



Section: Vector Analysis

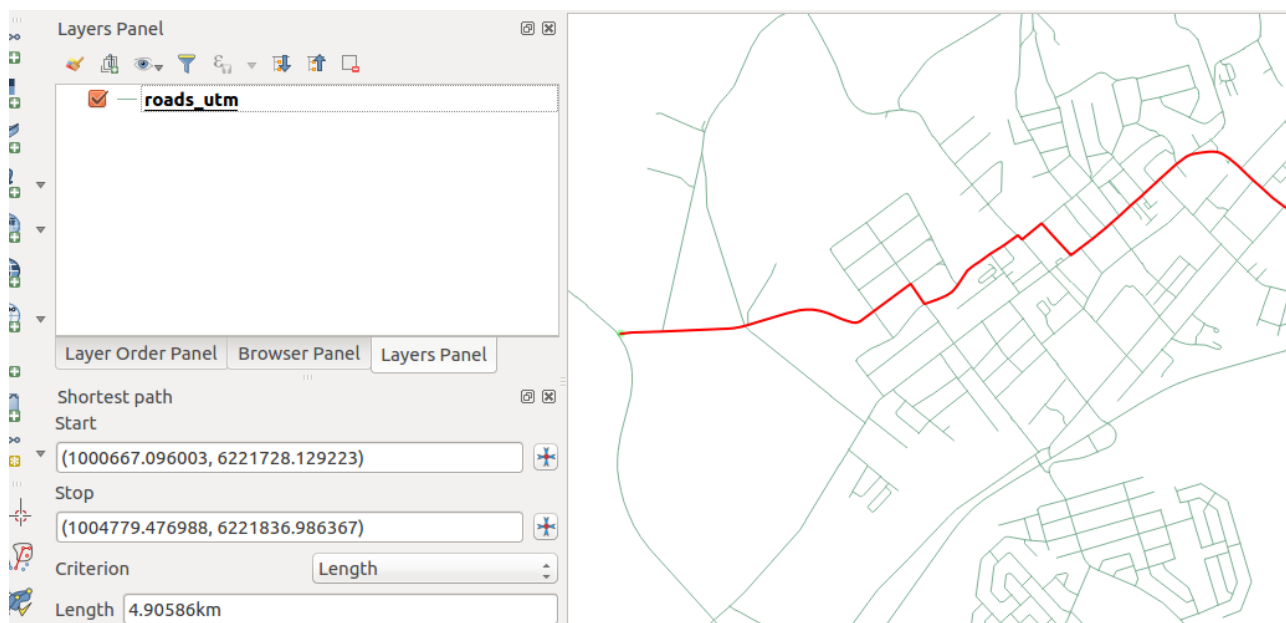
Module : Network Analysis



Network Analysis in Context

“ A network is a set of connected lines. The networks are usually used to delineate rivers, road network. Network analysis studies the relationship between connected lines in terms of distance and time. ”

In this module we look at how we can use QGIS to plan a route based on the shortest distance or the shortest time it takes to travel between two connected lines



You try:

Goal: To learn how to use the road graph plugin to calculate routes between two places.

Data: appendix3-local-data

* Open a new project and load the network layer.

* Activate the **Road Graph Plugin**.

* Project the network layer to the specified CRS (name the resultant layer roads_utm_33s)

* Navigate to the vector menu and choose Road graph settings

* Click on the default tab and choose the speed

* Click on a start in the Road graph panel and

✓ choose a starting point on the network (Use the projected layer)

✓ * Choose stop and activate it on the network

* Choose the either of the criterion.

✓ * Repeat the procedure using a different criteria.

NB: Explain your results in terms of distance and time

Name	Value
Speed	60 km/hr
network layer	roads_osm.shp
CRS	UTM 33S WGS 84
Criterion	Length/time



More about

Network analysis aims to establish if you can move from A to B and from B to C and is it possible to move from A to C. Network analysis is a type of connectivity analysis. Network analysis varies from simple analysis to complex analysis. Complexity is achieved by analysis the network and checking for features which gives resistance to a route. Example of features that bring resistance are number of traffic lights, terrain and this affects determining the shortest path between two points in a network. Travelling cost also vary because of these factors.



Check your knowledge:

1. Which of the following statements is true:

- a) A network should be uni directional. All roads should be travelling in the same direction
- b) A road network can be bidirectional. A road that goes in both direction
- c) A vector layer that has units as decimal degrees can be used when estimating distances.

2. Can a river be described as a network in the same way a road is:

- a) No we cannot determine the shortest path between two points because people do not travel in a river.
- b) Yes, a river is a network and all operations done on roads can be done here.
- c) A river is a GIS data depicting natural phenomenon so it cannot be used.

3. Plugins are only installed when online:

- True
- False

Answers: 1c, 2b, 3f



Further reading:

https://docs.qgis.org/2.14/en/docs/training_manual/vector_analysis/network_analysis.html

https://grasswiki.osgeo.org/wiki/Vector_network_analysis

<https://grass.osgeo.org/grass73/manuals/wxGUI.vnet.html>