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Design and Evaluation of a Specialized Computer Architecture for Manipulating Binary Decision Diagrams

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ABSTRACT

Binary Decision Diagrams (BDDs) are an extremely important data structure used in many logic design, synthesis and verification applications. Efficient implementations of BDD algorithms on general purpose computers has made manipulating large binary decision diagrams possible. Much research has gone into making BDD algorithms more efficient on general purpose computers. Despite amazing increases in performance and capacity of such computers over the last decade, they may not be the best way to solve large, specialized problems. A computer architecture designed specifically to execute algorithms on binary decision diagrams has been created to evaluate the possible performance improvements in BDD manipulation. This thesis will demonstrate that significant performance increases are possible using a specialized computer architecture for manipulating binary decision diagrams.