A

Dissertation

On

 **Dynamic Power Optimization of 1-Bit CMOS Full Adder Using Genetic Algorithm**

Submitted in Partial fulfillment of the requirement

For the award of Degree of

**MASTER OF TECHNOLOGY**

**(VLSI DESIGN & EMBEDDED SYSTEM)**

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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**DELHI TECHNOLOGICAL UNIVERSITY**

**(FORMERLY DELHI COLLEGE OF ENGINEERING)**

**2010-2012**

**DELHI TECHNOLOGICAL UNIVERSITY**

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**CERTIFICATE**

*This is to Certify that the major project work entitled,* “**Dynamic Power Optimization of 1-Bit CMOS Full Adder Using Genetic Algorithm**”submitted by **Meharban Singh (06/VLSI/2k10)** *in partial fulfilment of the requirements for the award of degree of* **Master of Technology** *in* **VLSI Design and Embedded System** *at* **Delhi Technological University** *is an original work carried out under my supervision and has not been submitted for the award of any other degree to the best of my knowledge and belief.*

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**ACKNOWLEDGEMENT**

I am indebted to my project Guide **“Prof. Rajiv Kapoor”, Head of Department of Electronics and Communication Engineering**, ), Delhi Technological University for his eminence guidance, valued constructive criticism and encouragement.

I am thankful to Mr. Pawan & Mr Rajinder, lab assistants (C & I Lab), Delhi Technological University for their cooperation.

I wish to express my heartfelt thanks to all my seniors and friends for their goodwill and support that helped me a lot in successful completion of this major project.

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**ABSTRACT**

With every passing day, integrated circuits are gaining importance, the size of components is reducing and the number of elements that can be fabricated on a single chip has increased many folds in the past decade.

With the ongoing globalization and technology the power requirements of mankind are rising at an extremely high rate.

Here we are making an attempt to optimize the power consumed by VLSI circuits. The circuit under consideration is a simple full adder implemented using CMOS technology. The circuit utilizes 28 transistors and runs on a high frequency in the range of MHz. The circuit has three inputs (A,B & C) and two outputs(Sum and Carry)

 We have implemented Genetic algorithm to solve the given problem. The thesis is mainly divided in to two portions. In the first half we try to find out the maximum and minimum acceptable values and other constraints on which power depends. We utilized the Cadence, Virtuso- 4 software to manually find these values.

In the second half the values obtained in previous step are utilized to create the initial population. We define the fitness function and other necessary parameters. MATLAB applies the genetic algorithm and finds us an optimum solution. Since Genetic algorithm is heuristic in nature it might not give us the ideal result but surely the outputs are reasonably good.

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