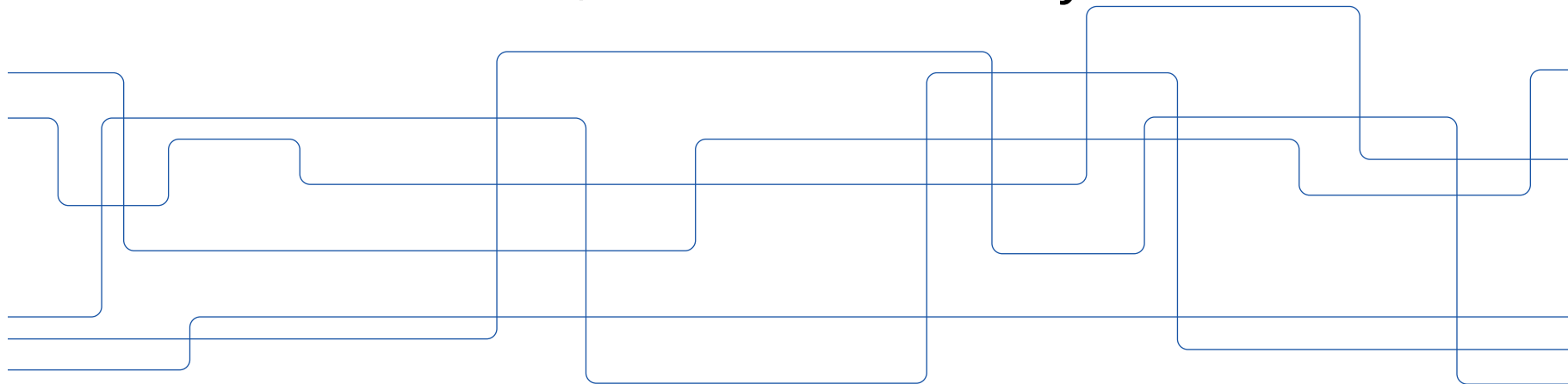
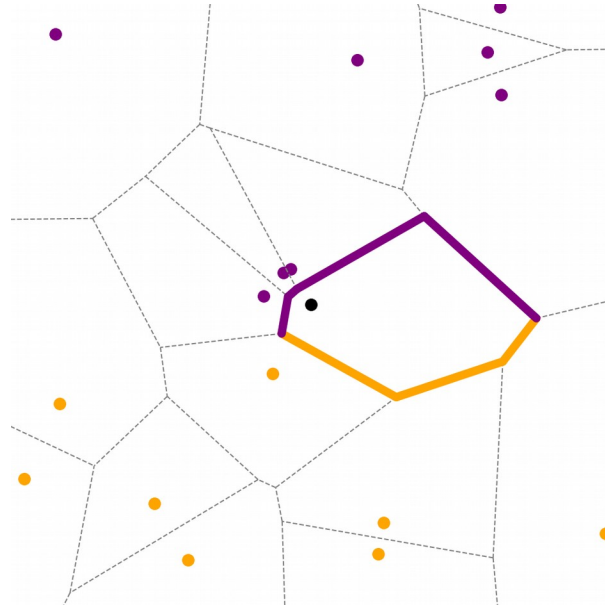


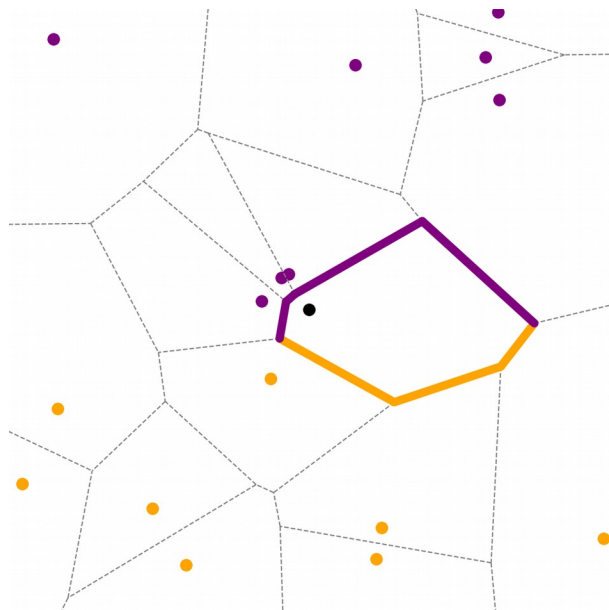
# Voronoi Boundary Classification:

