

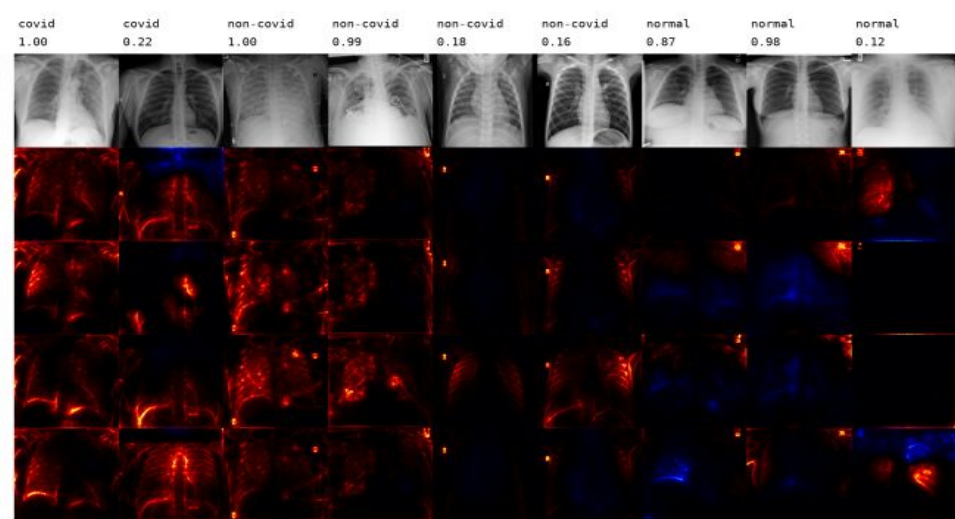
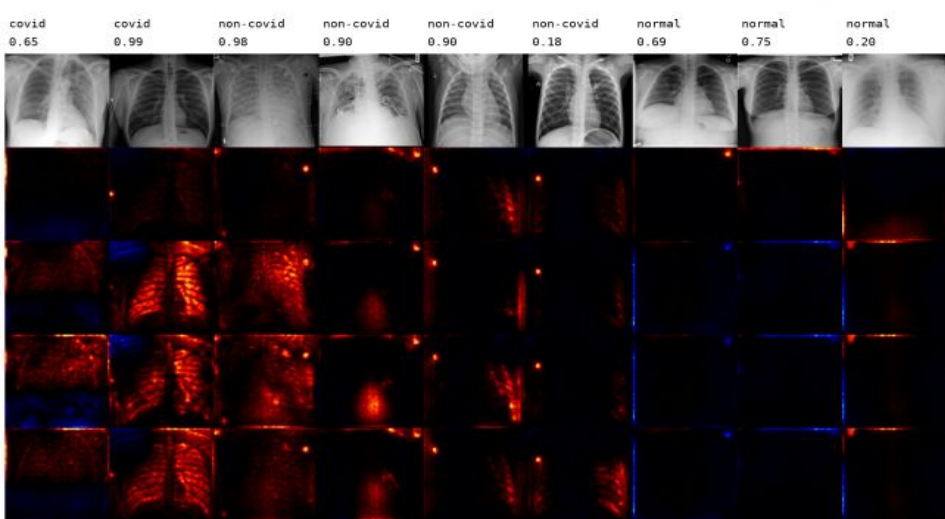
