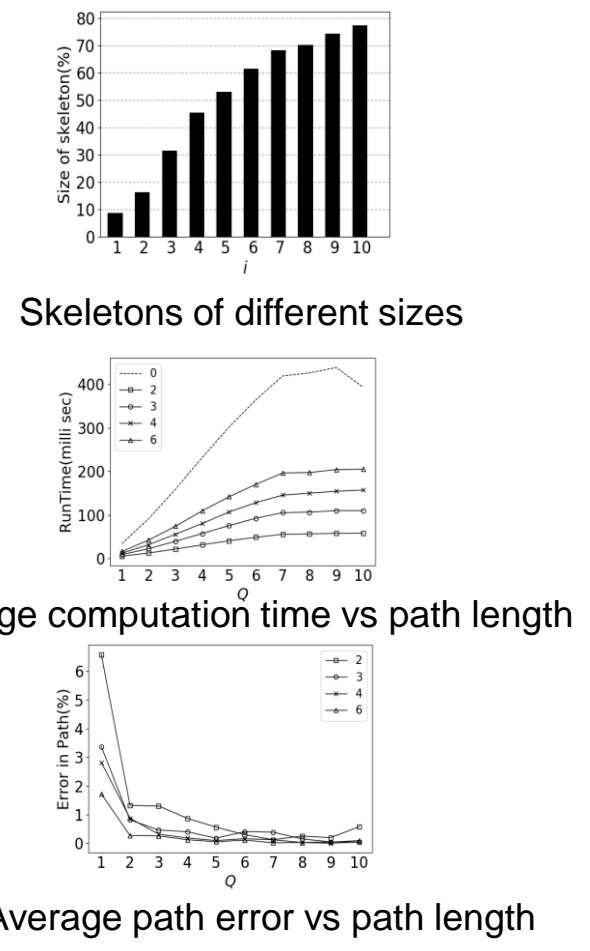


Lab for Spatial Informatics was setup with an aim to provide a platform for combining the strengths and progress in the Computer Science and IT fields related to the spatio-temporal domains and build domain expertise and applications in the various disciplines related to it, ranging from the natural to social sciences. The domains include GPS and related survey technologies, GeoDatabase, LBS, Spatial data mining, Satellite image processing, Computational Geometry, Mapping & Visualization, Geo-Analysis, Modelling & Simulation of Land Use and Environmental changes.

Generalization of Road Networks for Efficient Path Computation

- In this work a Skeletal Model is proposed to represent a road network by its generalized representation aka skeleton.
- The skeleton, represents the most important or often used edges of the network which is further used to divide the given network into smaller zones, which shall be selectively used in path computation.
- A path computation algorithm is proposed which extracts a significantly smaller part of the road network for path computation.
- Results show that the most optimal network skeleton induced an average error of less than 5% over large distances (over 10kms) while using no more than 30% of the given road network.
- Key Researchers: Rohith Reddy, Mukul Priya, Dr. K.S.Rajan

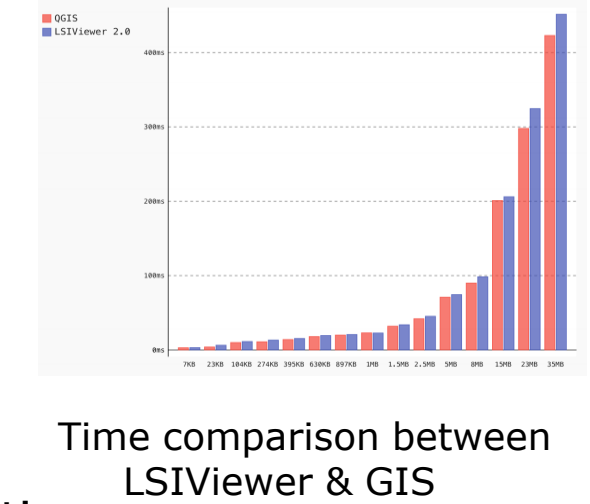


Performance Evaluation of SQL vs NoSQL for Routing

- Performance evaluation of an existing NoSQL database and SQL database with respect to routing algorithm and evaluate whether or not we can deploy the computations on the client system only.
- For this comparative study, MongoDB is the NoSQL engine while the PostgreSQL is the chosen SQL engine.
- Results suggest that MongoDB performs faster by an average factor of 15x which increases exponentially as the path length and network data size increases in both indexed and non-indexed operations.
- Key Researchers: Sarthak Agarwal, Dr.K.S.Rajan

