ToMAToMP: Robust and Multi-Parameter Topological Clustering

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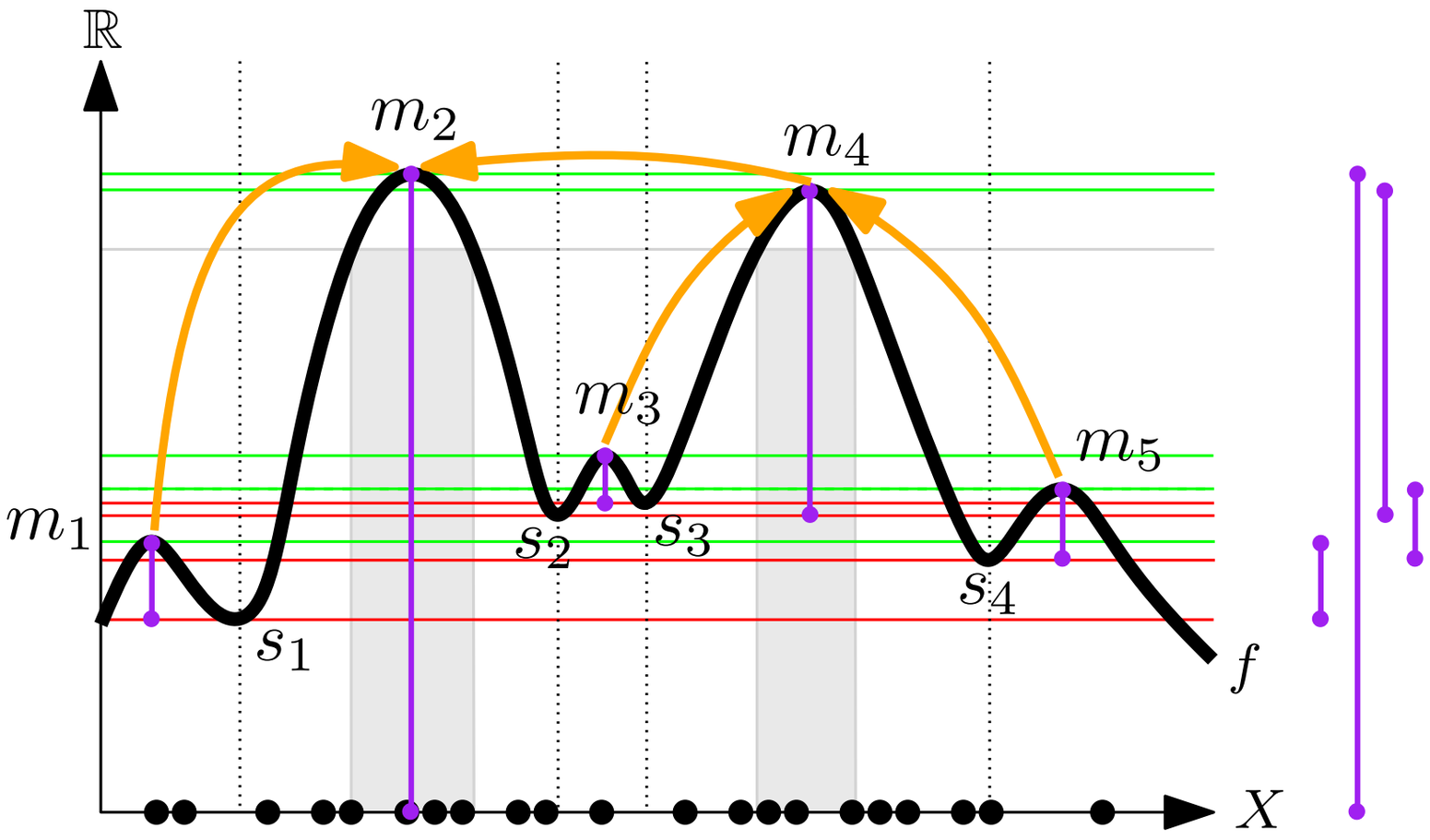

