Universiti Teknologi MARA

Optimizing Fire Stations' in Perlis By Using Voronoi Diagram

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

From a theoretical perspective, this paper is to study about the fire station distribution in Perlis. By developing Voronoi diagram (VD) model, it can optimized the area of the fire stations if any incident occur. The VD is a famous structure of computational geometry where it can help us to investigate the distance taken for the fire and rescue department to arrive from any selected fire station. The VD of the fire stations have been calculated and drawn on the personal computer from the actual city-map data of the district in Perlis by using R studio software. Specifically, this study propose the VD, which divides the data space into VD. Each VD is associated with the coordinate of each fire stations in Perlis. Imagine fire is declared, there are several fire stations in Perlis who can help to put out the fire but which one will react first. VD will help to identify which fire station has minimal distance to arrive at the fire scene. The result of a case study on some city's fire station plan shows it is scientific and effective. This proposed method can also be applied and used for locating other public facilities, such as clinics and hospitals.

Keyword: VD, fire stations, fire, distance

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