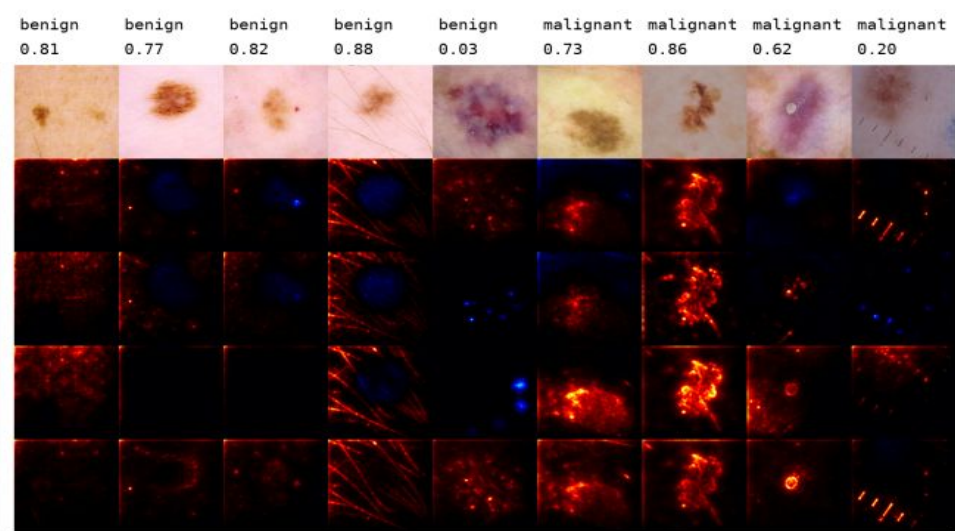
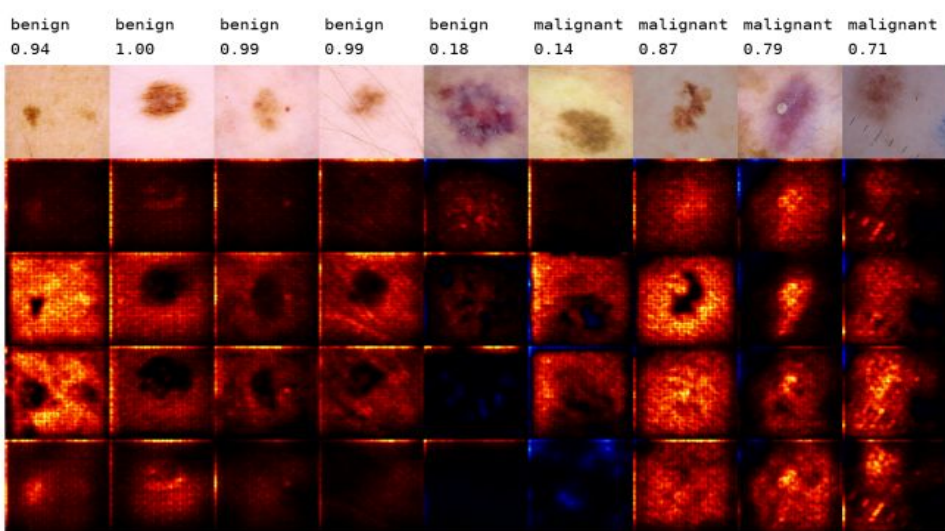
LRP & CRP