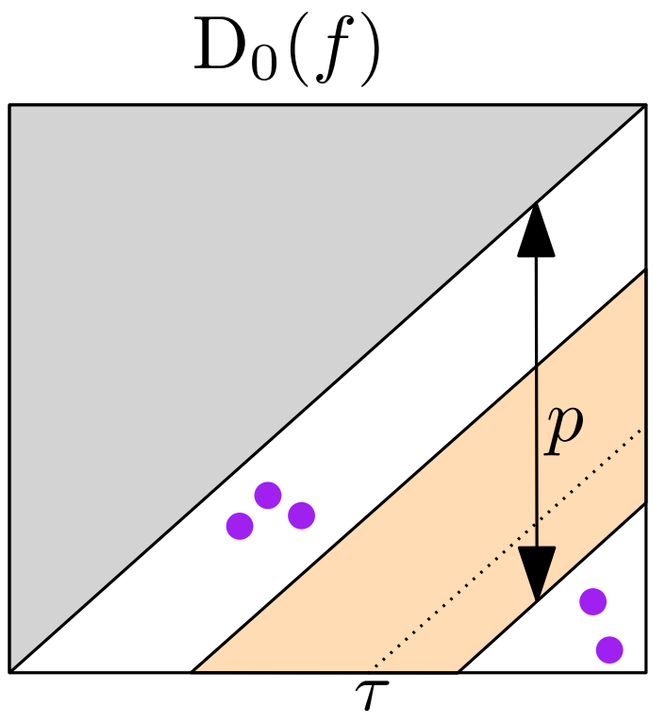

Persistence-Based Clustering in Riemannian Manifolds, Chazal et al., *J. ACM*, 2013

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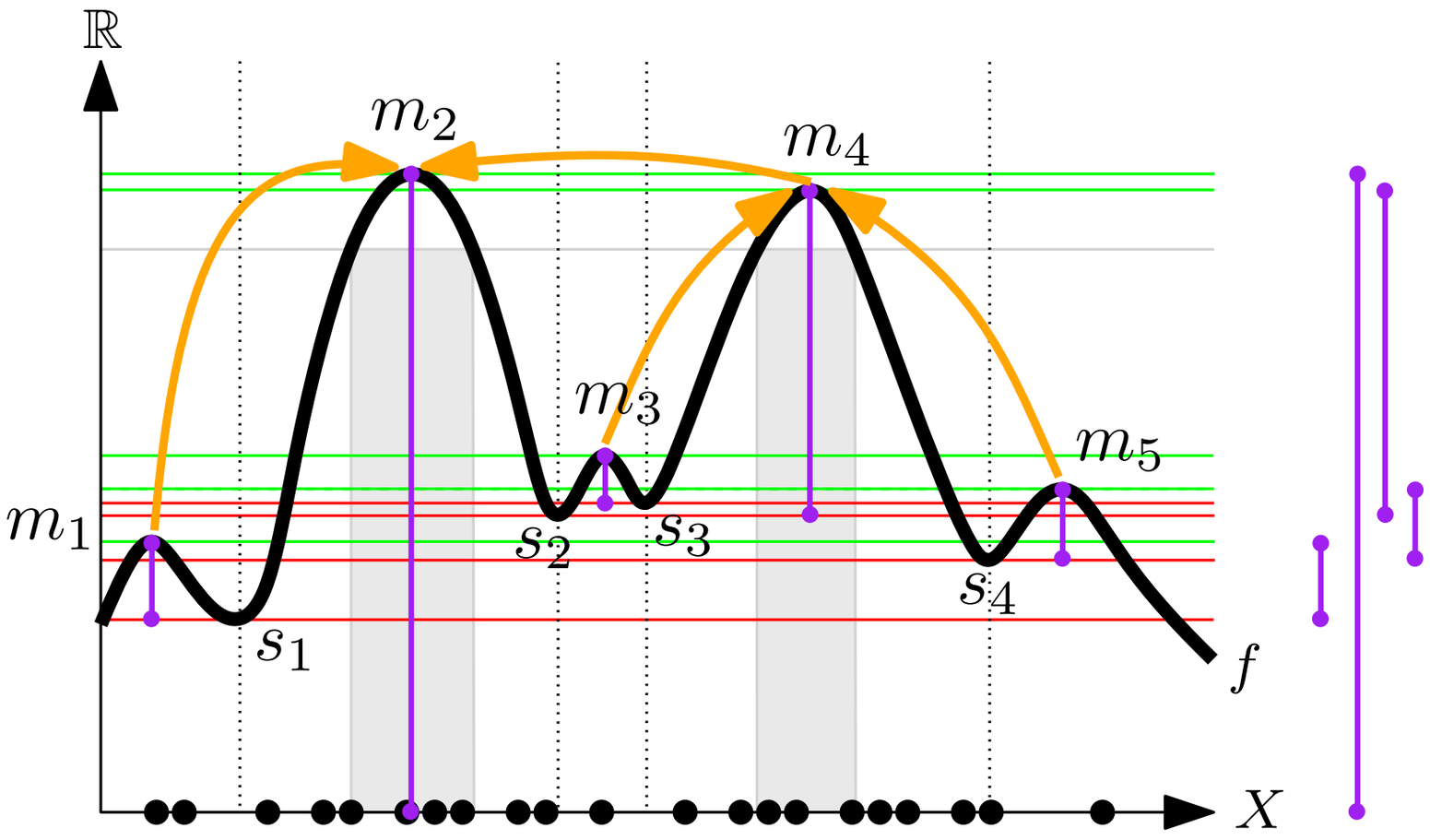

