC	AP	AUROC	AP
HARBOR	Fluid present	Natural	0.574 (0.503, 0.646)	0.873 (0.832, 0.912)	0.713 (0.652, 0.775)	0.921 (0.891, 0.948)
		SimCLR	0.545 (0.460, 0.623)	0.842 (0.789, 0.890)	0.782 (0.724, 0.832)	0.942 (0.917, 0.963)
		BYOL	0.588 (0.512, 0.665)	0.862 (0.814, 0.905)	0.574 (0.492, 0.648)	0.834 (0.778, 0.889)
		VICReg	0.544 (0.460, 0.622)	0.844 (0.794, 0.893)	0.717 (0.654, 0.783)	0.920 (0.889, 0.948)
		CLIP	0.775 (0.722, 0.827)	0.944 (0.924, 0.963)	<b>0.871 (0.833, 0.907)</b>	<b>0.971 (0.959, 0.981)</b>
		CLOOB	<b>0.776 (0.715, 0.833)</b>	<b>0.939 (0.913, 0.962)</b>	0.804 (0.745, 0.854)	0.943 (0.913, 0.967)
	High TR	Natural	0.528 (0.409, 0.650)	0.209 (0.118, 0.374)	0.596 (0.469, 0.726)	0.292 (0.178, 0.484)
		SimCLR	0.565 (0.453, 0.676)	0.185 (0.121, 0.309)	0.550 (0.412, 0.680)	0.216 (0.125, 0.385)
		BYOL	0.597 (0.457, 0.734)	0.234 (0.139, 0.410)	0.591 (0.466, 0.719)	0.221 (0.137, 0.379)
		VICReg	0.487 (0.352, 0.623)	0.170 (0.103, 0.294)	0.591 (0.464, 0.711)	0.224 (0.135, 0.393)
		CLIP	<b>0.633 (0.507, 0.755)</b>	<b>0.259 (0.154, 0.441)</b>	0.709 (0.564, 0.832)	0.429 (0.253, 0.647)
		CLOOB	0.622 (0.502, 0.743)	0.285 (0.177, 0.469)	<b>0.755 (0.652, 0.846)</b>	<b>0.323 (0.205, 0.512)</b>
	GA Conv.	Natural	0.539 (0.392, 0.690)	0.238 (0.115, 0.444)	0.467 (0.342, 0.600)	0.136 (0.081, 0.282)
		SimCLR	0.448 (0.317, 0.591)	0.138 (0.075, 0.282)	0.607 (0.482, 0.717)	0.164 (0.098, 0.301)
		BYOL	0.510 (0.373, 0.646)	0.138 (0.084, 0.250)	0.468 (0.335, 0.604)	0.117 (0.072, 0.207)
		VICReg	0.589 (0.448, 0.720)	0.175 (0.106, 0.308)	0.524 (0.397, 0.647)	0.132 (0.083, 0.242)
		CLIP	0.537 (0.408, 0.660)	0.182 (0.091, 0.326)	<b>0.665 (0.533, 0.795)</b>	<b>0.238 (0.132, 0.432)</b>
		CLOOB	<b>0.555 (0.431, 0.684)</b>	<b>0.207 (0.100, 0.377)</b>	0.648 (0.509, 0.773)	0.200 (0.119, 0.369)
	CNV Conv.	Natural	0.524 (0.422, 0.621)	0.174 (0.119, 0.270)	0.591 (0.474, 0.702)	0.233 (0.145, 0.385)
