

Workshop Huawei-SPBU Joint Laboratory

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Zoom ID: 212-058-333, password: Voronoi

Geometric algorithms: generalized Voronoi diagrams



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I will discuss two topics in the area of geometric algorithms: generalized Voronoi diagrams and graph morphing. The Voronoi diagram is a fundamental geometric structure that encodes proximity information. Given a set of geometric objects, called sites, their Voronoi diagram is a subdivision of the underlying space into regions according to their nearest neighbor (maximal regions, such that all points within one region have the same nearest site). This simple concept and its generalizations have numerous applications, both in practice and in theory. We will talk about the ordinary Voronoi diagram, and also about Hausdorff and the farthest-color Voronoi diagrams. For each of the structures we are interested in its properties, applications, and efficient algorithms for construction and maintenance.

References

- [1] E. Arseneva, J. Iacono, G. Koumoutsos, S. Langerman, B. Zolotov. Sublinear explicit incremental planar Voronoi diagram. Preprint at <https://arxiv.org/abs/2007.01686>
- [2] E. Arseneva and E. Papadopoulou. Randomized Incremental Construction for the Hausdorff Voronoi Diagram revisited and extended. *Journal of Combinatorial Optimization*, 37(2), 579-600, 2019.
- [3] M. Claverol, E. Khramtcova*, E. Papadopoulou, M. Saumell, and C. Seara. Stabbing circles for sets of segments in the plane. *Algorithmica*, 80(3), pages 849–884, 2018.
- [4] P. Cheilaris, E. Khramtcova*, S. Langerman, and E. Papadopoulou. A randomized incremental algorithm for the Hausdorff Voronoi diagram of non-crossing clusters. *Algorithmica* 76(4), pages 935–960, 2016.

*Khramtcova is a previous family name of E. Arseneva

Everyone is welcome!