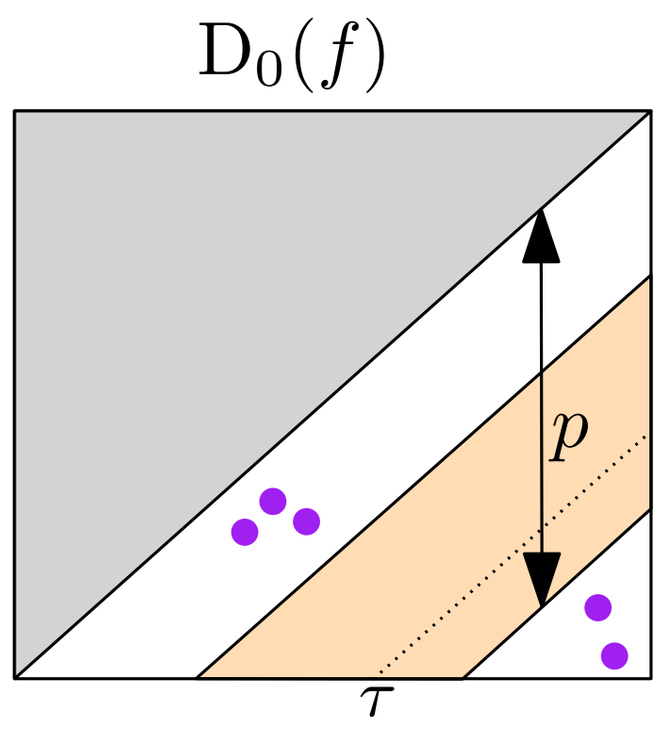

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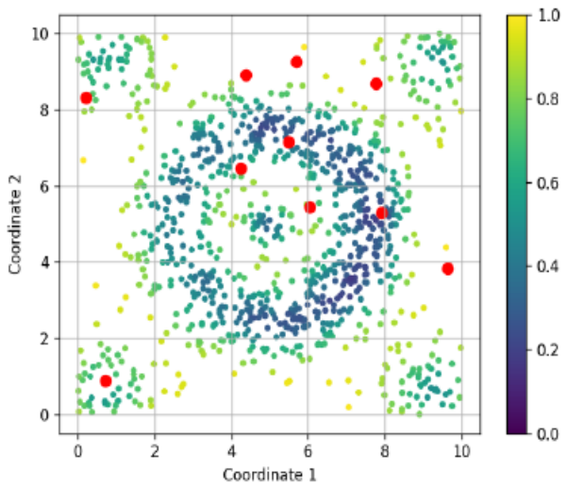

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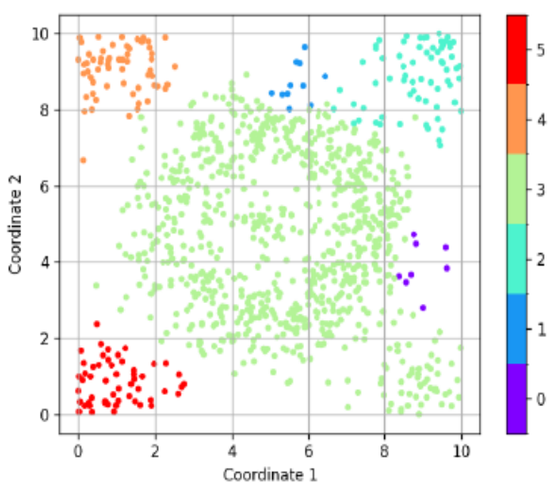