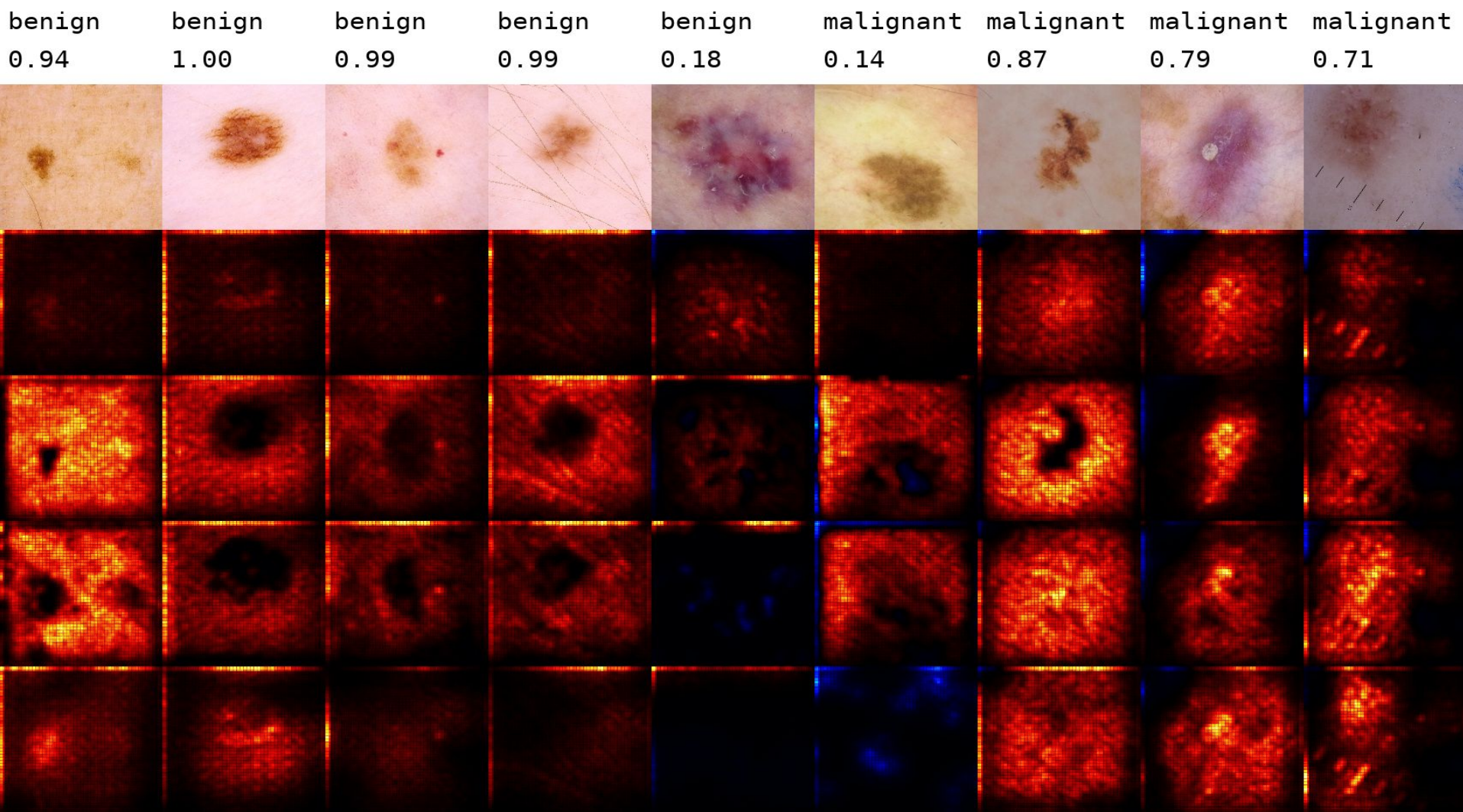
Evaluation across different model architectures and dataset

