Abstract:

Finding the cause of a failure in software running on a modern heterogeneous System-on-Chip (SoC) is challenging and time consuming. This challenge originates from two main issues. First, insight into the chip is very limited due to a huge gap between the size of the system state and the chip's ability to transfer this state off-chip. Second, the growing diversity in SoC architectures requires the developers to know the hardware architecture beyond the instruction set (ISA) interface to understand the program execution. In this paper, we show how traditional approaches to SoC debugging do not scale to future MPSoC, and present a novel approach which integrates expert knowledge into the diagnosis solution to raise the abstraction level of its output from raw data to useful information. The feasibility of the approach is shown by an industrial case study.
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