Iterative Heuristics for Timing & Low Power VLSI Standard Cell Placement

KFUPM Project Number COE/ITERATE/221

Progress report number 1

April 2001-Sept'2001

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Contents

1 Introduction

This report covers the work during the first 6 months period of COE/ITERATE/221 project. The report highlights the time duration of the reported period, tasks completed with the contribution of each investigator, budget utilization and list of equipment ordered for purchase, difficulties faced, and relevant publications.

2 Time duration

This report covers the first six months of the project, i.e., from April 2001 to September 2001.

3 Tasks Accomplished

Among the tasks stated in the original proposal the following were covered during the first report period.

Task 1. Collection of data, tools and translators. (completed)

Task 2. Literature review. (partially completed; in progress)

Task 3. Design of encoding scheme suitable for iterative algorithms. (In progress)

Task 4. Design and experimentation of neighborhood search strategies. (In progress)

Task 5. Fuzzification of various iterative heuristics. (In progress)

Task 6. Implementation of proposed algorithms. (In progress)

Task 9. Documentation of developed software. (In progress)

Task 10. Generation of periodic and final reports. (In progress)

This report covers the collection of data, tools and translator. Other tasks are in progress and the project is progressing well and according to the proposed schedule.

3.1 Task Achievement Diagram

Refering to Figure 1, we have completed task 1, data was collected, translators were written, and different tools that will be used were developed. Some tools have also been obtained from other researchers and modified for our need. Task 2 is partially completed, we have covered the previous work done in low power and high performance implementation of VLSI circuits at all levels and the literature on solving multiobjective optimization problems. Task 3 is under progress and we have designed a tentative solution representation and encoding scheme, this encoding scheme may be changed (if needed or if a better encoding scheme is developed) during the implementation of

Task	(Months)								Contributors
	0–3	4–6	7–9	10–12	13–15	16–18	19–21	22-24	
1	x	x							Sait & GSt
2	x	x	–	–					Sait, Maleh & GSt
3	x	x	–						Maleh
4		x	–	–					Maleh & GSt
5		x	–	–					Sait & GSt
6		x	–	–	–	–	–		Sait, Maleh & GSt
7				–	–	–	–		
8					–	–	–		
9		x	–	–	–	–	–	–	Sait & GSt
10		x		–		–	–	–	Sait & GSt

Figure 1: Task Achievement Diagram and Contributors. (GSt ... Graduate Students)

different algorithms. Task 4 has been initiated and still in the development stage. Task 5 has also been initiated and as a first part we have fuzzified the overall cost estimation. During the implementation of the proposed algorithms different stages of the algorithms will be fuzzified. As for task 6, so far we have developed the code to generate data structure and the code for calculating different costs. Task 9 is also in progress as we have documented the tool and translators developed by us. Completion of this report and authoring of a book chapter for “The Computer Engineering Handbook” (attached as an appendix) is a part of task 10.

4 Budget Utilization

4.1 Man Power

Total Amount Allocated = SAR 95,800/-

Budget Utilized

- Principal Investigator (Dr. Sadiq M. Sait) @ SAR 1200/- per month = SAR 7200/-
- Co-Investigator (Dr. Aiman El-Maleh) @ SAR 1000/- per month = SAR 6000/-
- 2 Graduate Student, Research Assistant = SAR 9600/-
- Secretary = SAR 1000/-

Total utilization during this period = SAR 23,800/-

4.2 Travel

Total Amount Allocated = SAR 30,000/-
Total utilization during this period = SAR 0/-

4.3 Equipment

Total Amount Allocated = SAR 23,000/-

Equipment:- Order were placed for One Pentium 800 MHz/1GigaHertz machine and printer = SAR 16,000/- (yet to arrive)

Consumables:- Floppies, tapes, zip drives, printer toner, stationary ... = SAR 1207/-

Total utilization during this period = SAR 1,207/-

5 Difficulties Faced

No difficulty was faced during this period which can result in the deviation from the original objectives of the proposal.

6 Publications

1. A book chapter entitled " Modern Approximation Iterative Algorithms and Their Applications in Computer Engineering" in "The Computer Engineering Handbook", CRC Press 2001, has been accepted for publication: (To appear in December 2001).
2. A detailed report covering technical details and other activities during the first 6 months is also submitted with this progress report.
3. Conference papers related to progress made thus far are in preparation.

7 Acknowledgements

The research team acknowledges King Fahd University of Petroleum and Minerals for all support.