Breast Ultrasound Image Segmentation: an optimization approach based on super-pixels and high-level descriptors

Quality Control by Artificial Vision
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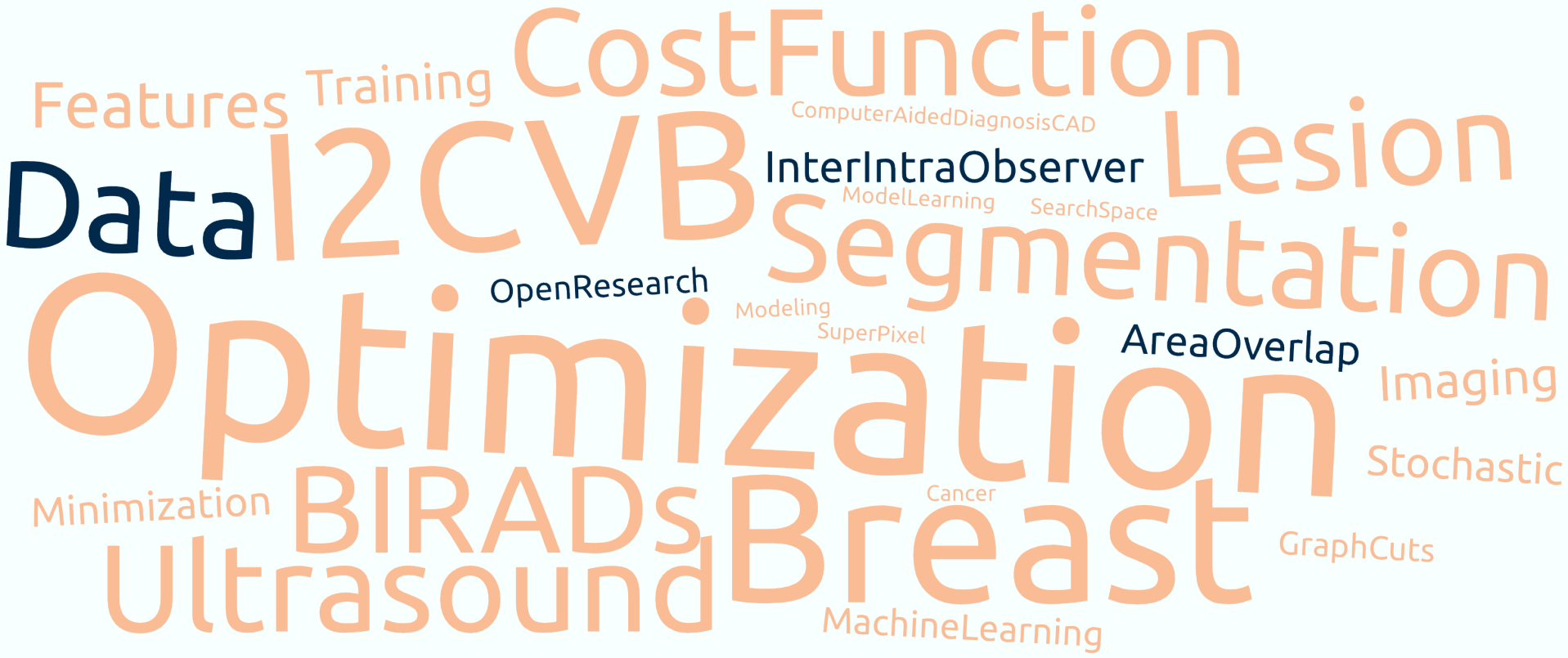
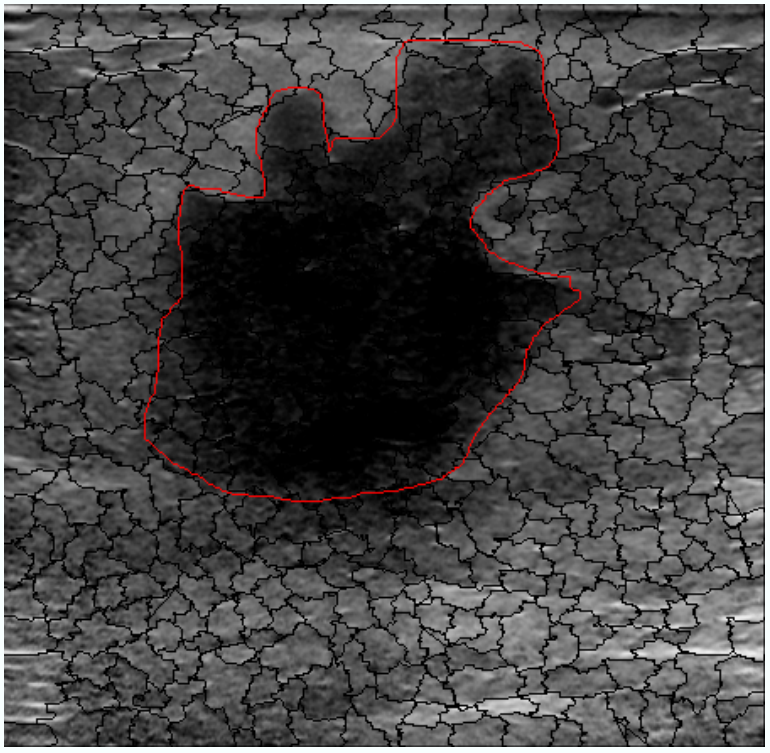
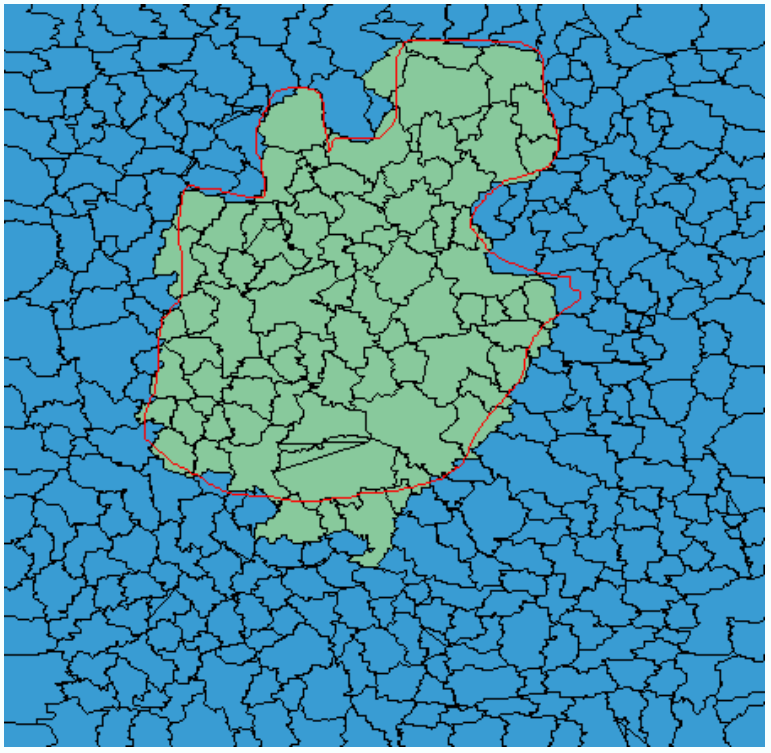

