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CASES 2009 guest editor's introduction

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It gives us great pleasure to present two papers selected from the CASES 2009 program. These two papers were selected from around seventy submissions received after a rigorous process of reviewing. The first paper titled "Tabu Search-Based Synthesis of Digital Microfluidic Biochips with Dynamically Reconfigurable Non-Rectangular Devices" by Elena Maftei, Paul Pop and Jan Madsen, is in the relatively new area of bio chip synthesis. In this paper, a Tabu Search metaheuristic for the synthesis of digital microfluidic biochips is presented. Starting from a biochemical application and a biochip architecture, the work in the paper determines the allocation, resource binding, scheduling and placement of operations in the application. The novelty of the work is further exemplified by the devising of an analytical method for determining the completion time of an operation on a device of any given shape, and not necessarily rectangular. This paper also received the CASES 2009 Best Paper Award.

"Reducing Impact of Cache Miss Stalls in Embedded Systems by Extracting Guaranteed Independent Instructions" is the title of the second paper, and is written by Garo Bournoutian and Alex Orailoglu. This paper efficiently exploits both compile-time and run-time information to safely allow non-data-dependent instructions to continue executing in the event of a memory stall. The system avoids the use of power and area hungry constructs like reorder buffers, and shows significant improvement in performance with little impact on area and power overheads.

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We hope that you enjoy these papers which provide a brief glimpse in to the latest research in Compilers, Architectures and Synthesis in Embedded Systems.

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