Abstract

The shortest path problem in graphs is a fundamental optimization problem which has stimulated research for several decades. Numerous real-world applications are modeled as graphs and shortest path computation is a frequent operation performed on them. Many graphs happen to be very large like road networks or routing networks. Shortest path computation on them is a challenge because of the low performance due to its large nature. Already existing graph algorithms are not suitable for large graphs. In this paper, an attempt is made to solve the problem of finding an efficient point-to-point shortest path algorithm for graphs of larger sizes. First run the A * algorithm with binary heap implementation from both the directions. The nodes extracted from both directions are saved and then genetic algorithm is used to find the shortest path. The bi-directional strategy reduces the search space and the genetic algorithm optimizes the search problem to give best result. The final results illustrates that this novel approach with the optimization strategies achieves high scalability and performance.

References

- Dijkstra, E. W. (1959), A Note on Two Problems in Connexion with Graphs, Numerishe
Shortest Path Computation in Large Graphs using Bidirectional Strategy and Genetic Algorithms

Mathematic 1 , 269-271
- M. Ericsson, M. G. C. Resende, and P. M. Pardalos , A Genetic Algorithm for the Weight Setting Problem in OSPF Routing

Index Terms

Computer Science Algorithms

Keywords

Min Heaps Dijkstra's Algorithm Genetic Algorithms Shortest Path
Computation