

High-Level Synthesis of Software Function Calls

Masanari NISHIMURA, Nagisa ISHIURA, Yoshiyuki ISHIMORI, Hiroyuki KANBARA, and
Hiroyuki TOMIYAMA

This letter presents a novel framework in high-level synthesis where hardware modules synthesized from functions in a given ANSI-C program can call the other *software* functions in the program. This enables high-level synthesis from C programs that contains calls to hard-to-synthesize functions, such as dynamic memory management, I/O request, or very large and complex functions. A single-thread implementation scheme is shown, whose correctness has been verified through register transfer level simulation.

Key words: high-level synthesis, CCAP, hardware/software co-design, C-based design