

Paper-Reading Group

Proactive Energy-Aware Programming with PEEK

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Problem



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Usual Approach to Analysis

Write or modify Program

Goal: Fully automated and integrated

* tooling support

* energy measurements

* suggestions on code improvement

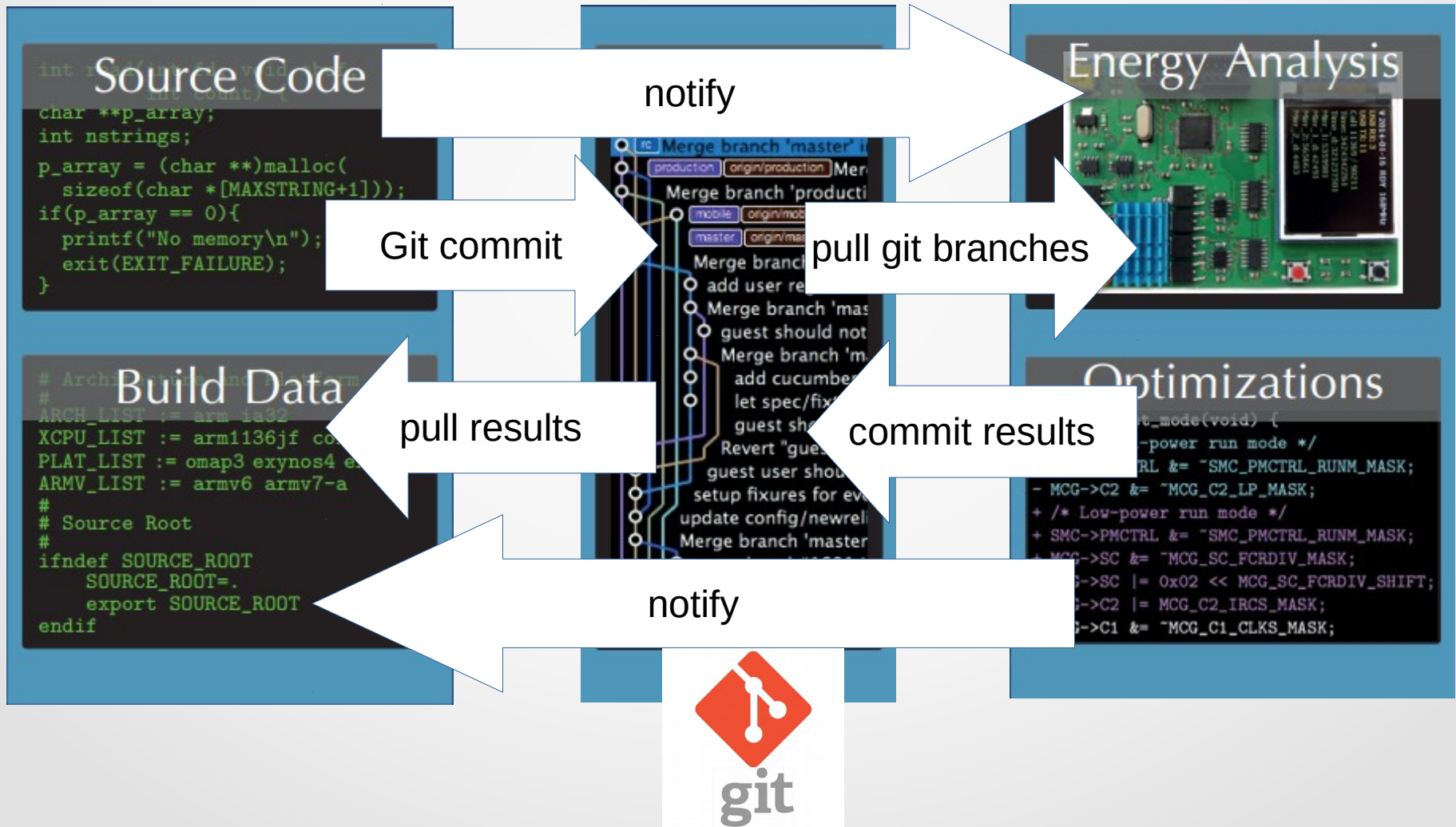
perform energy analysis

build application

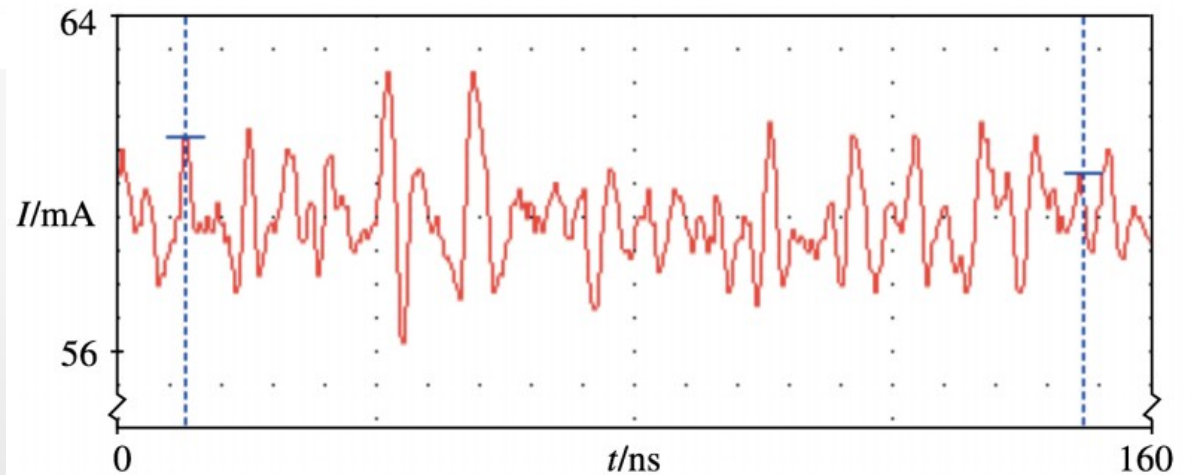
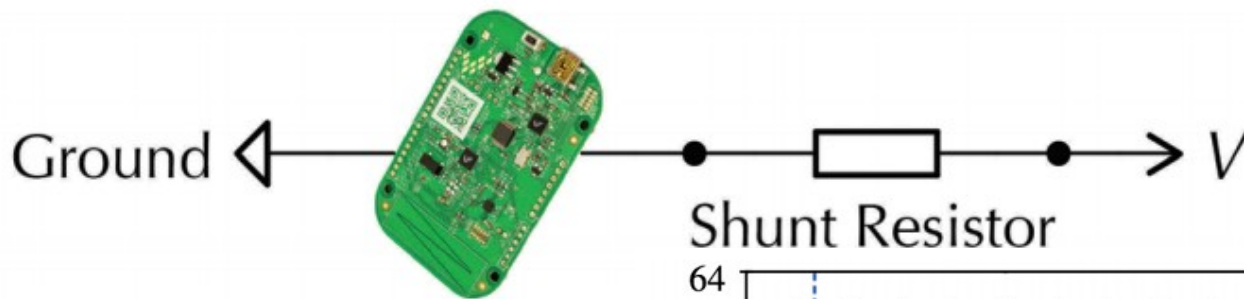
run with defined input