CostFunction
Features
Training
Data
I2CVB
ComputerAidedDiagnosisCAD
InterIntraObserver
Lesion
ModelLearning
SearchSpace
Segmentation
OpenResearch
Optimization
Modeling
SuperPixel
AreaOverlap
Imaging
Stochastic
Minimization
BIRADs
Cancer
Breast
GraphCuts
Ultrasound
MachineLearning

Qualitative results
Super-pixel classification vs Area-Overlap

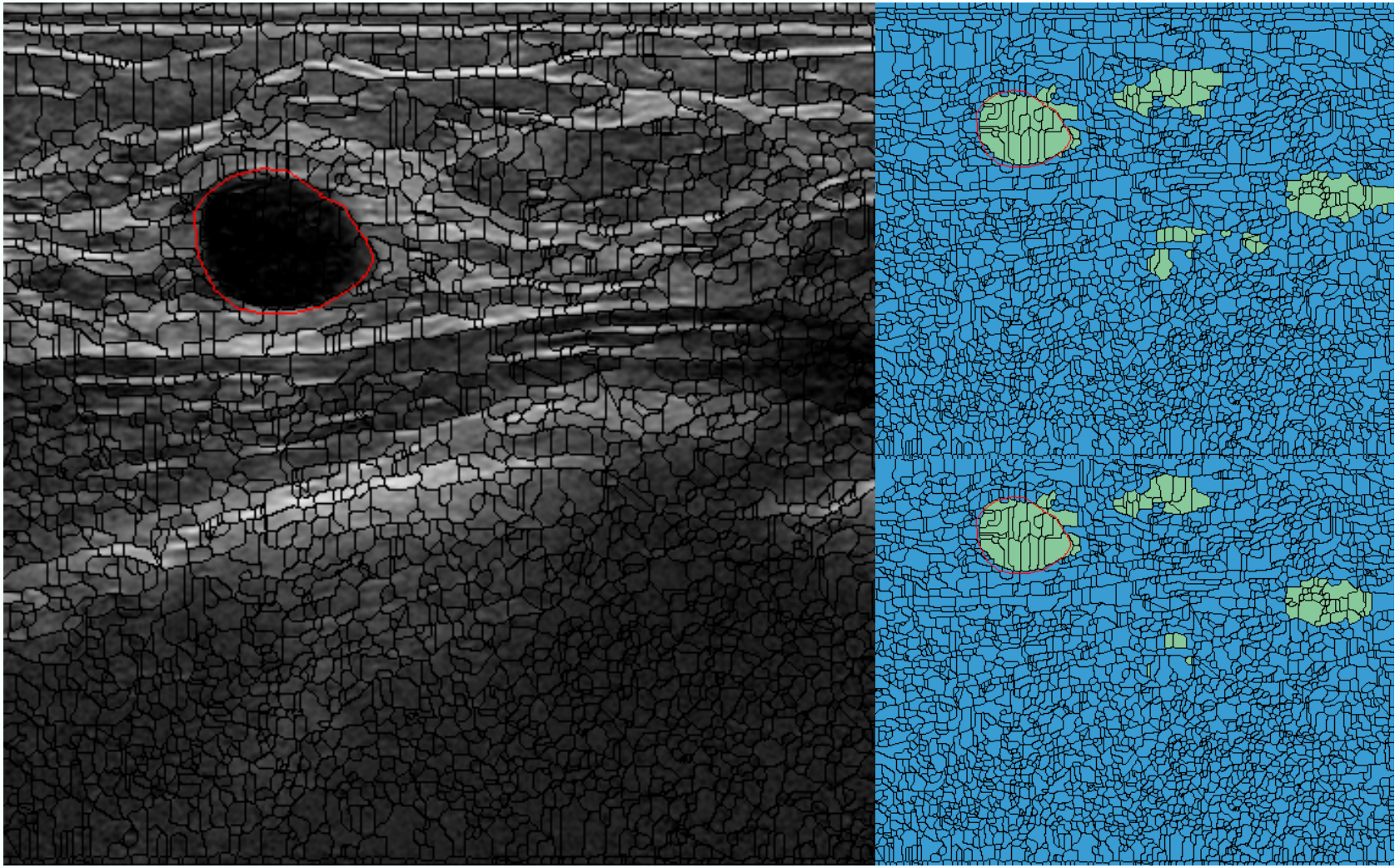


(a) Original Image, Ground Truth and Super-Pixels delineation.

