Lehrstuhl für Eingebettete Systeme
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BA / Specialization Module / MA Project

Formal Analysis of Energy Consumption Indicating Properties of Synchronous Data Flow Graphs.

Description:
Streaming applications can be efficiently modeled with data flow graphs. Application consist of communicating tasks that produce and consume data (tokens) over communication channels. Data flow oriented applications with few control flow can be modeled by synchronous dataflow graphs (SDF). Efficient techniques exist to analyze important performance indicators like latency and throughput. To some extend properties that indicate energy consumption can be analyzed as well, when certain properties are assured.
In this work, SDF-based techniques for extra functional properties indicating energy consumption (processor utilization, data rates on hardware communication channels) should be implemented in a standalone software. The following tasks should be done within the scope of this work:

- literature research about formal analysis techniques indicating energy consumption for SDF graphs
- implementation of analysis techniques into a standalone software
- synthetic and real-life benchmarks to evaluate performance and scalability

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