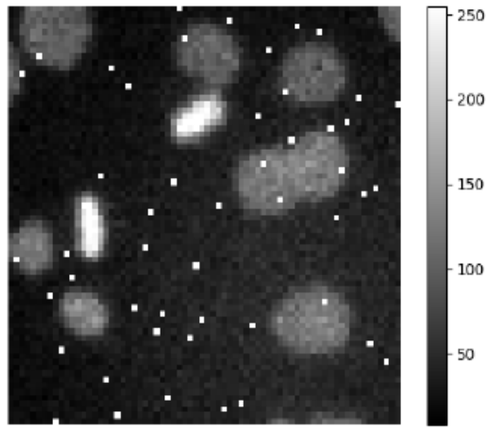

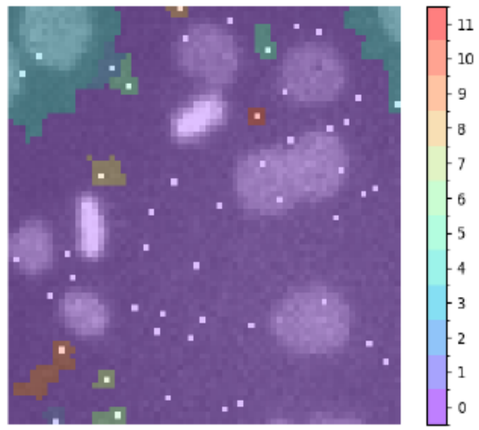

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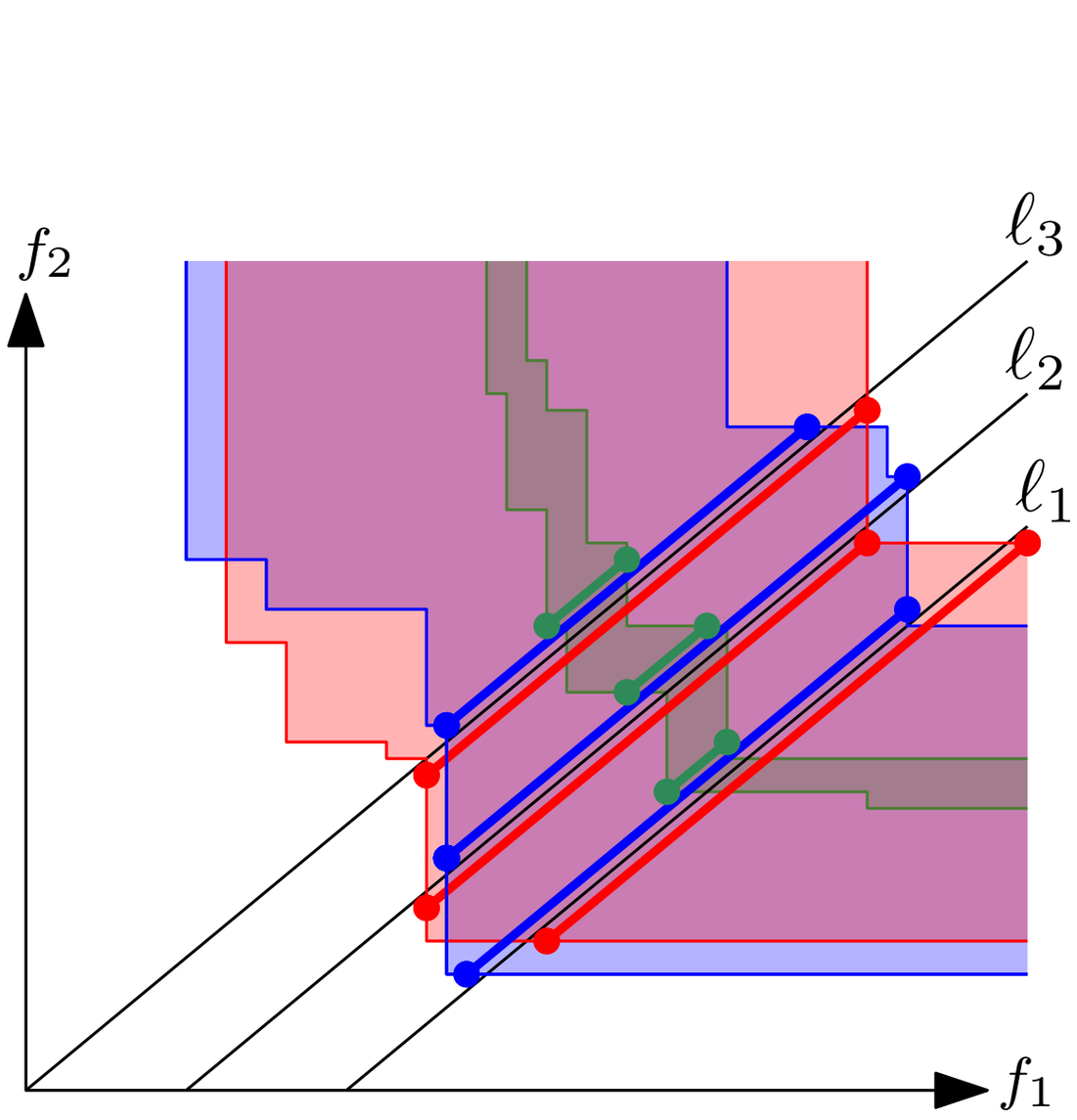

