

# Optimal Location Analysis of TOD Sensor for Detect Infiltration using Genetic Algorithm

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**ABSTRACT:** To determine the optimal location of TOD sensor, infiltration route analysis should precede. Because of car navigation system, route analysis is one of most famous GIS technique. Most route analysis techniques are based on graph (network), however infiltration route has some different characteristic. It is hard to apply most route analysis methods in infiltration route analysis, because there are no pre-defined nodes or edges in infiltration route. For this reason, infiltration route analysis should be done based on raster data. Each pixel of raster data can be considered nodes of graph data, but it can cause massive computations and the location of TOD sensor also has a lot of cases. To overcome massive computations, genetic algorithm was applied both infiltration route and optimal location analysis. Route and locations are represented by genes and optimal locations of TOD sensor were estimated by genetic operator. The results shows that the proposed method efficiently finds the optimal routes and locations.

**KEY WORDS:** Optimal Location Analysis, Genetic Algorithm, TOD, Infiltration