



## Embedded benchmarks for real-time workloads

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Type:

Master/Bachelor

Description:

Several Linux-based benchmarks to evaluate embedded applications and OS-capabilities exist, but finding the "right" one for a specific purpose/comparison is challenging and multiple benchmarks must be used.

Furthermore, benchmarks are normally not structured to reflect the periodicity of execution that is typical of real-time workloads and implement instead a one-shot behavior.

The thesis focuses on first evaluating the differences and commonalities among different embedded, vision, and OS benchmarks. Then a common framework for executing all the selected benchmarks in a real-time oriented way should be developed and a comparative analysis of the different benchmarks under different real-time workloads (and on different embedded boards such as NVIDIA Xavier, Xilinx ZCU102, ...) should be proposed. The execution of the benchmark in a "bare-metal" hypervisor environment can also be considered.

Examples of possible benchmarks are: irq latency, Imbench, unixbench, polybench, mibench, autobench, san diego vision benchmark suite.

Requirements:

Mandatory: C, Bash, Makefile  
Optional: Python/Perl



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