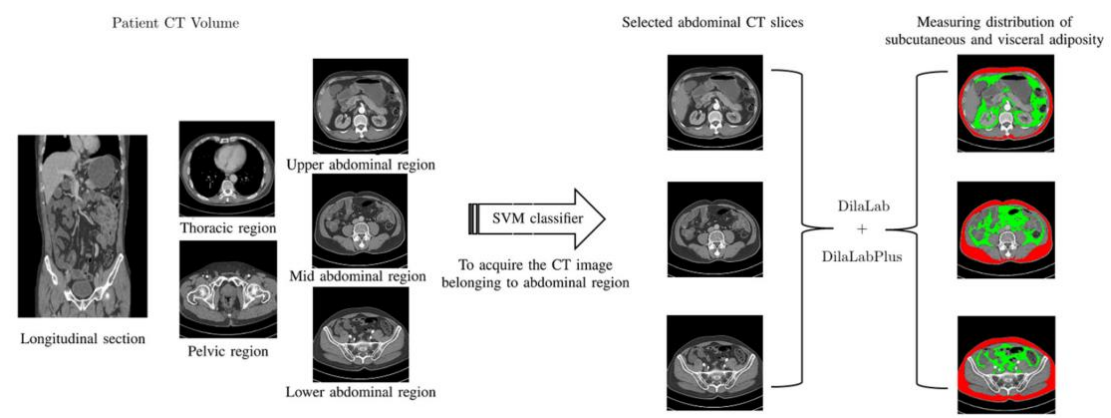
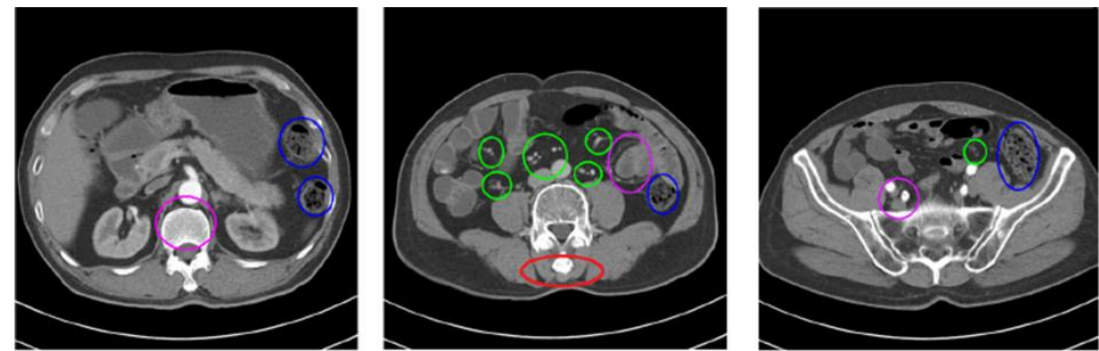


README

一、整体框架



二、难点



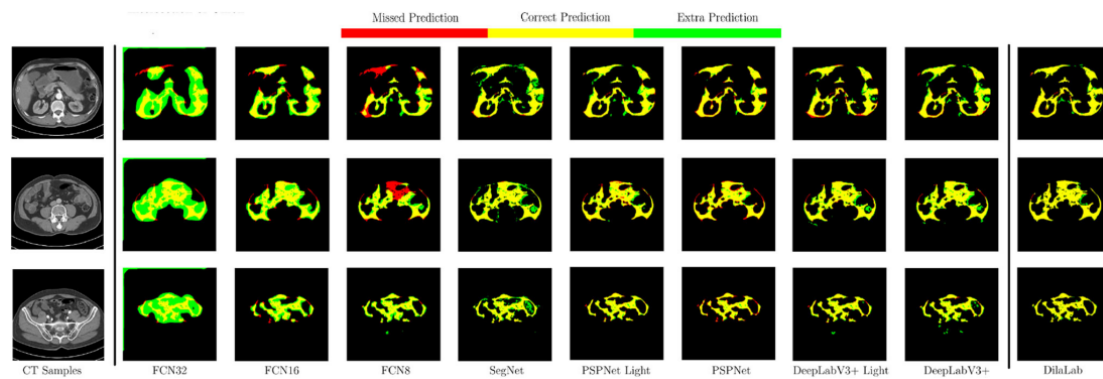
三、腹部 CT 判别

各种分类器比较:

