



Master Thesis Topic

Long-Run Average Metrics for Energy Consumption Analysis of Dynamic Data Flow Graphs.

Description:

Streaming applications can be efficiently modeled with data flow graphs. Applications consist of communicating tasks that produce and consume data (tokens). 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 extent properties that indicate energy consumption can be analyzed as well. However, many applications show data-dependent behavior, that can be modeled by probability based extensions of SDF, namely scenario-aware data flow (SADF) graphs. Long-run average metrics for throughput and latency exist that account for scenario transitions, that have yet to be extended to energy consumption indicating properties. In this work, SDF-based techniques for extra functional properties indicating energy consumption (processor utilization, data rates on hardware communication channels) shall be extended for SADF graphs. The following tasks should be done within the scope of this work:

- development of analysis methodologies for long run average metrics indicating energy consumption for SADF graphs
- implementation as a software library or into an existing analysis framework
- synthetic and real-life benchmarks to evaluate performance and scalability

Reference person: Florian Grützmacher
Tel.: 0381/498-7289
Email: florian.gruetzmacher2@uni-rostock.de
Büro: Institut MD, Haus1, Raum 1337