Fractal Algorithm For Road Network Modeling In Indian Urban

Khalid Ahmed Ali [1], Maged Marghany [1*], Hashim Ali Hasab[2,] Anuar Bin Ahmad[3]

[1] Ministry of Higher Education & Scientific Research ,
Foundation of Technical Education – Iraq, Khalid.ahmedali3@gmail.com
&
Faculty of Geoinformation Science and Real Estate (FGHT)
Universiti Teknologi Malaysia (UTM), Malaysia.

[1*] Institute of Geospatial Science and Technology (INSTG)
Universiti Teknologi Malaysia
81310 UTM, Johor, Malaysia, magedupms@gmail.com

[2,3] Faculty of Geoinformation Science and Real Estate (FGHT)
Universiti Teknologi Malaysia (UTM)
81310 UTM, Johor, Malaysia

Abstract: Planning road infrastructure is a continuous process on a time frame. Georeferencing of all network characteristics are essential to study the improvement of connectivity, accessibility and mobility of traffic. In a planning dissemination of network from different perspectives will facilitate to visualize network serving strength, road utility levels, potentiality of junctions in the process of user preferred paths. Analysis is proposed to conduct with network characteristics like number of nodes, number of links, connectivity patterns, road utility levels, land use patronage. This study is aimed at utilizing fractal algorithm for road network physical characteristics modeling with integration with geographic information system. In doing so, the study area is developed as base map comprising of built up areas, road network configurations with external gateways of 17 and internal gateways of 33. Study area is having around number of links17416 and number of nodes 12786.

The study shows that the fractal algorithm is able to reconstruct all road network characteristics and utilities. Further, fractal algorithm is found to be useful for generating the junctions to be improved, corridors for elevated highways; change of functionality of roads, lead on new connectivity improvement, and traffic density. In conclusions, the integration between road network and fractal algorithm can be used as Geomatic tool for road network investigation in such crowded urban as India.

Keywords: Fractal algorithm, road network, road utilities, modeling road infrastructures.