CHAPTER 7

CONCLUSIONS

7.1 CONCLUSIONS

In the recent years, transportation related decision analysis within a GIS environment has increased in popularity. In this type of analysis, the computation of shortest paths is often a central task because shortest path distances are often needed as input for "higher level" models in many transportation analysis problems. With the advancement of GIS technology and the availability of high quality road network data, it is possible to conduct transportation analysis within a GIS environment. Execution time of three shortest path algorithms using real road networks depends on the problem conditions and the number of nodes in the real road networks. Genetic algorithm performs better than other, when the number of nodes and the constraints increase. ACO algorithm performs better than others for the small number of nodes and for the complex problem conditions. So the Genetic Algorithm among various execution times is the optimal solution from those feasible solutions with all the three conditions.

Best route selection problem in network analysis can be solved with genetic algorithm through efficient encoding, fitness function and various genetic operations. Crossover is identified as the most significant operation to the final solution. Singe Point crossover and Partially Cycle Crossover using MGG GA algorithm is presenting us the minimum solution than the other feasible solutions. MGG GA algorithm yields the minimized as well as
accurate solutions of the iterations in the PCX. This also gives the optimal
solution for the given transportation problem using Minimal Generation Gap
model.

Evaluations of shortest path algorithms with PGA using HPC
applications with message passing interface for the communication in the real
road networks give better solution with respect to distance comparing with
standard Genetic Algorithm. In the present, GIS route finding modules are
able to process improved safety, reduced congestion and environmental
impacts using the Multi Objective Genetic Algorithm. This enables the user to
choose a favorite route after looking at feasible ones.

7.2 FUTURE WORK

Future efforts can be made on the following activities:

- Enhancing the adaptability of the algorithm for multiple cities.
- Expanding the applications of the algorithm into broader GIS
topics.
- Knowledge discovery methods can also be used for
identifying the interrelated data for the path computation.