		SimCLR	0.565 (0.463, 0.666)	0.195 (0.133, 0.307)	0.513 (0.413, 0.614)	0.177 (0.118, 0.287)
		BYOL	0.528 (0.421, 0.640)	0.191 (0.127, 0.312)	0.522 (0.405, 0.634)	0.192 (0.128, 0.306)
		VICReg	0.545 (0.432, 0.659)	0.200 (0.130, 0.319)	0.461 (0.360, 0.561)	0.156 (0.109, 0.238)
		CLIP	<b>0.581 (0.462, 0.696)</b>	<b>0.279 (0.165, 0.439)</b>	0.605 (0.495, 0.714)	0.239 (0.158, 0.392)
		CLOOB	0.560 (0.438, 0.679)	0.262 (0.154, 0.424)	<b>0.674 (0.585, 0.764)</b>	<b>0.247 (0.168, 0.379)</b>
OLIVES	DME/DR	Natural	0.700 (0.389, 0.944)	0.519 (0.226, 0.929)	0.640 (0.166, 1.0)	0.689 (0.187, 1.0)
		SimCLR	0.700 (0.320, 1.0)	0.655 (0.236, 1.0)	0.600 (0.273, 0.907)	0.446 (0.194, 0.886)
		BYOL	0.860 (0.593, 1.0)	0.789 (0.375, 1.0)	0.820 (0.538, 1.0)	0.739 (0.298, 1.0)
		VICReg	0.740 (0.417, 1.0)	0.572 (0.250, 1.0)	0.620 (0.280, 0.923)	0.463 (0.200, 0.900)
		CLIP	0.740 (0.428, 0.962)	0.544 (0.250, 0.952)	0.880 (0.667, 1.0)	0.768 (0.392, 1.0)
		CLOOB	<b>0.940 (0.769, 1.0)</b>	<b>0.925 (0.667, 1.0)</b>	<b>0.940 (0.769, 1.0)</b>	<b>0.877 (0.533, 1.0)</b>
MIX	Disease type	Natural	0.875 (0.853, 0.895)	0.667 (0.610, 0.716)	0.928 (0.912, 0.941)	0.773 (0.726, 0.816)
		SimCLR	0.617 (0.581, 0.654)	0.270 (0.237, 0.311)	0.946 (0.934, 0.957)	0.837 (0.800, 0.871)
		BYOL	0.863 (0.841, 0.882)	0.606 (0.548, 0.660)	0.861 (0.839, 0.881)	0.598 (0.541, 0.654)
		VICReg	0.868 (0.847, 0.886)	0.619 (0.558, 0.672)	0.925 (0.908, 0.940)	0.787 (0.740, 0.824)
		CLIP	<b>0.929 (0.913, 0.942)</b>	0.789 (0.744, 0.828)	<b>0.982 (0.977, 0.987)</b>	<b>0.940 (0.921, 0.957)</b>
		CLOOB	0.928 (0.913, 0.943)	<b>0.791 (0.745, 0.830)</b>	0.978 (0.971, 0.983)	0.924 (0.901, 0.944)

**Table A4.** The mean performance of the predictive models with 95% confidence intervals on external downstream tasks using *fine-tuning*. These evaluations were conducted on the hold-out test set through bootstrapping-based validation. The highest performance for each training setup is highlighted in bold.