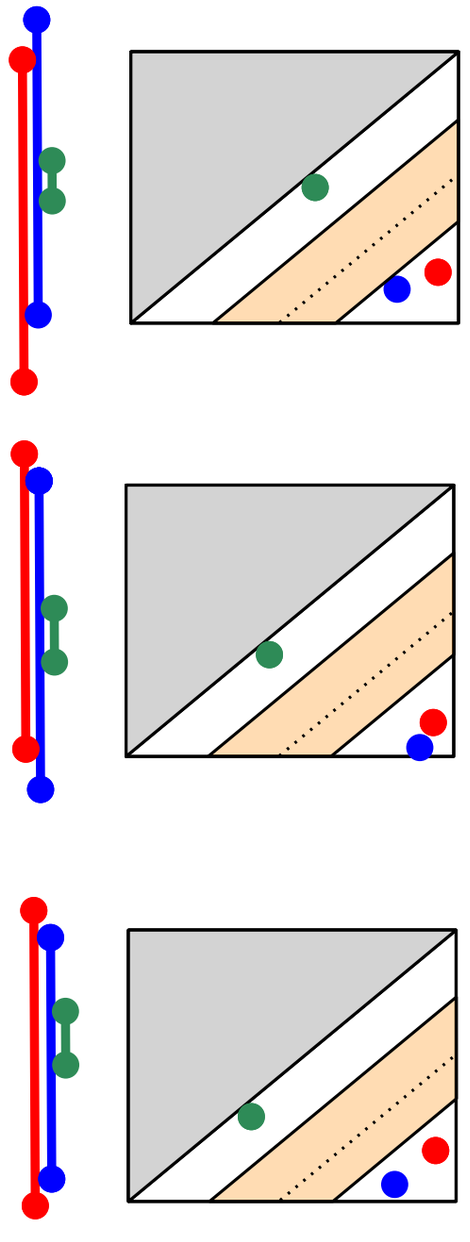

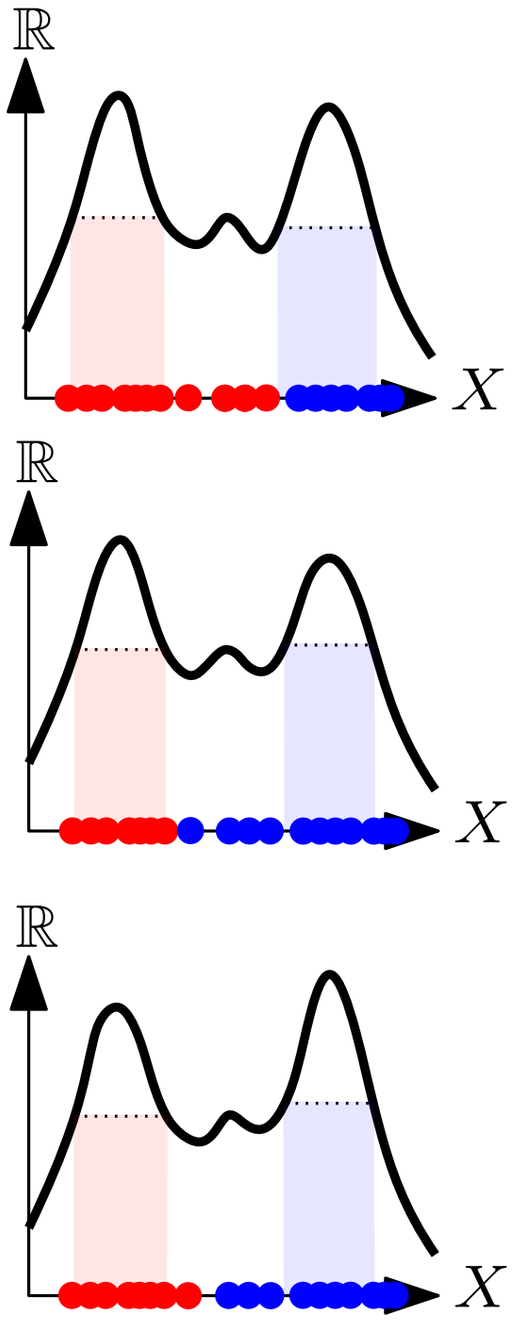

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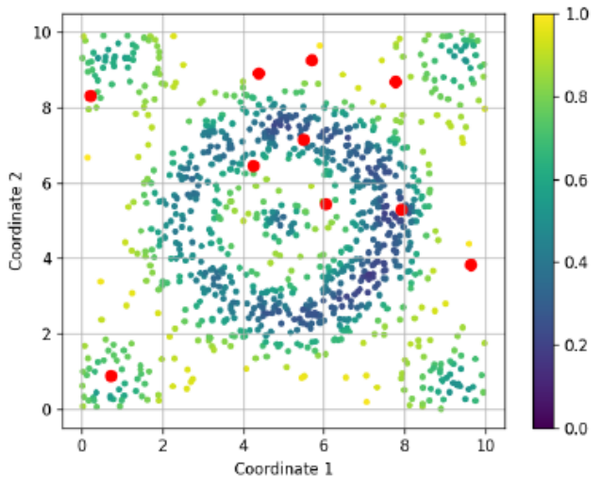