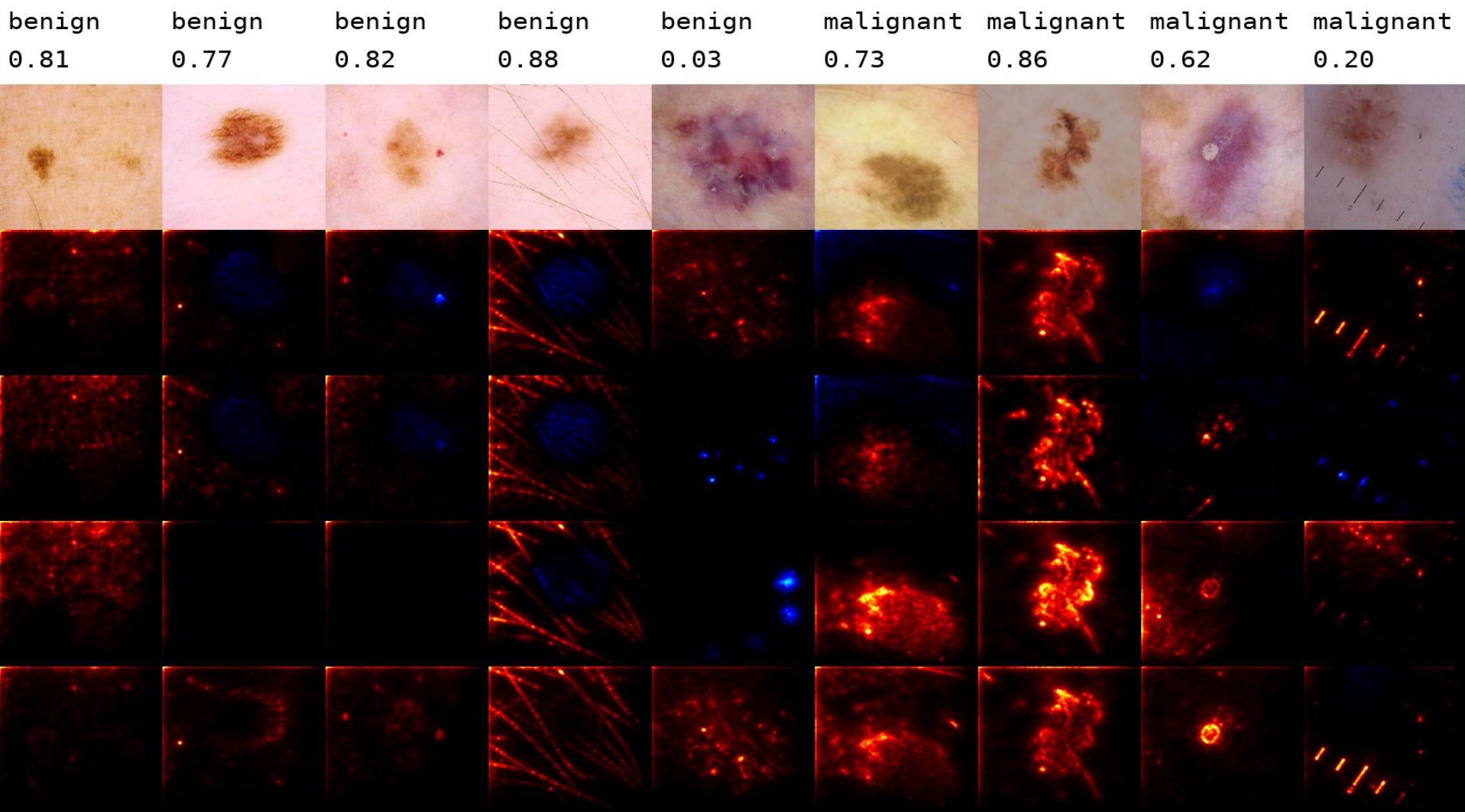
Paweł Pawlik, Michał Siennicki, Alicja Ziarko

