A SYSTEM OF OF HAMILTON-JACOBI EQUATIONS CHARACTERIZING GEODESIC CENTROIDAL TESSELLATIONS

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ABSTRACT. We introduce a class of systems of Hamilton-Jacobi equations characterizing geodesic centroidal tessellations, i.e. tessellations of domains with respect to geodesic distances where generators and centroids coincide. Typical examples are given by geodesic centroidal Voronoi tessellations and geodesic centroidal power diagrams. An appropriate version of the Fast Marching method on unstructured grids allows computing the solution of the Hamilton-Jacobi system and therefore the associated tessellations. We propose various numerical examples to illustrate the features of the technique.

Keywords: geodesic distance; Voronoi tessellation; K-means; power diagram; HamiltonJacobi equation; Mean Field Games; Fast Marching method.

Mathematics Subject Classifications (2010): 65K10, 49M05, 65D99, 35F21, 49N70.

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