

The Geodesic among Circular Obstacles in Plane

C. Song¹, J. Cha¹, M. Lee¹, and D. -S. Kim^{1, 2, *}

Abstract: In this study, we presents an algorithm for finding the geodesic, i.e. the shortest path, among circular obstacles in the plane. This problem has been one of the important optimization problems but is known to be difficult to get correct answer efficiently. This problem has diverse applications including the optimal path planning for unmanned aerial vehicles. The main computational tool employed is the Voronoi diagram of disks in the plane for efficient reasoning the spatial proximity among neighbor disks. We use the recently announced topology-oriented incremental algorithm for computing the Voronoi diagram.

* Corresponding author

¹ School of Mechanical Engineering,
Hanyang University, South Korea,
{*cysong.vdrc, jhcha.vdrc, mwlee.vdrc*}@gmail.com
dskim@hanyang.ac.kr

² Molecular Geometry and Voronoi Diagram Research Center,
Hanyang University, South Korea,
dskim@hanyang.ac.kr