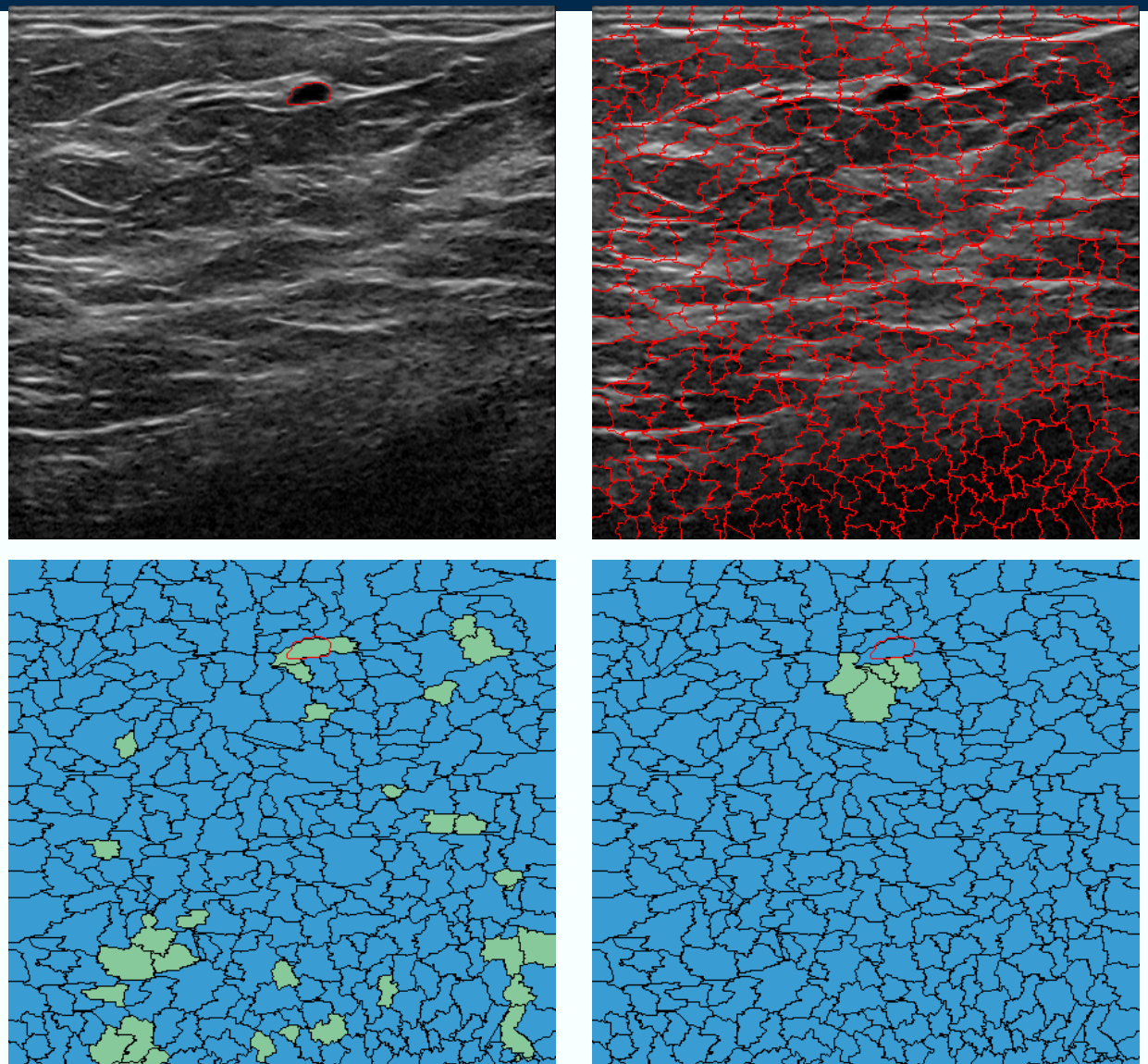


(b) $\{\text{lesion}, \overline{\text{lesion}}\}$ labeling results, GT and SP delineation.

Qualitative results
Influence of the Smoothing Term to False Positive Ratio

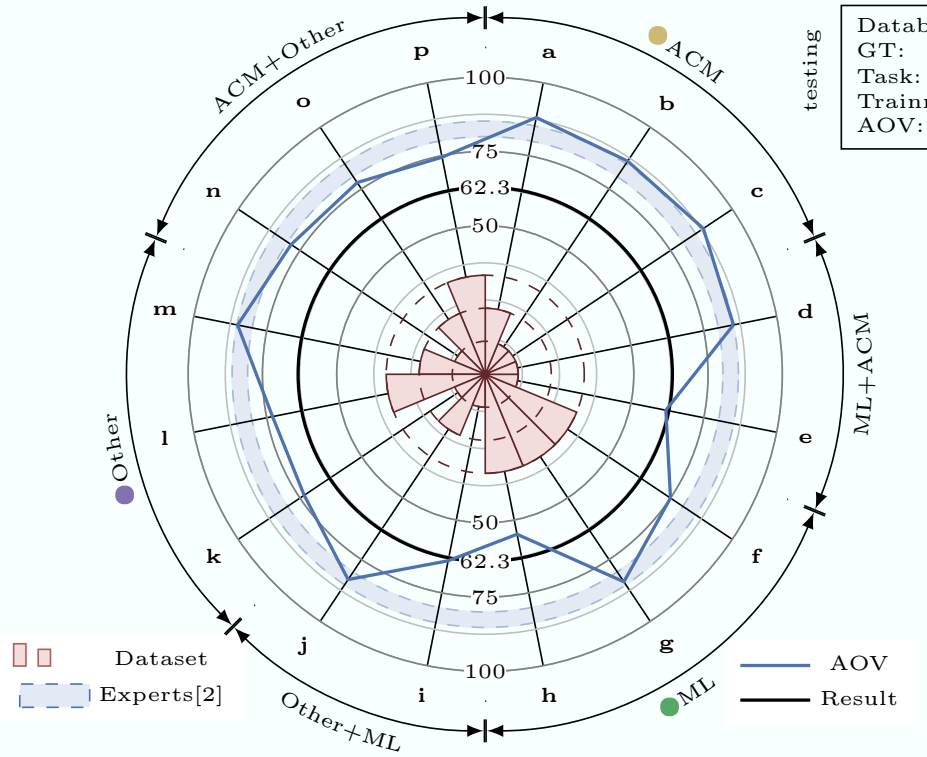


Qualitative results
When False Negative Emerge



Quantitative Results

Method Id:	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
Dataset size:	76	20	32	20	42	480	347	352	25	120	6	400	50	20	118	488
techonlogy used for:																
detection																
segmetnation																
post-processing																
AOV (in %):	88.1	86.3	88.3	85.2	62.0	75.0	84.0	54.9	64.0	83.1	73.3	73.0	85.0	78.6	77.6	74.5



testing

Database size:	16
GT:	multi-label
Task:	$\mathcal{L} = \{\text{lesion}, \overline{\text{lesion}}\}$
Trainning:	Leave-one-Patient-Out
AOV: .623	FPR: .4 FNR: .008