What was done

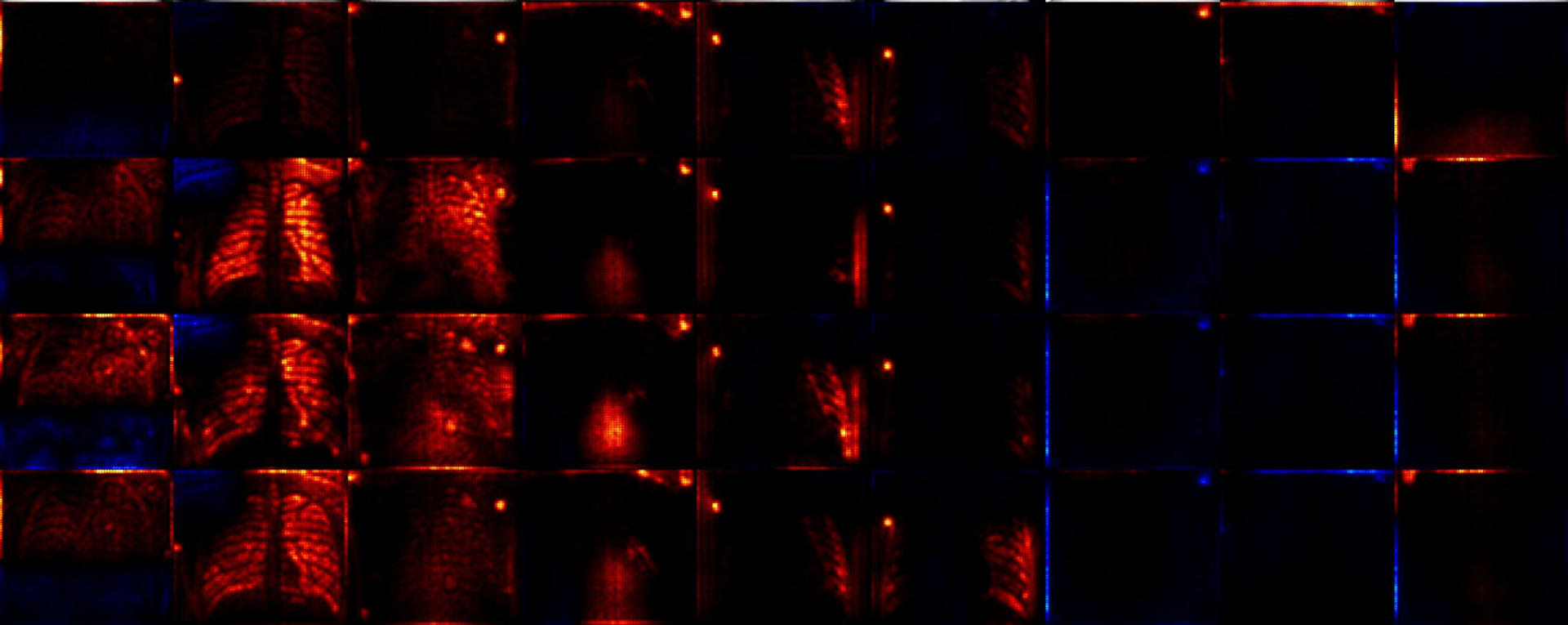
- More data exploration
- Training of the models
- LRP and CRP on
 - 2 models: ResNet50 and VGG16
 - 2 datasets: COVID and Melanoma
- test LRP stability after applying augmentations