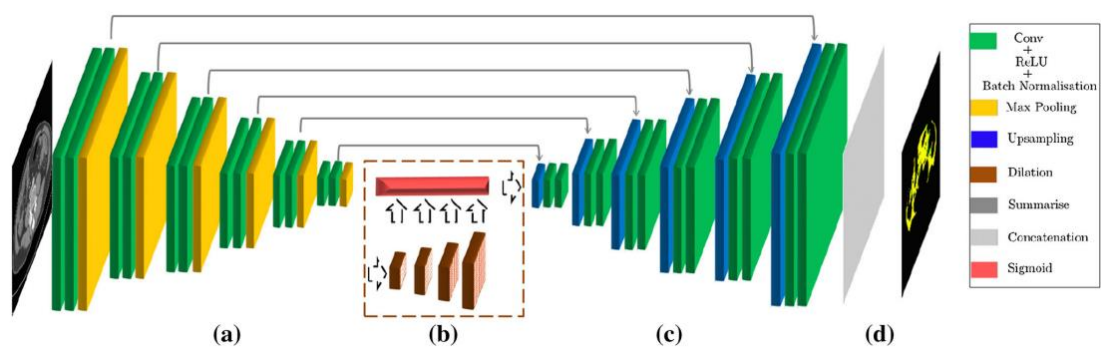
Classifier	Training time (s)	Train score	Test accuracy	Classification report			
				Precision	Recall	f1-score	Support
Decision tree + HOG	25.96	0.9808	0.9808	0.98	0.98	0.98	1100
Random forest + HOG	17.22	0.8269	0.8269	0.88	0.83	0.82	1100
AdaBoost + HOG	193.07	0.6346	0.6346	0.49	0.63	0.52	1100
SVM-HOG	55.40	0.9983	0.9983	1	0.99	0.99	1100

四、state-of-art 网络比较

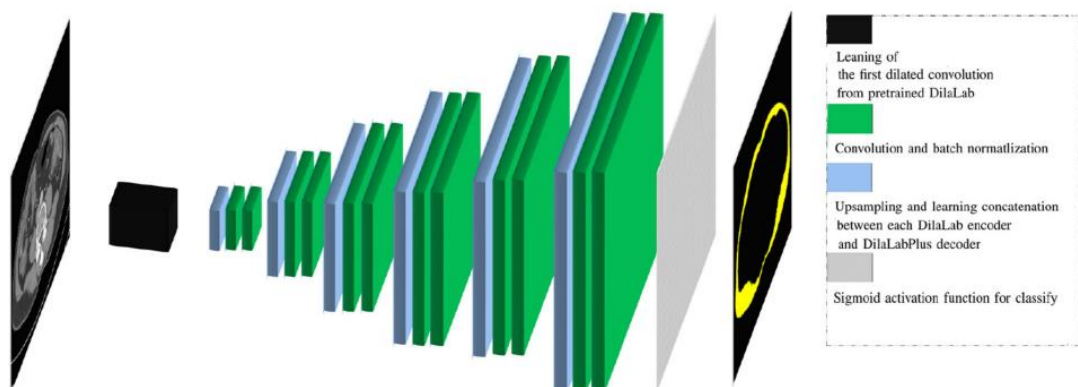
使用 FCNs, SegNet, PSPNets、DeepLabV3+进行了内脏脂肪分割提取和比较：