(a) Regression tasks

Dataset	Target	Encoder initialization	Model input					
			Fundus (2D)		OCT (3D)			
			RMSE	R <sup>2</sup>	RMSE	R <sup>2</sup>		
HARBOR	BCVA	Random	21.765 (20.071,23.347)	-0.177 (-0.348, -0.033)	12.098 (10.727, 13.445)	0.636 (0.547, 0.709)		
		Natural	17.221 (15.684, 18.587)	0.263 (0.133, 0.374)	11.689 (10.538, 12.751)	0.660 (0.584, 0.721)		
		SimCLR	16.628 (15.101, 18.046)	0.313 (0.183, 0.423)	<b>11.512 (10.142, 12.804)</b>	<b>0.670 (0.585, 0.740)</b>		
		BYOL	17.355 (15.770, 18.897)	0.251 (0.112, 0.369)	12.408 (11.185, 13.604)	0.617 (0.539, 0.685)		
		VICReg	17.337 (15.807, 18.839)	0.253 (0.109, 0.365)	13.307 (11.865, 14.611)	0.560 (0.457, 0.651)		
		CLIP	<b>16.310 (14.949, 17.697)</b>	<b>0.339 (0.208, 0.449)</b>	12.323 (11.108, 13.442)	0.622 (0.545, 0.691)		
		CLOOB	16.423 (14.973, 17.834)	0.329 (0.192, 0.443)	12.218 (11.006, 13.377)	0.629 (0.539, 0.699)		
		CST [ $\mu$ m]	Random	161.234 (147.385, 175.923)	-1.211 (-1.589, -0.911)	85.020 (76.070, 93.343)	0.384 (0.292, 0.464)	
			Natural	125.638 (112.945, 138.954)	-0.343 (-0.499, -0.209)	74.160 (66.118, 81.705)	0.532 (0.430, 0.612)	
	SimCLR		131.279 (116.946, 145.467)	-0.466 (-0.613, -0.344)	78.870 (70.879, 86.749)	0.470 (0.378, 0.550)		
	BYOL		129.915 (115.821, 144.250)	-0.436 (-0.576, -0.315)	80.323 (59.472, 107.030)	0.451 (-0.013, 0.702)		
	VICReg		129.567 (116.441, 142.717)	-0.428 (-0.596, -0.277)	73.131 (64.730, 81.672)	0.545 (0.447, 0.622)		
	CLIP		<b>112.938 (100.536, 125.803)</b>	<b>-0.085 (-0.176, -0.005)</b>	64.870 (52.061, 81.038)	0.642 (0.422, 0.777)		
	CLOOB		122.770 (108.843, 136.728)	-0.282 (-0.385, -0.195)	<b>64.298 (51.620, 80.412)</b>	<b>0.648 (0.427, 0.776)</b>		
	OLIVES		BCVA	Random	14.985 (8.814, 21.010)	-1.282 (-4.214, 0.072)	7.224 (4.479, 9.480)	0.470 (0.056, 0.673)
				Natural	9.858 (6.901, 12.582)	0.012 (-1.078, 0.429)	6.851 (3.700, 9.493)	0.523 (0.018, 0.802)
		SimCLR		9.236 (5.761, 12.083)	0.133 (-0.416, 0.418)	7.159 (4.596, 9.728)	0.479 (-0.154, 0.746)	
		BYOL		10.851 (6.946, 14.309)	-0.197 (-1.224, 0.298)	8.551 (5.333, 11.713)	0.257 (-0.661, 0.676)	
VICReg		9.145 (6.325, 11.624)		0.150 (-0.740, 0.480)	7.111 (4.146, 10.087)	0.486 (-0.185, 0.783)		
CLIP		9.347 (5.911, 12.387)		0.112 (-0.574, 0.412)	5.831 (3.000, 8.051)	0.654 (0.029, 0.909)		
CLOOB		<b>7.454 (5.250, 9.500)</b>		<b>0.435 (-0.027, 0.622)</b>	<b>5.601 (3.373, 7.467)</b>	<b>0.681 (0.306, 0.856)</b>		
CST [ $\mu$ m]		Random		238.450 (166.010, 299.520)	-1.662 (-3.328, -0.982)	86.648 (50.785, 118.532)	0.648 (0.389, 0.808)	