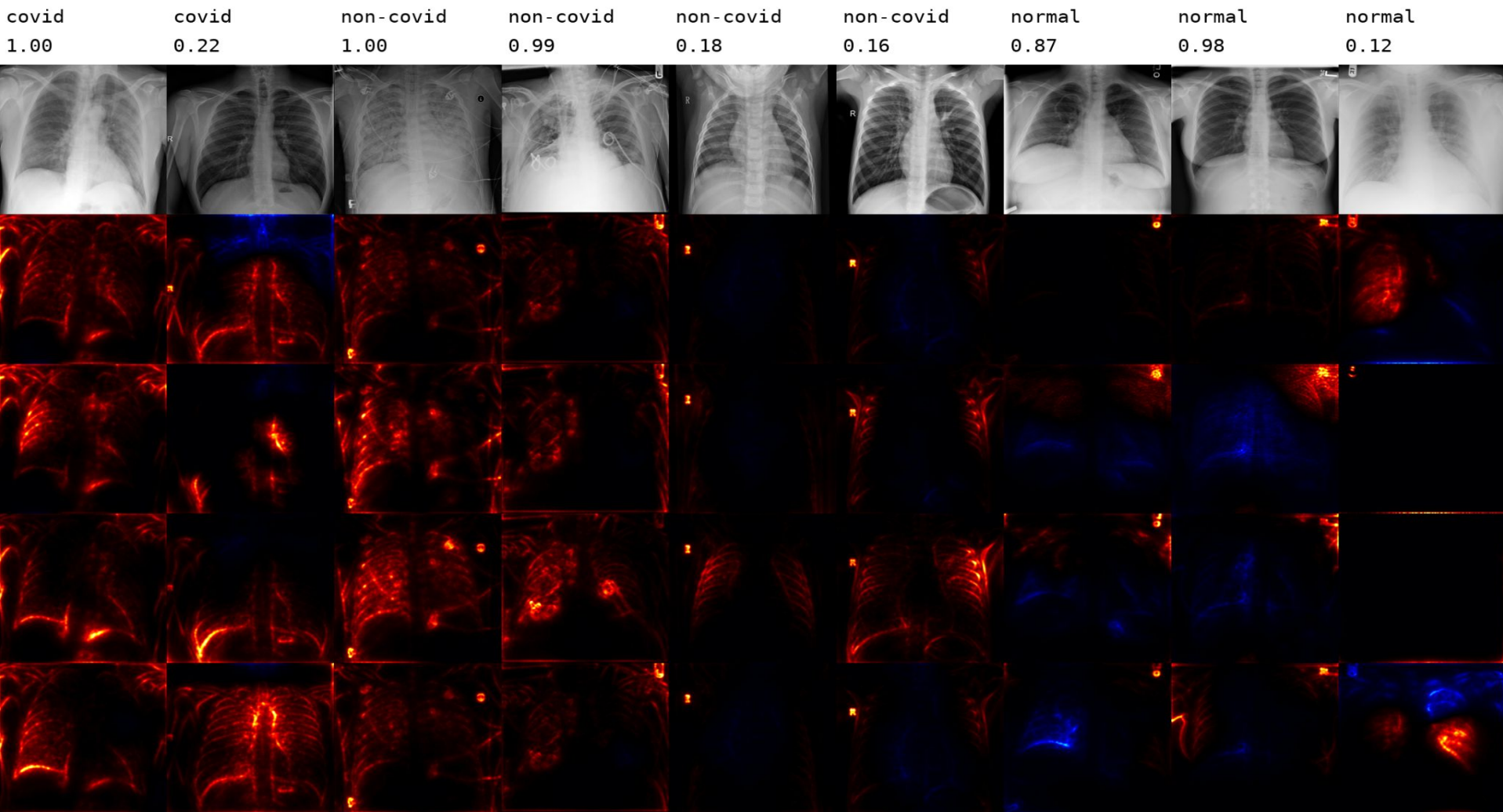




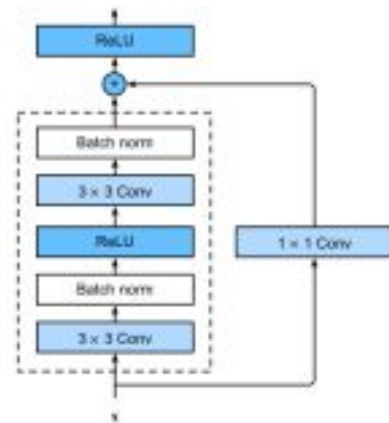
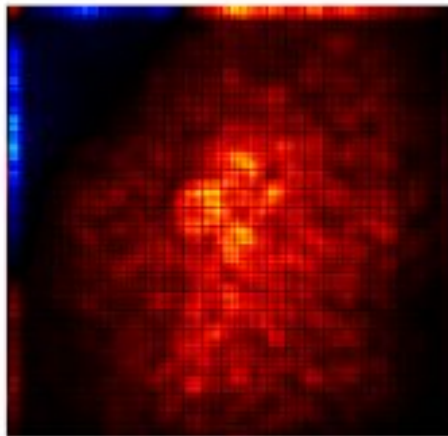
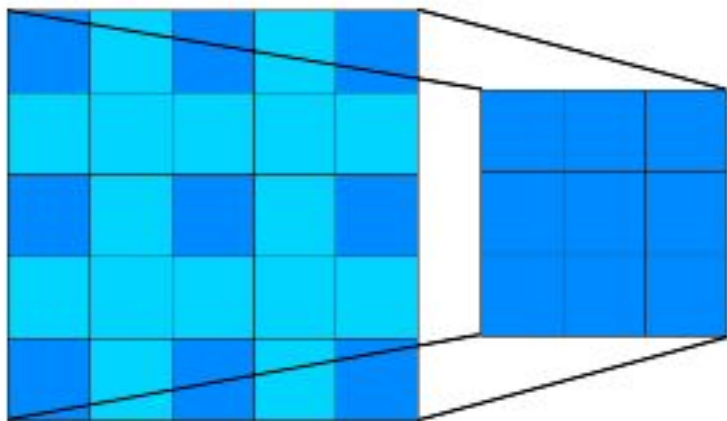


covid	covid	non-covid	non-covid	non-covid	non-covid	normal	normal	normal
0.65	0.99	0.98	0.90	0.90	0.18	0.69	0.75	0.20