五、DilaLab

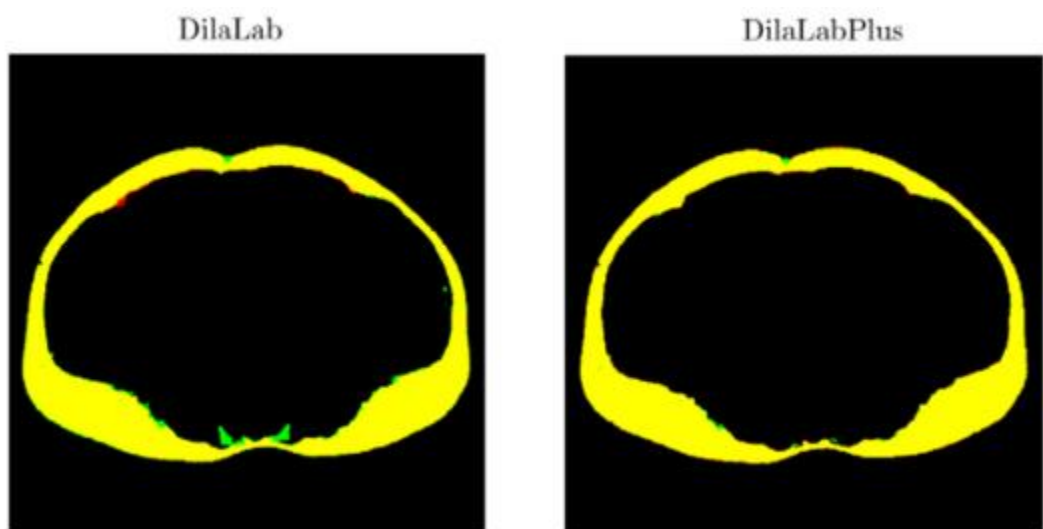


六、DilaLabPlus



七、DilaLab&DilaLabPlus

在皮下脂肪的分割效果对比：



运行时间、参数量比较：

Model	Model analysis report				
	FLOPs	Params	Train rate (ms/setp)	Train time (s)	Test rate (s/im)
<i>DilaLab</i>	13.8604×10^8	6.8253×10^8	73	683.0077	4.6741
<i>DilaLabPlus</i>	3.9424×10^8	1.9695×10^8	32	455.6625	5.8758