A High-Dimensional Geometric Approach via Weighted Monte Carlo Integration

Vladislav Polianskii, Florian T. Pokorný

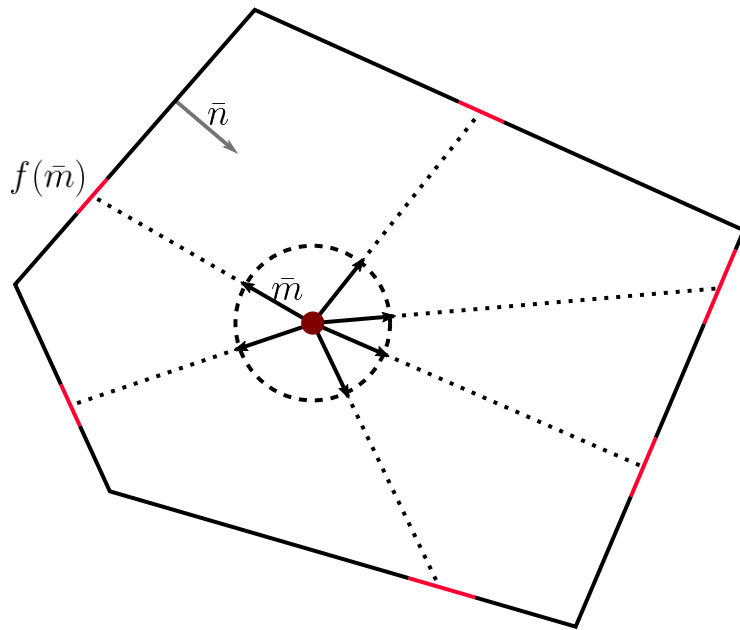


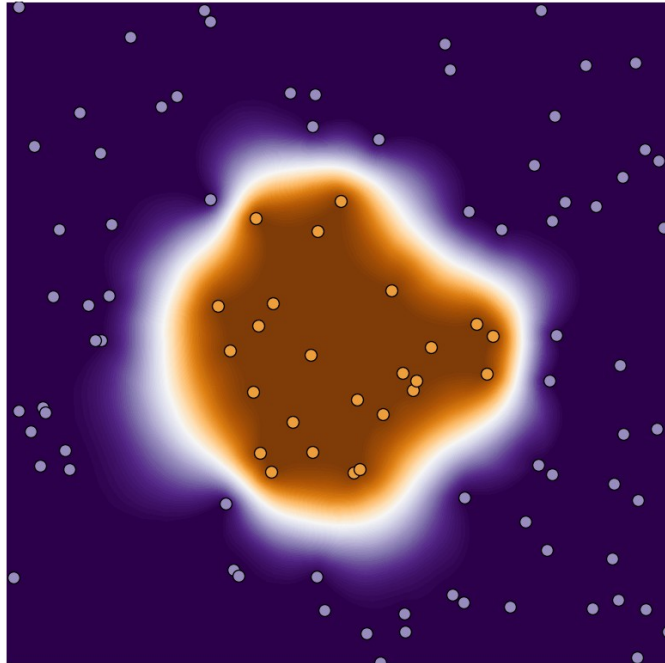


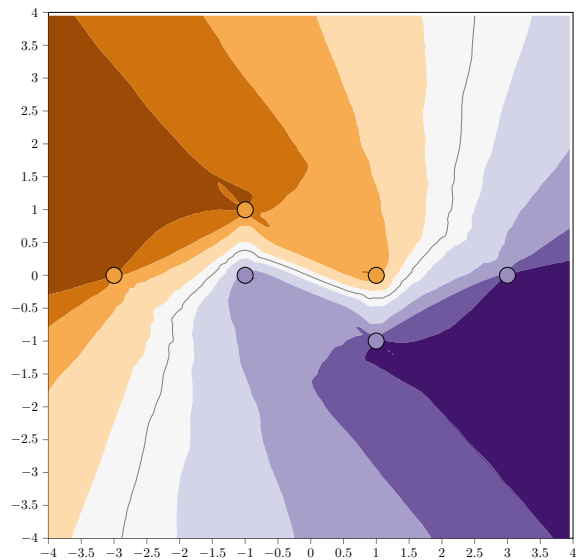
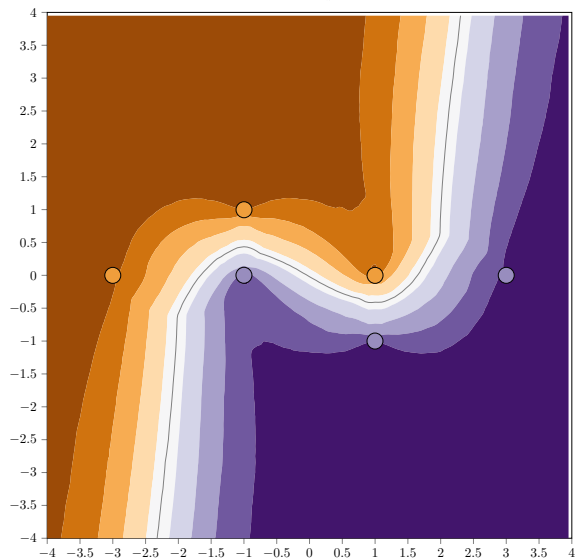
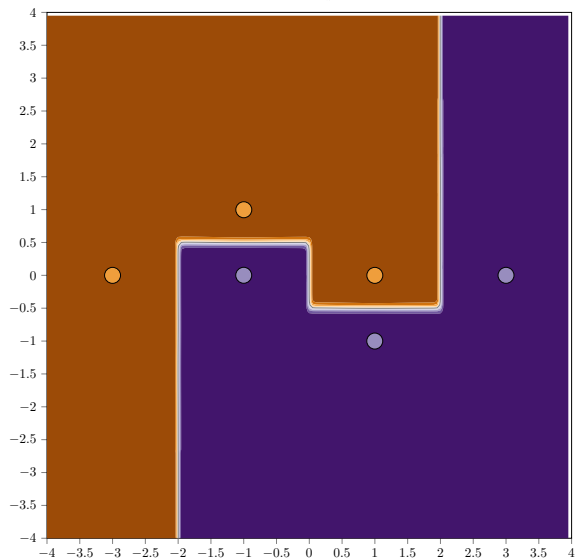


