An Optimized RDP Algorithm for Curve Approximation

Authors : Jean-Pierre Lomaliza, Kwang-Seok Moon, Hanhoon Park

Abstract : It is well-known that Ramer Douglas Peucker (RDP) algorithm greatly depends on the method of choosing starting points. Therefore, this paper focuses on finding such starting points that will optimize the results of RDP algorithm. Specifically, this paper proposes a curve approximation algorithm that finds flat points, called essential points, of an input curve, divides the curve into corner-like sub-curves using the essential points, and applies the RDP algorithm to the sub-curves. The number of essential points play a role on optimizing the approximation results by balancing the degree of shape information loss and the amount of data reduction. Through experiments with curves of various types and complexities of shape, we compared the performance of the proposed algorithm with three other methods, i.e., the RDP algorithm itself and its variants. As a result, the proposed algorithm outperformed the others in term of maintaining the original shapes of the input curve, which is important in various applications like pattern recognition.