

Mailboxes, color printers, fish, and Homer Simpson or why I love to do applied mathematics

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Abstract

Centroidal Voronoi tessellations are a generalization of the classical k-means clustering algorithm that apply to a variety of continuous and discrete settings. We describe the centroidal Voronoi tessellation algorithm and discuss several of its computational and analytic properties that contribute to making it a useful methodology. We then illustrate its use in several disparate applications including image processing, grid generation, reduced-order modeling, and point sampling in hypercubes as well as those mentioned in the title.