

Supplementary

Table 1. Detail of experimental result of nuclei detection

DoH Threshold	Run time (s)	Median Distance	Precision	Recall	F1 Score
0	145.5676451	2.211057814	0.260652	0.9675306	0.405361
10	89.22065218	2.328823698	0.505014	0.9235719	0.650308
20	64.52379818	2.486949781	0.578888	0.8851442	0.697844
30	52.92521794	2.66052103	0.624708	0.8406132	0.714582
40	47.62836859	2.782566566	0.653486	0.8029401	0.718044
50	43.05979155	2.945111302	0.679803	0.7764985	0.722283
60	39.56667384	3.163262808	0.699799	0.7446698	0.718726
70	36.80672399	3.359306406	0.716999	0.7196443	0.715466
80	33.874406	3.726345425	0.727476	0.6822828	0.700998
90	31.48796779	4.170924699	0.735062	0.6475874	0.684748
100	29.34444708	4.655433885	0.741422	0.6185951	0.670223

Table 2. Detail of experimental result of nuclei classification

Classifier		Sel Inflammatory		Sel Lainnya		F1-Score
		Precision	Recall	Precision	Recall	
k-NN	k = 1	0.4119025	0.531613	0.5787016	0.4749204	0.499468
	k = 3	0.4715933	0.5382095	0.5459676	0.4792802	0.5087499
	k = 5	0.4663633	0.5374548	0.5480523	0.4797295	0.5077489
	k = 7	0.470375	0.5403379	0.5547048	0.4820169	0.5117489
	k = 9	0.4665154	0.5391596	0.5594217	0.4824571	0.5117469
	k = 11	0.4696146	0.5399277	0.5611263	0.4829096	0.5134922
	k = 13	0.4680594	0.5397693	0.5568931	0.4821142	0.5117489
Random Forest	T = 300	0.3218801	0.5573775	0.7167729	0.4830296	0.5197499
	T = 400	0.3157876	0.5546192	0.7104338	0.4812724	0.5154879
	T = 500	0.3276598	0.5670766	0.7247674	0.4873881	0.5267499
SVM		0.3986138	0.5456445	0.627816	0.4836472	0.5142489

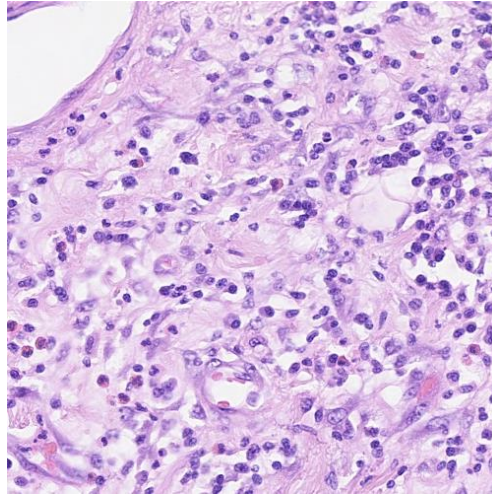


Figure 1. Sample of image data

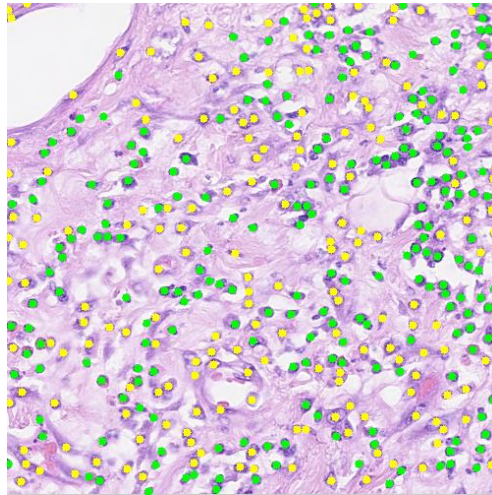


Figure 2. Annotated centroid.
Green dots = Centroid inflammatory nuclei
Yellow dots = Centroid non-inflammatory nuclei

