Abstract

In this paper a new parallel version of finding the Fuzzy Reasoning Path (FRP) using the knowledge representation model, introduced by Chandwani & Chaudhari [1] known as Fuzzy Deduction Graph (FDG) is presented. In an FDG, a systematic method of finding the Fuzzy Reasoning Path (FRP) already exists, which is based on Dijkstra's shortest path framework [2]. Our FRP algorithm is conglomeration of CYK algorithm of parsing and FRP algorithm for fuzzy reasoning which generates the path with the greatest fuzzy value. In FDG the weights of edges are real numbers in the fuzzy interval [0-1]. The maximum of multiplication is obtained on weights instead of minimum of summation of weights [1]. CYK algorithm employs a bottom up approach with the principle of Dynamic Programming (DP) to determine the FRP from source node to the destination node. The concurrency and synchronization in finding FRP process are inherently maintained through parallel PRAM model of construct. We present a complete formulation along with analysis of parallel algorithm for finding FRP.
Finding Fuzzy Reasoning Path on Fuzzy Deduction Graph using Parallel CYK Algorithm on a PRAM model


Index Terms
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Keywords
Deduction Graph  Fuzzy Deduction Graphs  Rule-based Systems  Horn Clauses  Fuzzy Reasoning Path  Cyk-algorithm  Dynamic Programming  Pram Model  Wram Model  Knowledge-base System