		Natural		135.106 (94.991, 170.290)	0.145 (-0.376, 0.385)	77.561 (45.622, 104.604)	0.718 (0.514, 0.854)	
	SimCLR	161.251 (103.507, 208.809)	-0.217 (-1.009, 0.186)	39.625 (24.143, 53.056)	0.926 (0.823, 0.972)			
	BYOL	175.295 (111.847, 227.131)	-0.439 (-1.317, -0.023)	61.765 (37.794, 81.894)	0.821 (0.701, 0.902)			
	VICReg	174.455 (104.595, 232.826)	-0.425 (-1.367, 0.113)	51.114 (33.464, 66.857)	0.878 (0.778, 0.935)			
	CLIP	122.149 (76.378, 160.604)	0.301 (-0.150, 0.553)	29.099 (22.088, 34.847)	0.960 (0.924, 0.976)			
	CLOOB	<b>110.547 (75.461, 139.629)</b>	<b>0.428 (0.091, 0.590)</b>	<b>28.106 (19.962, 35.386)</b>	<b>0.963 (0.916, 0.982)</b>			

(b) Classification and forecasting tasks

Dataset	Target	Encoder initialization	Model input					
			Fundus (2D)		OCT (3D)			
			AUROC	AP	AUROC	AP		
HARBOR	Fluid present	Random	0.580 (0.507, 0.652)	0.871 (0.827, 0.912)	0.906 (0.870, 0.936)	0.977 (0.966, 0.987)		
		Natural	0.720 (0.646, 0.791)	0.890 (0.846, 0.939)	0.900 (0.869, 0.931)	0.978 (0.969, 0.986)		
		SimCLR	0.667 (0.600, 0.736)	0.903 (0.869, 0.935)	0.918 (0.890, 0.944)	0.982 (0.974, 0.989)		
		BYOL	0.709 (0.639, 0.775)	0.909 (0.870, 0.943)	0.910 (0.880, 0.938)	0.980 (0.971, 0.987)		
		VICReg	0.616 (0.542, 0.693)	0.867 (0.819, 0.914)	0.896 (0.863, 0.926)	0.977 (0.967, 0.985)		
		CLIP	<b>0.805 (0.753, 0.856)</b>	<b>0.951 (0.931, 0.969)</b>	<b>0.930 (0.903, 0.953)</b>	<b>0.985 (0.978, 0.991)</b>		
		CLOOB	0.775 (0.720, 0.829)	0.941 (0.919, 0.962)	0.915 (0.886, 0.940)	0.982 (0.974, 0.989)		
		High TR	Random	0.529 (0.389, 0.672)	0.227 (0.130, 0.421)	0.546 (0.430, 0.668)	0.223 (0.141, 0.391)	
			Natural	0.542 (0.412, 0.669)	0.191 (0.117, 0.336)	0.526 (0.394, 0.645)	0.175 (0.112, 0.297)	
	SimCLR		0.293 (0.183, 0.411)	0.116 (0.076, 0.187)	0.626 (0.498, 0.746)	0.265 (0.168, 0.427)		
	BYOL		0.441 (0.312, 0.586)	0.151 (0.098, 0.237)	0.583 (0.457, 0.700)	0.237 (0.149, 0.399)		
	VICReg		0.503 (0.373, 0.632)	0.174 (0.111, 0.309)	0.509 (0.368, 0.654)	0.222 (0.127, 0.398)		
	CLIP		<b>0.660 (0.527, 0.783)</b>	<b>0.344 (0.191, 0.534)</b>	<b>0.796 (0.683, 0.887)</b>	<b>0.435 (0.282, 0.664)</b>		
	CLOOB		0.553 (0.419, 0.699)	0.231 (0.139, 0.422)	0.762 (0.659, 0.856)	0.398 (0.236, 0.597)		
	GA Conv.		Random	0.619 (0.497, 0.736)	0.173 (0.103, 0.313)	0.565 (0.424, 0.701)	0.161 (0.094, 0.307)	
			Natural	0.602 (0.430, 0.758)	0.237 (0.121, 0.447)	0.568 (0.447, 0.695)	0.171 (0.099, 0.329)	
		SimCLR	0.566 (0.443, 0.693)	0.149 (0.090, 0.272)	0.568 (0.459, 0.685)	0.160 (0.096, 0.308)		