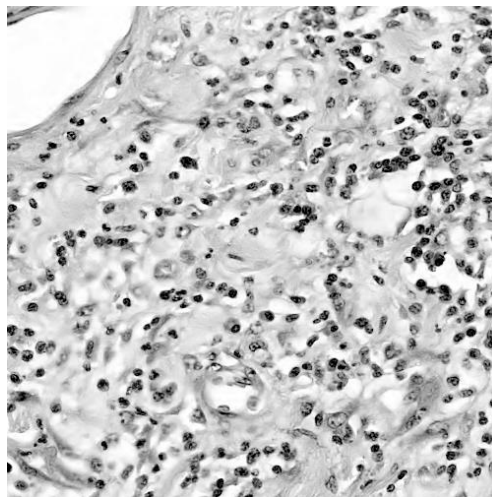


Figure 3. Preprocessed image data

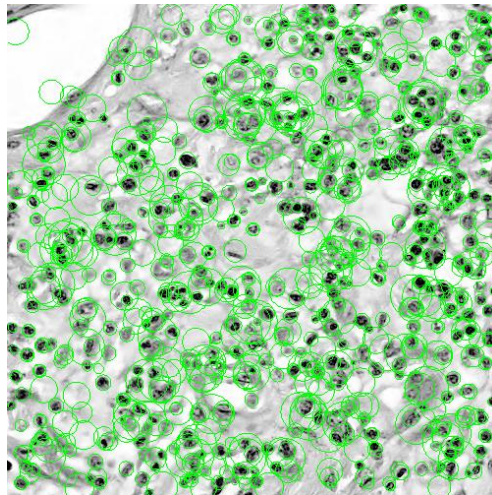


Figure 4. Interest points that have been generated by SURF Detector

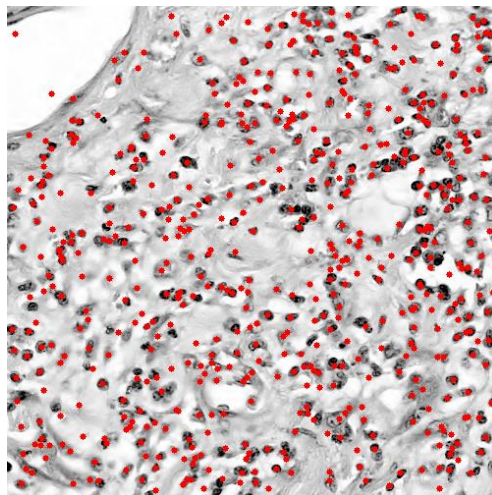


Figure 5. Clustered interest point

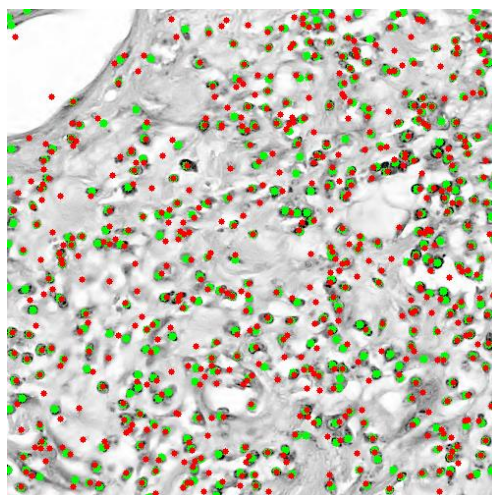


Figure 6. Comparison of annotated centroid and generated centroid
Green dots = Annotated Centroid of nuclei
Red dots = Generated Centroid of nuclei

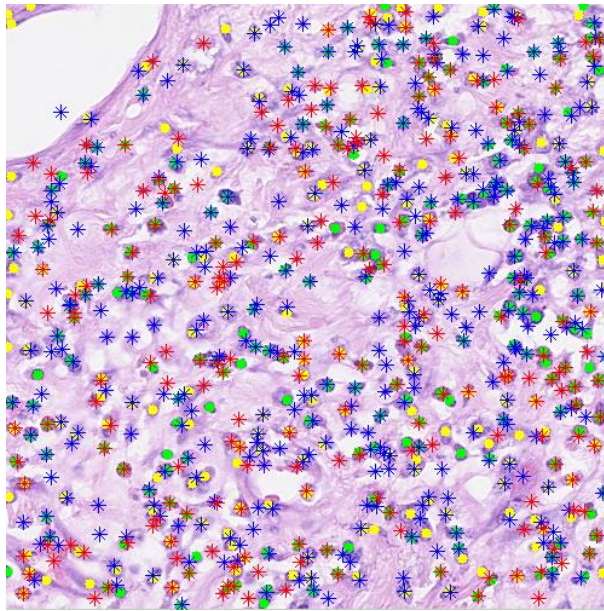


Figure 7. Comparison of labeled nuclei type and generated nuclei type
Green dots = Annotated Centroid of inflammatory nuclei
Yellow dots = Annotated Centroid of non-inflammatory nuclei
Blue stars = Location of detected inflammatory nuclei by system
Red stars = Location of detected non-inflammatory nuclei by system