Abstract

Finding the boundary nodes of a Euclidean connected graph can be done using the LPCN algorithm. In each iteration, this algorithm calculates the minimum angle formed by the current node and its neighbor found in the previous iteration with its other neighbors. The node that gives the minimum angle will be considered as the current boundary node of the next iteration. This algorithm works only if the starting node is a boundary node. In general, we start from a node having the minimum x-coordinate. The drawback of this condition is that the boundary nodes cannot be determined in the case where it is not possible to determine the starting boundary node. In this presentation, we propose a new technique called Reset and Restart that allows to start from any node of the graph and to run the LPCN algorithm normally by assuming that the starting node is the one having the minimum x-coordinate $x_{min}$. If the next found boundary node has an x-coordinate smaller than $x_{min}$ than this one will be considered as a starting node with the smallest x-coordinate, the $x_{min}$ will be updated by this coordinate and all the previously found boundary nodes will be cancelled and considered as ordinary nodes (Reset step). The algorithm will be executed again (Restart step) starting from this node. This procedure will be repeated as soon as a node having an x-coordinate smaller than $x_{min}$ is found. Otherwise, the algorithm stops if the next node selected from the starting node is selected twice.