

Special Session on Approaches and Frameworks for Predictable Multi-Core Computing

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Guaranteeing predictable (bounded) rather than maximal performance is a big challenge for the successful integration of multi- and many-core processing on a chip (MPSoC) in many embedded systems. Important and growing application areas demanding for compile-time analyzable parallel program execution qualities are automotive systems, avionics, and healthcare. Here, apart from timing, other non-functional properties of program execution must be considered as constraints such as power consumption, or guarantees on reliability and security properties. Of course, static analysis techniques are limited by either conventional (sequential) programming models or rigid underlying assumptions such as strict resource partitioning and isolation. In this special session, four unique approaches/frameworks are introduced and compared for their ability and methods to allow for a parallel programming of MPSoCs with predictable execution qualities that may even adaptively handle uncertainties of workload scenarios.