



National Cheng Kung University

Department of Computer Science and Information Engineering

Master's Thesis

Design and Performance Evaluation of Mobility  
Management in Wireless Sensor Networks

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July 2012

## Abstract

As the number of buses increase substantially in multi-core SoC designs, the bus planning problem has become the dominant factor in determining the performance and power consumption of SoC designs. To cope with the bus planning problem, it is desirable to consider this issue in early floorplanning stage. Recently, bus-driven floorplanning problem has attracted much attention in the literature. However, current algorithms adopt an over-simplified formulation ignoring the position and orientation of the bus pins, the chip performance may be deteriorated. In this paper, we propose the bus-driven floorplanning algorithm that fully considers the impacts of the bus pins. By fully utilizing the position and orientation of the bus pins, bus bendings are not restricted to occur at the modules on the bus, then it has more flexibility during bus routing. With more flexibility on the bus shape, the size of the solution space is increased and a better bus-driven floorplanning solution can be obtained. Compared with the bus-driven floorplanner<sup>?</sup>, the experimental results show that our algorithm performs better in runtime by  $3.5\times$ , success rate by  $1.2\times$ , wirelength by  $1.8\times$ , and reduced the deadspace by  $1.2\times$ .

• **Keywords:** Floorplanning, Bus planning

## **Acknowledgments**

" 我思故我在, 我做故我存."

"I think, therefore I am. I do, that become valuable."

" 別人笑我太瘋癲，我笑他人看不穿."

"People laugh at me for my insane, but I laugh them because they don't see the truth."

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