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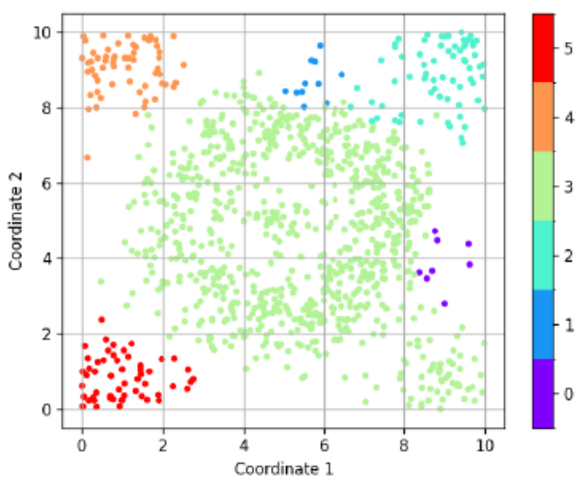

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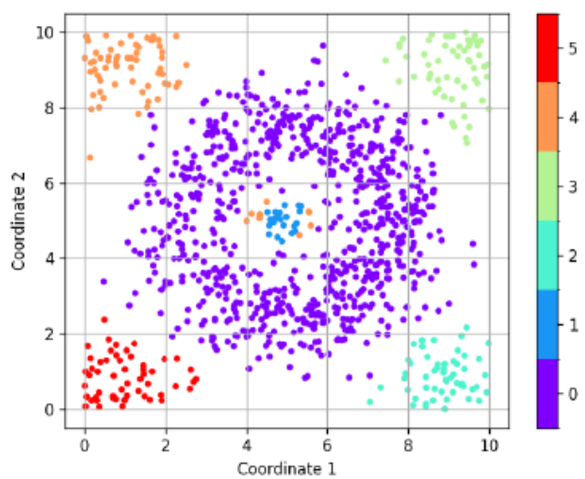

