

CheXtriv: Anatomy-Centered Representation for Case-Based Retrieval of Chest Radiographs

Supplementary Material

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Table 1. Comparison of **top-3** retrieval performance on MIMIC-CXR dataset against global baselines (CNN, ATH) and a local variant (AnaXNet). (.)^{*} indicates $p < 0.05$.

Findings	Global CNN			ATH [1]			AnaXNet [2]			CheXtriv		
	AP	HR	RR	AP	HR	RR	AP	HR	RR	AP	HR	RR
LO	91.4 [*]	85.8 [*]	91.9 [*]	89.7 [*]	82.5 [*]	90.6 [*]	90.7 [*]	84.0 [*]	91.7 [*]	92.5	88.2	93.0
PE	70.0 [*]	56.2 [*]	71.2	62.6 [*]	47.6 [*]	63.9 [*]	64.8 [*]	48.6 [*]	65.7 [*]	72.1	59.4	73.0
AT	60.8 [*]	45.2 [*]	61.9 [*]	53.9 [*]	36.8 [*]	54.5 [*]	59.7 [*]	42.5 [*]	61.1 [*]	64.9	48.5	65.8
ECS	64.5 [*]	49.3 [*]	65.6 [*]	61.6 [*]	45.9 [*]	62.5 [*]	64.5 [*]	48.3 [*]	65.2 [*]	70.5	55.4	71.7
PE/HO	55.3 [*]	40.7 [*]	56.1 [*]	51.0 [*]	36.0 [*]	51.7 [*]	53.7 [*]	36.3 [*]	54.5 [*]	64.0	49.1	65.2
PTX	20.7 [*]	11.5 [*]	21.0 [*]	7.6 [*]	4.2 [*]	7.8 [*]	32.0	16.3	32.1	29.7	14.9	29.7
CONS	21.6 [*]	12.9	21.8 [*]	20.9 [*]	13.0 [*]	21.1 [*]	25.6	15.0	25.8	27.2	15.9	27.7
FO/HF	11.2 [*]	6.5 [*]	11.3 [*]	13.6 [*]	7.3 [*]	13.7 [*]	15.0 [*]	7.7 [*]	15.1 [*]	26.3	13.6	26.4
PN	37.1 [*]	22.8 [*]	37.5 [*]	34.3 [*]	21.4 [*]	34.6 [*]	39.4 [*]	26.2 [*]	39.7 [*]	44.8	28.2	45.4
Mean	48.1	36.8	48.7	43.9	32.7	44.5	49.5	36.1	50.1	54.7	41.5	55.3
wMean	67.1	55.7	67.9	63.2	51.0	64.0	66.3	53.4	67.1	71.3	59.8	72.0

Table 2. Comparison of **top-10** retrieval performance on MIMIC-CXR dataset against global baselines (CNN, ATH) and a local variant (AnaXNet). (.)^{*} indicates $p < 0.05$.

Findings	Global CNN			ATH [1]			AnaXNet [2]			CheXtriv		
	AP	HR	RR	AP	HR	RR	AP	HR	RR	AP	HR	RR
LO	89.0 [*]	86.1 [*]	92.2 [*]	86.2 [*]	82.0 [*]	90.9 [*]	87.3 [*]	83.5 [*]	91.9 [*]	90.5	87.7	93.2
PE	64.4 [*]	54.1 [*]	73.2	58.2 [*]	45.2 [*]	67.2 [*]	59.3 [*]	46.4 [*]	68.9 [*]	67.6	57.5	75.1
AT	55.7 [*]	43.5 [*]	65.0 [*]	50.5 [*]	36.1 [*]	59.2 [*]	55.1 [*]	41.4 [*]	65.0 [*]	59.7	47.6	68.6
ECS	59.8 [*]	48.5 [*]	68.5 [*]	57.3 [*]	43.8 [*]	65.7 [*]	59.5 [*]	46.1 [*]	68.3 [*]	64.6	53.1	74.1
PE/HO	52.3 [*]	39.1 [*]	60.2 [*]	48.4 [*]	32.8 [*]	56.1 [*]	50.2 [*]	34.0 [*]	59.1 [*]	59.2	46.3	68.0
PTX	23.6	6.8 [*]	24.6 [*]	10.3 [*]	4.3 [*]	11.3 [*]	32.1	9.5 [*]	35.3	31.4	11.5	35.4
CONS	26.3 [*]	13.2	28.9	24.8 [*]	10.8 [*]	26.2 [*]	27.2	11.3	30.7	30.7	14.1	33.8
FO/HF	16.5 [*]	6.7 [*]	16.9 [*]	16.6 [*]	6.7 [*]	18.3 [*]	18.9 [*]	6.3 [*]	20.3 [*]	29.8	10.7	32.1
PN	38.1 [*]	22.3 [*]	44.2 [*]	36.2 [*]	22.2 [*]	41.6 [*]	39.5 [*]	22.4 [*]	45.5 [*]	42.8	22.5	50.7
Mean	47.3	35.6	52.6	43.2	31.5	48.5	47.7	33.4	53.9	52.9	39.3	59.0
wMean	64.2	54.9	70.5	60.5	49.7	67.1	62.8	51.7	69.9	67.9	58.3	74.3

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Table 3. Statistics of the Chest ImageGenome [3] test dataset, which includes frontal chest radiographs (PA or AP view) with valid bounding box annotations for 18 anatomical regions. The data split is based on the official MIMIC-CXR [4,5] data splits.

Radiological Findings	#Radiographs
Lung Opacity	2679
Pleural Effusion	1340
Atelectasis	1241
Enlarged Cardiac Silhouette	1212
Pulmonary Edema / Hazy Opacity	819
Pneumonia	643
Consolidation	334
Fluid Overload / Heart Failure	169
Pneumothorax	96

References

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3. Wu, Joy T, et al.: Chest Imagenome Dataset for Clinical Reasoning. In: *Advances in Neural Information Processing Systems* (2021).
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5. Johnson, Alistair, et al.: MIMIC-CXR-JPG, A Large Publicly Available Database of Labeled Chest Radiographs. *arXiv preprint arXiv:1901.07042* (2019).