$$w_t(x) = \frac{e^{-\alpha \|x-t\|^2}}{\|x-t\|^d}$$

$$\int_P w(x) d\text{Vol} \rightarrow \int_{\mathbb{S}^{d-1}} w(f(m)) \frac{\|f(m)\|^{d-1}}{|\langle m, n \rangle|} d\text{Vol}_{\mathbb{S}^{d-1}}$$









# Evaluation results

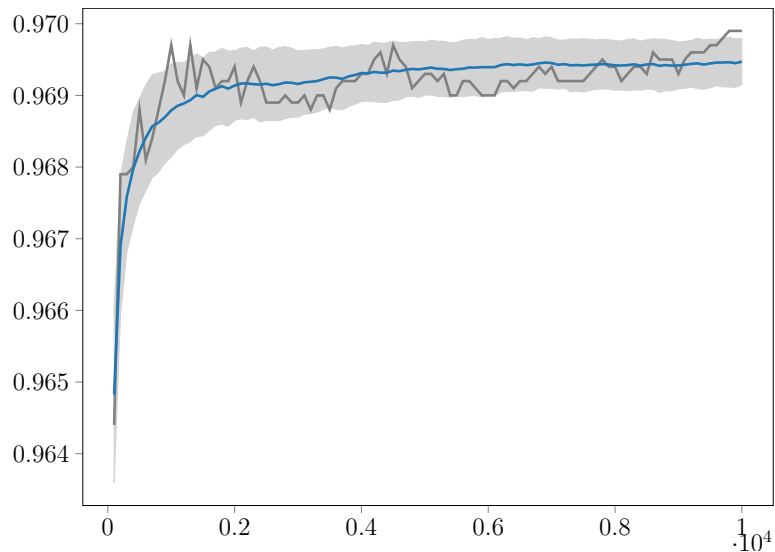
Comparison with other classical ML methods (no data preprocessing):

	FROGS	MNIST	CIFAR-10
VC(10k)	<b>.986</b> $\pm$ .0002	.969 $\pm$ .0003	<b>.494</b> $\pm$ .0011
1NN	.982	.969	.354
SVM	.903	.944	.440
RF(1500)	.974 $\pm$ .0004	<b>.972</b> $\pm$ .0004	<b>.495</b> $\pm$ .0016

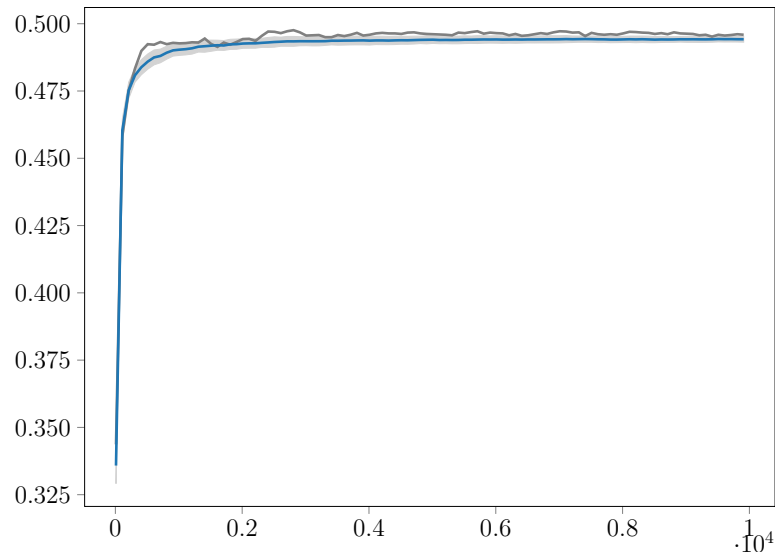
Running time on CIFAR with 10 000 samples on GPU: ~5 min.



# Accuracy convergence



MNIST



CIFAR10





# Pacific Ballroom #129

---