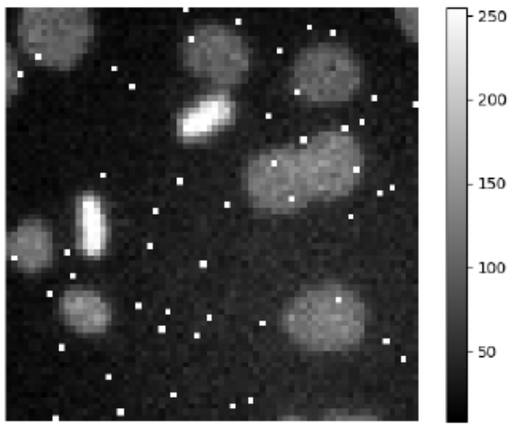

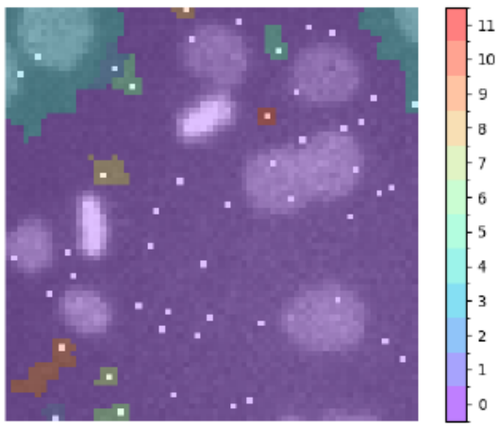

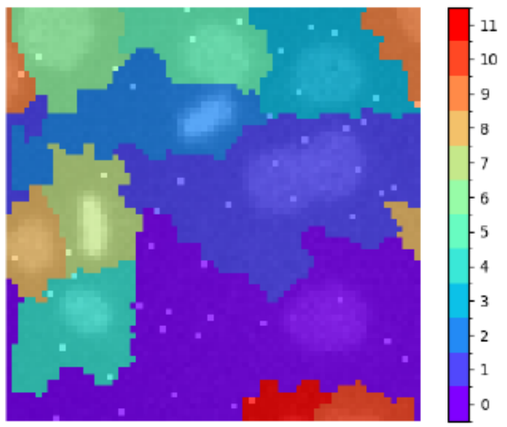

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Method	`synthetic no-radius`	`3dshape no-radius`	`synthetic outlier`	`image outlier`
KMeans	0.43	0.41 $\pm$ 0.20	0.38 $\pm$ 0.03	0.69 $\pm$ 0.00
SpectralClustering	0.69	0.38 $\pm$ 0.18	0.67 $\pm$ 0.00	0.69 $\pm$ 0.00
AgglomerativeClustering	0.45	**0.42 $\pm$ 0.19**	0.43 $\pm$ 0.03	0.67 $\pm$ 0.00
DBSCAN	0.00	0.03 $\pm$ 0.11	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00
DensityPeaks	0.53	0.34 $\pm$ 0.18	0.53 $\pm$ 0.01	0.63 $\pm$ 0.00
HDBSCAN	0.75	0.25 $\pm$ 0.13	0.72 $\pm$ 0.02	0.12 $\pm$ 0.01
Louvain	0.57	0.41 $\pm$ 0.15	0.56 $\pm$ 0.02	0.67 $\pm$ 0.00
Leiden	0.56	0.41 $\pm$ 0.16	0.56 $\pm$ 0.02	0.68 $\pm$ 0.00
ToMATo (min)	0.00	0.26 $\pm$ 0.21	–	–
ToMATo (mean)	0.66	0.38 $\pm$ 0.19	–	–
ToMATo	–	–	0.59 $\pm$ 0.12	0.55 $\pm$ 0.02
ToMAToMP	**0.82**	0.35 $\pm$ 0.20	**0.93 $\pm$ 0.01**	**0.74 $\pm$ 0.00**

Table 1: AMI scores for `no-radius` and `outlier` experiments. Results are averaged over all meshes (resp. frames) of the `3dshape` (resp. `image`) dataset.

Thank you!!