

Abstract

Computational science is required for the development of technologies primarily focused on computational geometry. The method used for its development is the Voronoi diagram. Voronoi diagram is a method of sharing a map to a smaller area berdasarkan shortest distance to the object. Voronoi diagrams are also used to divide the map into a smaller space or Voronoi cell. Voronoi cells may consider the object in the area as its nearest object. It has the benefit of analyzing objects in the area that have potential in fields such as business development. Voronoi diagram has a variation of that order-1 and Higher Order Voronoi Diagram. Order-1 and Higher Order Voronoi Diagram has the disadvantage that the dynamic nature and have high computing on Higher Order. The weakness is overcome by using a Voronoi Diagram is the latest variation of *Highest Order Voronoi Diagram* (HSVD) which can be used for all orders Voronoi diagram. HSVD have benefits for identification farthest point and the region, as well as the identification of all distances for each region. However, these methods there is a shortage due to the fragmentation object can not be directly accessed because fragment has a polygon shape. This resulted in accessing require high computing. So accessing fragment can use linear search for pengecekannya. Consequently make data searches to find the region to be slow and takes a long time. Therefore, fragment needs index in order to reduce to a search region. Quadtree index used is capable of cutting more than half of the original data.

Keywords: nearest neighbour, region, voronoi diagram, spatial database, indexing.