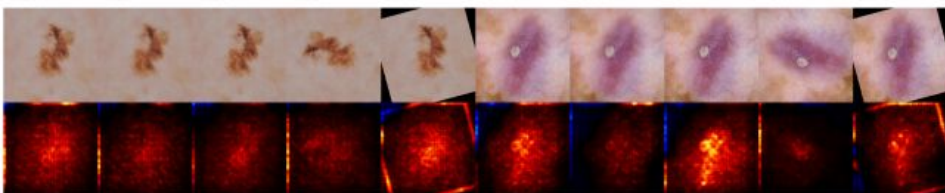
Checker pattern in ResNet explanations



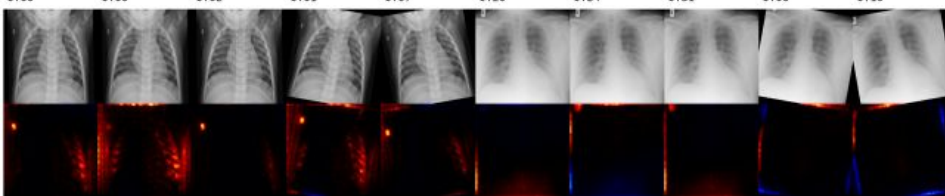
LRP on augmentations

ResNet50

identity	blur	sharpen	rotate90	rotate15	identity	blur	sharpen	rotate90	rotate15
malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant
0.87	0.86	0.83	0.87	0.85	0.79	0.63	0.84	0.74	0.79

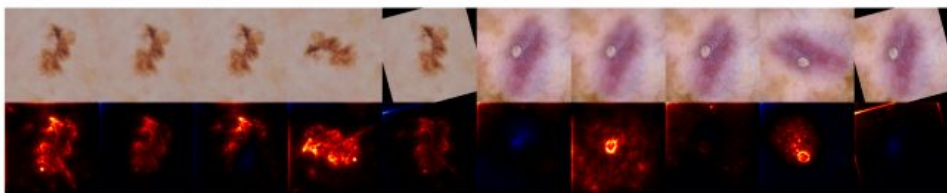


identity	blur	sharpen	rotate-10	rotate10	identity	blur	sharpen	rotate-10	rotate10
non-covid	non-covid	non-covid	non-covid	non-covid	normal	normal	normal	normal	normal
0.00	0.00	0.02	0.01	0.07	0.20	0.24	0.31	0.06	0.19

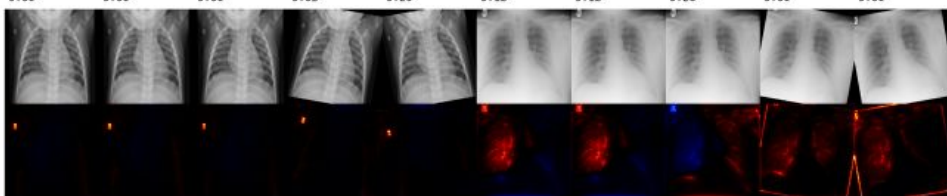


VGG16

identity	blur	sharpen	rotate90	rotate15	identity	blur	sharpen	rotate90	rotate15
malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant	malignant
0.86	0.82	0.71	0.85	0.86	0.62	0.93	0.32	0.72	0.17



identity	blur	sharpen	rotate-10	rotate10	identity	blur	sharpen	rotate-10	rotate10
non-covid	non-covid	non-covid	non-covid	non-covid	normal	normal	normal	normal	normal
0.00	0.00	0.00	0.02	0.29	0.12	0.12	0.26	0.00	0.00



Takeaways

- LRP and CRP give useful insight into how models work
- medical datasets are hard
- CNNs are not robust so their explanations are not either