八、效果

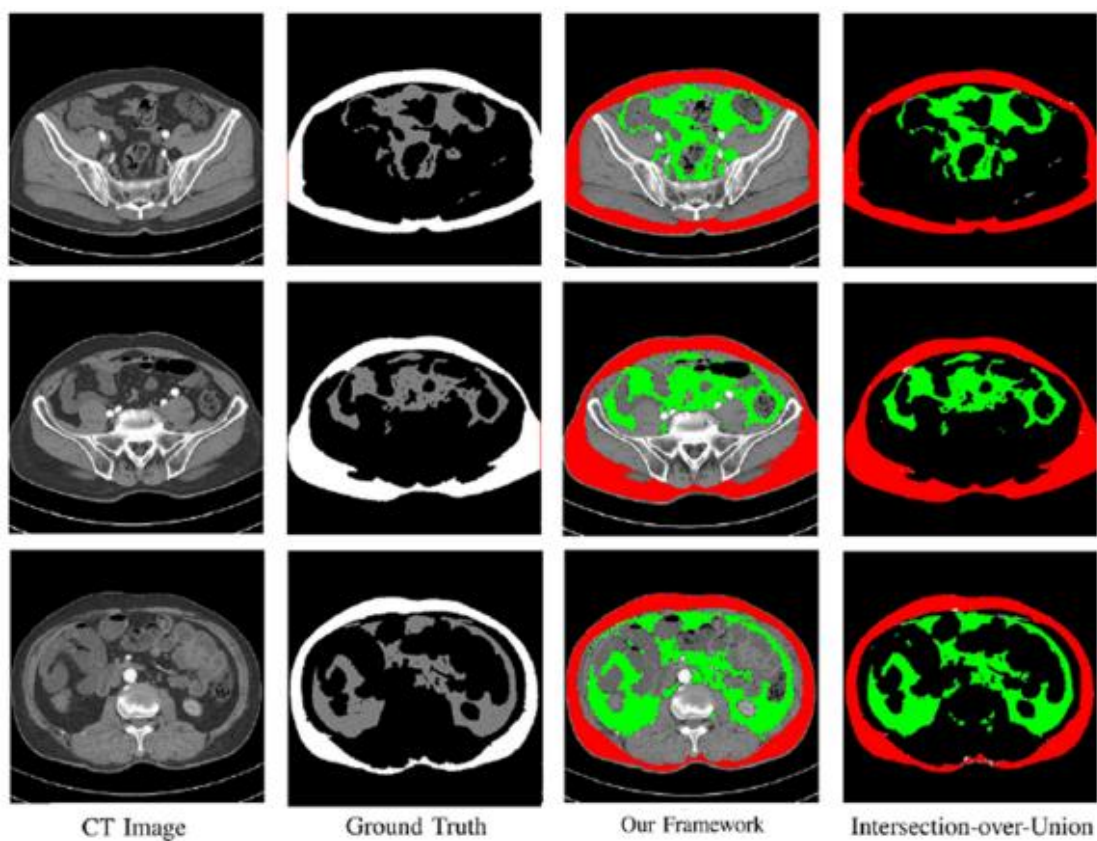
内脏脂肪：

Networks	Evaluation of VAT			
	Pixel-wise accuracy	False-positive rate	False-negative rate	Specificity
FCN32	0.8412 ± 0.0320	0.3305 ± 0.0329	0.0986 ± 0.0421	0.8483 ± 0.0298
FCN16	0.9139 ± 0.0340	0.2980 ± 0.0249	0.1735 ± 0.0416	0.8706 ± 0.0211
FCN8	0.9556 ± 0.0349	0.2577 ± 0.0255	0.1551 ± 0.0306	0.9301 ± 0.0212
SegNet	0.9577 ± 0.4119	0.0558 ± 0.0513	0.3089 ± 0.0300	0.9509 ± 0.0307
PSPNet light	0.9692 ± 0.0270	0.0333 ± 0.0287	0.0306 ± 0.0231	0.9734 ± 0.0216
PSPNet	0.9137 ± 0.0026	0.0625 ± 0.0027	0.0934 ± 0.0024	0.9137 ± 0.0026
DeepLabV3+ light	0.9789 ± 0.0138	0.0293 ± 0.0374	0.0424 ± 0.0355	0.9823 ± 0.0151
DeepLabV3+	0.9788 ± 0.0135	0.0213 ± 0.0129	0.0300 ± 0.0203	0.9786 ± 0.0151
DilaLab	0.9782 ± 0.0134	0.0123 ± 0.0133	0.0075 ± 0.0023	0.9836 ± 0.0191

皮下脂肪：

Networks	Evaluation of SAT			
	Pixel-wise accuracy	False-positive rate	False-negative rate	Specificity
FCN32	0.9280 ± 0.0240	0.0765 ± 0.0259	0.0632 ± 0.0046	0.9321 ± 0.0224
FCN16	0.8755 ± 0.0021	0.2398 ± 0.0064	0.0654 ± 0.0057	0.8721 ± 0.0061
FCN8	0.8756 ± 0.0018	0.2499 ± 0.0013	0.0848 ± 0.0262	0.8731 ± 0.0010
SegNet	0.9727 ± 0.0254	0.0272 ± 0.0239	0.0249 ± 0.0360	0.9728 ± 0.0265
PSPNet light	0.9355 ± 0.0732	0.0960 ± 0.0881	0.1383 ± 0.1078	0.9415 ± 0.0789
PSPNet	0.9401 ± 0.0730	0.0598 ± 0.0730	0.1042 ± 0.0953	0.9401 ± 0.0730
DeepLabV3+ light	0.9878 ± 0.0110	0.0186 ± 0.0285	0.0327 ± 0.0378	0.9901 ± 0.0056
DeepLabV3+	0.9875 ± 0.0102	0.0128 ± 0.0108	0.0214 ± 0.0188	0.9874 ± 0.0113
DilaLab	0.9784 ± 0.0161	0.0088 ± 0.0143	0.0061 ± 0.0032	0.9903 ± 0.0319
DilaLabPlus	0.9833 ± 0.0084	0.0070 ± 0.0084	0.0053 ± 0.0023	0.9943 ± 0.0100

可视化：



九、不同样本量效果比较

内脏脂肪

Number of samples	Evaluation of visceral adipose tissue			
	Pixel-wise accuracy	False-positive rate	False-negative rate	Specificity
1100 Samples	0.9782 ± 0.0134	0.0123 ± 0.0133	0.0075 ± 0.0023	0.9836 ± 0.0191
70 Samples	0.9756 ± 0.0229	0.0149 ± 0.0240	0.0078 ± 0.0017	0.9891 ± 0.0174

皮下脂肪

Number of samples	Evaluation of subcutaneous adipose tissue			
	Pixel-wise accuracy	False-positive rate	False-negative rate	Specificity
1100 Samples	0.9833 ± 0.0084	0.0070 ± 0.0084	0.0053 ± 0.0023	0.9943 ± 0.1001
70 Samples	0.9823 ± 0.0063	0.0055 ± 0.0057	0.0057 ± 0.0011	0.9995 ± 0.0138

十、公开数据集验证

DeepLesion 数据集：

