International Journal of Soft Computing and Software Engineering
E-ISSN: 2251-7545
DOI: 10.7321/jscse.vol2.no4

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Vol. 2, No. 4, April 25, 2012

between target and spacecraft in near distance (<2m), this paper established a binocular stereovision model, and proposed a Non-cooperative target relative pose measuring method based on stereo vision and RANSAC algorithm. Linear characteristic of Non-cooperative target was used to abstract feature points firstly, then stereo matching and three-dimensional restructuring were taken for the feature points, finally, an algorithm based on RANSAC algorithm was used to calculate the relative pose between the target and the camera. Therefore, errors were eliminated effectively, and the computation load was decreased by using disparity gradient constraint. Experimental results show that high accuracy and real-time results are the advantages of this method.

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Doi : 10.7321/jscse.v2.n4.4

Abstract. An ad hoc network is a collection of wireless mobile hosts forming a temporary network without the aid of any established infrastructure or centralized administration. Infrastructures less networks have no fixed routers; all nodes are capable of movement and can be connected dynamically in an arbitrary manner. Nodes of these networks function as routers which discover and maintain routes to other nodes in the network. Topological changes in mobile ad hoc networks frequently render routing paths unusable. Such recurrent path failures have detrimental effects on quality of service. A suitable technique for eliminating this problem is to use multiple backup paths between the source and the destination in the network. Most proposed on-demand routing protocols however, build and rely on single route for each data session. Whenever there is a link disconnection on the active route, the routing protocol must perform a route recovery process. This paper proposes an effective and efficient protocol for backup and disjoint path set in ad hoc wireless network. This protocol converges to a highly reliable path set very fast with no message exchange overhead. The paths selection according to this algorithm is beneficial for mobile ad hoc networks, since it produce a set of backup paths with more high reliability. Simulation experiments are conducted to evaluate the performance of our algorithm in terms of route numbers in the path set and its reliability. In order to acquire link reliability estimates, we use link expiration time (LET) between two nodes. In another experiment, we save the LET of entire links in the ad-hoc network during a specific time period, then use them as a data base for predicting the probability of proper operation of links. Links reliability obtains from LET. Prediction is done by using a Multi-Layer Perceptron (MLP) Network which is trained with back propagation error algorithm. Experimental results shows the MLP net can be a good choice to predict the reliability of the links between the mobile nodes with more accuracy.

Keyword : Mobile Ad Hoc Networks, Reliability, Routing,; Artificial neural networks

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Editorial Board

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