

This research paper is based on the research paper entitled A FAST ALGORITHM FOR FINDING BETTER ROUTES BY AI SEARCH TECHNIQUES by (Takahiro Ikeda, Min-Yao Hsu, Hiroshi Imai). The paper discusses about shortest path problem which is applicable in various fields and has close connection with route navigation system. The paper also proposes bidirectional A* algorithm based on a new approach.

Most fundamental issue to deal for the route-finding algorithm is to keep the information on appropriate routes for all pairs of the origin and the destination and the possibility of using dynamic information such as traffic flow. This requires the problem to be solved for every request of the user. This paper surveys these algorithms by conducting experiments from the point of view of applying them to the two-terminal shortest path problem on the road network. and proposes bidirectional A* algorithm based on a new approach based on the technique translating the A* algorithm into the Dijkstra method.

It is natural to use A' algorithm for both forward search and backward search to reduce the searched area. Assume that for each vertex U a heuristic estimate for the shortest path. Due to the fact that the algorithm utilizes independent estimators for two inner A* algorithms and does not change if both estimators are dual feasible, to avoid such a demerit, this paper proposes a new bidirectional A* algorithm based on another approach based on the following technique translating the A* algorithm into the Dijkstra algorithm in the case that each estimator is dual feasible.

In this paper, algorithms to solve the two terminal shortest path problem such as the Dijkstra method, the A* algorithm, and the bidirectional Dijkstra method have been surveyed and the bidirectional A' algorithm based on a new approach translating the A' algorithm into the Dijkstra method has been proposed for the case estimators are dual feasible. This algorithm is fit for finding not only the shortest route but also better routes. The efficiency and the property of these algorithms has been discussed through experiments using actual road data.