		BYOL	0.565 (0.426, 0.706)	0.171 (0.099, 0.333)	0.527 (0.394, 0.660)	0.135 (0.082, 0.243)		
		VICReg	0.563 (0.428, 0.693)	0.157 (0.092, 0.290)	0.519 (0.376, 0.672)	0.148 (0.090, 0.271)		
		CLIP	<b>0.636 (0.522, 0.745)</b>	<b>0.182 (0.106, 0.321)</b>	<b>0.701 (0.593, 0.802)</b>	<b>0.224 (0.135, 0.404)</b>		
		CLOOB	0.632 (0.494, 0.752)	0.199 (0.110, 0.367)	0.693 (0.586, 0.797)	0.210 (0.130, 0.369)		
		CNV Conv.	Random	0.526 (0.419, 0.630)	0.179 (0.122, 0.276)	0.614 (0.506, 0.721)	0.266 (0.158, 0.420)	
			Natural	0.492 (0.387, 0.596)	0.175 (0.116, 0.288)	0.626 (0.524, 0.725)	0.239 (0.159, 0.384)	
	SimCLR		0.419 (0.304, 0.536)	0.160 (0.105, 0.264)	0.565 (0.451, 0.678)	0.213 (0.137, 0.349)		
	BYOL		0.534 (0.425, 0.644)	0.192 (0.130, 0.309)	0.540 (0.430, 0.654)	0.293 (0.166, 0.436)		
	VICReg		0.478 (0.362, 0.603)	0.184 (0.121, 0.304)	0.559 (0.440, 0.676)	0.206 (0.133, 0.325)		
	CLIP		0.575 (0.470, 0.683)	0.200 (0.135, 0.306)	0.647 (0.541, 0.751)	0.280 (0.175, 0.429)		
CLOOB	<b>0.621 (0.521, 0.725)</b>		<b>0.236 (0.157, 0.377)</b>	<b>0.698 (0.595, 0.793)</b>	<b>0.299 (0.202, 0.463)</b>			
OLIVES	DME/DR		Random	0.640 (0.240, 1.0)	0.627 (0.201, 1.0)	0.920 (0.714, 1.0)	0.885 (0.583, 1.0)	
			Natural	0.680 (0.340, 0.955)	0.578 (0.208, 0.957)	0.900 (0.630, 1.0)	0.900 (0.591, 1.0)	
		SimCLR	0.620 (0.231, 0.944)	0.570 (0.188, 0.933)	0.920 (0.727, 1.0)	0.876 (0.500, 1.0)		
		BYOL	0.360 (0.077, 0.680)	0.306 (0.133, 0.649)	0.880 (0.636, 1.0)	0.796 (0.352, 1.0)		
		VICReg	0.360 (0.091, 0.679)	0.302 (0.140, 0.617)	0.720 (0.432, 0.964)	0.505 (0.242, 0.964)		
		CLIP	0.840 (0.577, 1.0)	0.743 (0.361, 1.0)	0.980 (0.889, 1.0)	0.967 (0.833, 1.0)		
		CLOOB	<b>0.960 (0.833, 1.0)</b>	<b>0.943 (0.733, 1.0)</b>	<b>1.0 (1.0, 1.0)</b>	<b>1.0 (0.999, 1.0)</b>		
		MIX	Disease type	Random	0.881 (0.861, 0.899)	0.655 (0.600, 0.709)	0.966 (0.956, 0.975)	0.899 (0.872, 0.924)
				Natural	0.925 (0.907, 0.941)	0.796 (0.754, 0.835)	0.986 (0.980, 0.990)	0.954 (0.937, 0.968)
SimCLR	0.918 (0.899, 0.932)			0.747 (0.695, 0.793)	0.987 (0.981, 0.992)	0.958 (0.942, 0.973)		
BYOL	0.890 (0.870, 0.909)			0.675 (0.617, 0.727)	0.991 (0.987, 0.994)	0.969 (0.957, 0.980)		
VICReg	0.892 (0.873, 0.909)			0.691 (0.637, 0.737)	0.989 (0.983, 0.993)	0.964 (0.949, 0.976)		
CLIP	0.950 (0.937, 0.960)			0.845 (0.807, 0.878)	0.993 (0.990, 0.995)	0.973 (0.962, 0.982)		
CLOOB	<b>0.960 (0.949, 0.969)</b>			<b>0.878 (0.845, 0.905)</b>	<b>0.995 (0.993, 0.997)</b>	<b>0.982 (0.973, 0.989)</b>		