

ALGORITHM FOR COMPUTATION AND VISUALIZATION OF WEIGHTED CONSTRAINED VORONOI DIAGRAMS

Chaowalit Thamsonglar

Dr. Kannpan Palaniappan, Thesis Supervisor

ABSTRACT

A weighted Voronoi diagram (WVD) has been developed in order to regionalize or allocate space around a predetermined set of points or generators for the case that generator points have different weights reflecting their variable properties [16]. In this research, the weighted constrained Voronoi diagram has been adapted in order to fix some weaknesses in the older method. The new method allows some points on a space to be unclassified and some center points to be merged with other center points with higher weights to avoid incorrect spatial neighborhood graphs which lead to poor segmentation. Mainly, this algorithm generates the collection of geometric objects by using center points and their maximum radius given by users. Also, additional boundaries are created to determine classification of the overlapping area by using a linear equation. Finally, the obtained results show the visualization of the space partitioned by the collection of geometric objects that can be applied to diverse problem sets, including forestry spacing, cell biology, and the optimal allocation of resources.