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نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

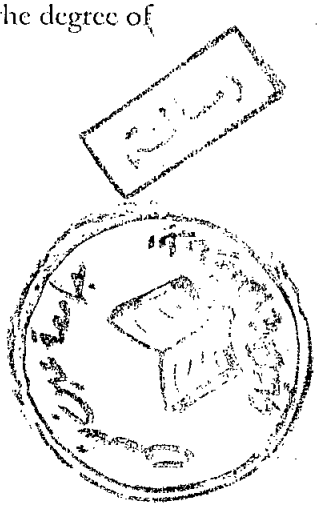
Ain Shams University – Faculty of Engineering
Computer and Systems Engineering Department

HARDWARE/SOFTWARE CO-VERIFICATION USING SYSTEMC

A Thesis

Submitted in partial fulfillment of the requirements for the degree of

Master of Computer Engineering



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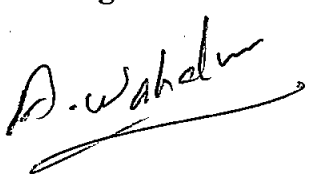

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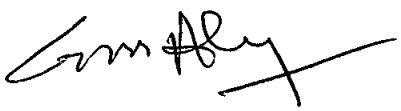

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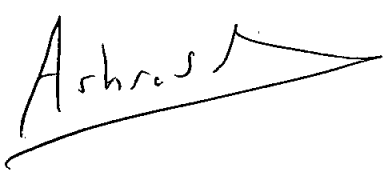

Date: / / 2002

STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Master of Science in Computer Engineering.

The work included in this thesis was carried out by the author at the Computer and Systems Engineering Department, Faculty of Engineering, Ain Shams University.

No part of this thesis has been submitted for a degree or qualification at other university or institution.

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Date 15/ 7/ 2002

ABSTRACT

HARDWARE/SOFTWARE CO-VERIFICATION USING SYSTEMC

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Master of Science in Computer Engineering

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With EDA industry moving to integrating microprocessors, memory and ASICs into a single chip to form System on Chip (SoC). Detailed system specification that closely simulates the target system becomes a necessity to detect system bugs at early stages of development and hardware/software co-verification becomes the enabler to merge between the software and hardware of the system design.

In this thesis, we focus on using SystemC, a new modeling methodology based on C++, to describe both hardware and software of an entire system throughout the design flow.

Using this methodology, we model a priority-based preemptive real time operating system (RTOS) kernel. Then, we develop a co-verification technique, to verify the interaction of the embedded software consisting of the RTOS kernel and the running application tasks with a hardware module representing a bus functional model (BFM) of a generic microcontroller with its associated hardware peripherals.

For this thesis, we show that using SystemC to model all parts of the system provides great flexibility and enables faster co-simulation compared to existing methodologies.

Keywords: Co-Verification, Co-Simulation, RTOS, SoC, SystemC, Virtual Prototyping.

ACKNOWLEDGMENT

I wish to express my sincere appreciation to Prof. Dr. Gamal Aly for his strong interest in my research work and for being chairman of my dissertation committee. I would also like to thank him for his encouragement to write and publish technical papers during the Master period. In addition, special thanks to my advisor Dr. Ashraf Salem whose familiarity with the needs and ideas of the thesis was helpful during all phases of this undertaking and his kind assistance in presenting this research in a professional way was a key factor of publishing it.

Thanks to my company Mentor Graphics, my managers & colleagues there, for their support and for using company resources, library, tools and valuable time.

Thanks to Prof. Dr. Imai Masahru from VLSI Design Lab in Osaka University, for accepting me in his laboratory in Japan. His acceptance has accelerated my potential to do my best in this research.

Finally, I'd like to dedicate this effort to my family for their support and encouragement during my whole life.