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Computing the Measure of Generalized Voronoi Regions

This talk introduces a fast algorithm for computing the measures of generalized Voronoi regions associated with generators of arbitrary co-dimension. The algorithm is based upon solving one Eikonal equation to generate a kernel whose iteration accumulates "mass" along the closest generator. In particular, the algorithm does not require the computation of the Voronoi diagram nor the gradient of the solution to the Eikonal equation. The algorithm is shown to be first order and converge very quickly. The method is illustrated by calculating the fraction of population living closest to each highway in the Los Angeles County highway system. This method can also be used for the fast computation of the mass centroids and higher moments of the generalized Voronoi regions.