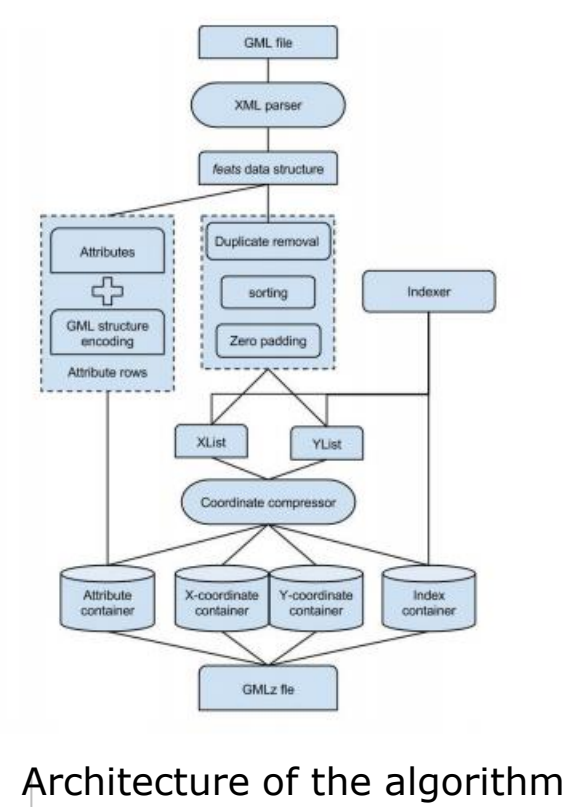
LSI Viewer

- A simple and robust online geospatial data visualisation system that performs data rendering and user-interactive styling, with a reduced load on the server.
- The performance analysis showed that the time taken to render the vector data using LSI Viewer is comparable to a desktop GIS application over an identical system configuration.
- Key Researchers: Manikanta Kondeti, Dr.K.S.Rajan



GTree Based GML Compression Model

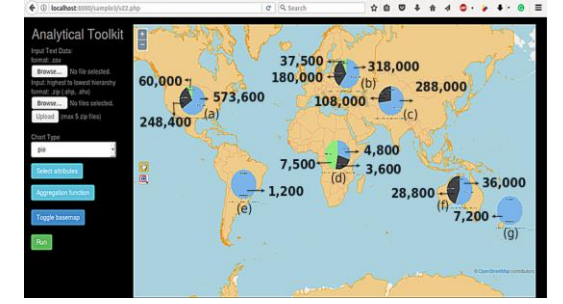
- Geography markup language(GML) is an XML specification for expressing geographical features.
- The focus of this work is to provide software solutions and services that can compress and decompress GML data.
- The algorithm takes advantage of topological structure and uses a tree-based data structure to store coordinate and attribute data achieving lossless compression.
- Key Researchers: Ayush Khandelwal, Dr.K.S.Rajan



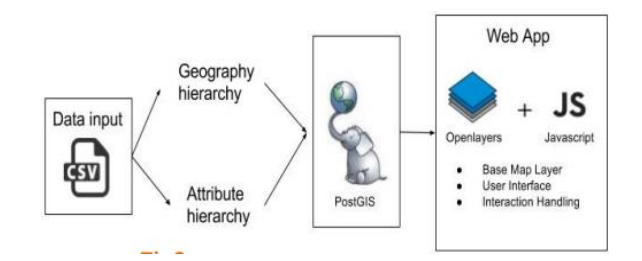
Architecture of the algorithm

LSI STAT

- A web-based spatio-temporal interactive analytical platform that generates dynamic data visualizations based on user-given data.
- In contrast to the current visualization tools, this platform gives users an option to choose charts in combination with maps distributed spatially over the area of interest.
- Key Researchers: Neha Pande, Dr.K.S.Rajan



LSI STAT



Architecture of LSI STAT