Approach

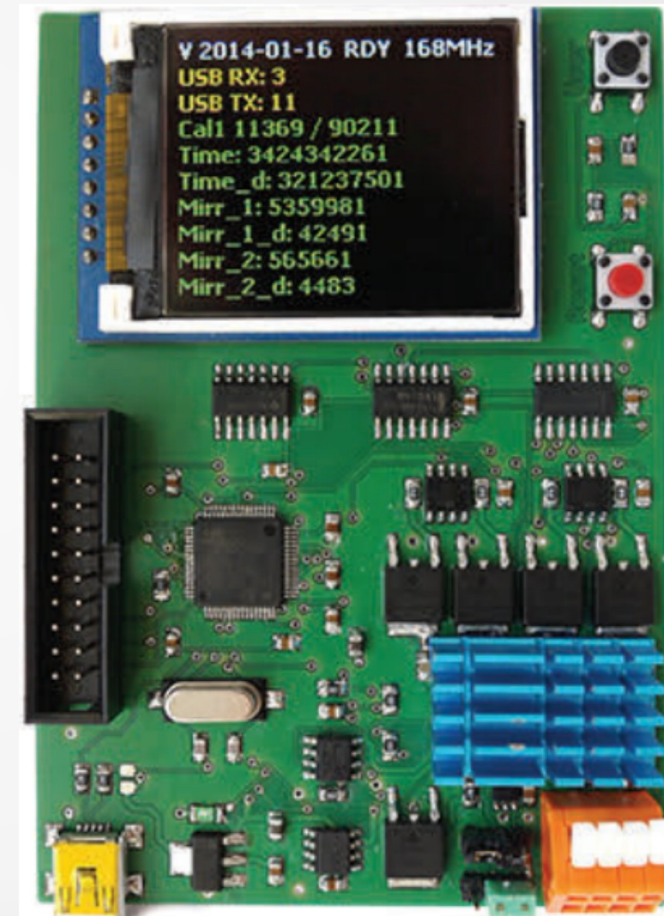
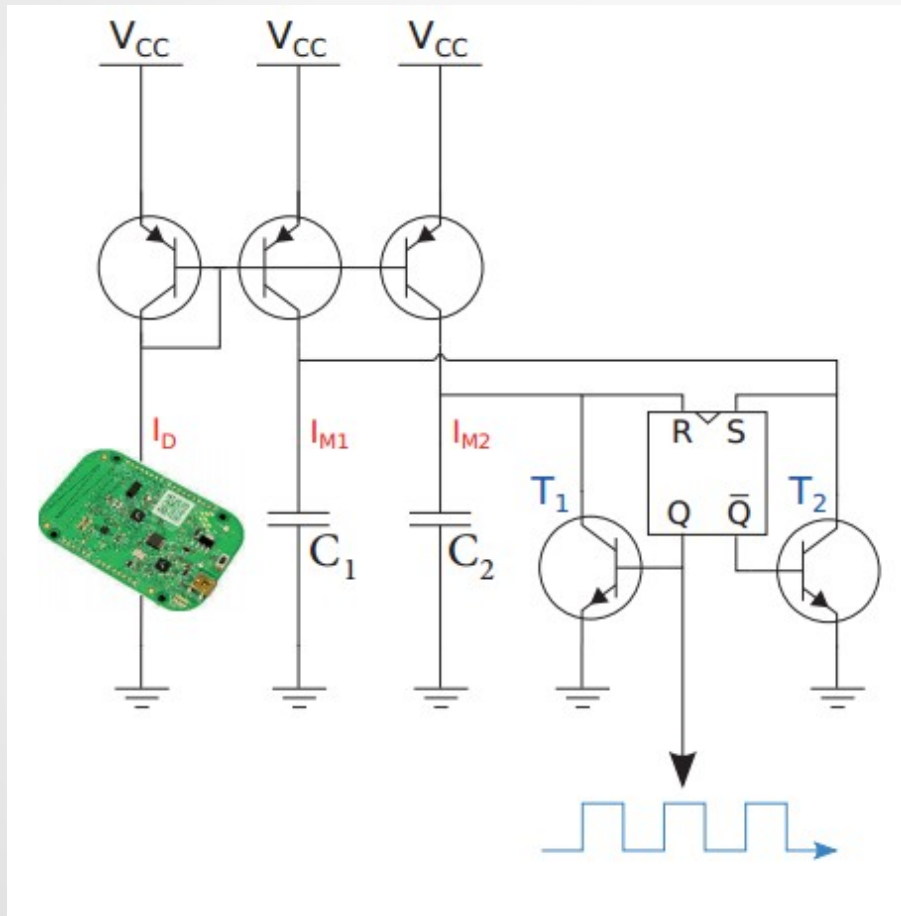
- Modular proactive energy-aware development kit



Measurement Device

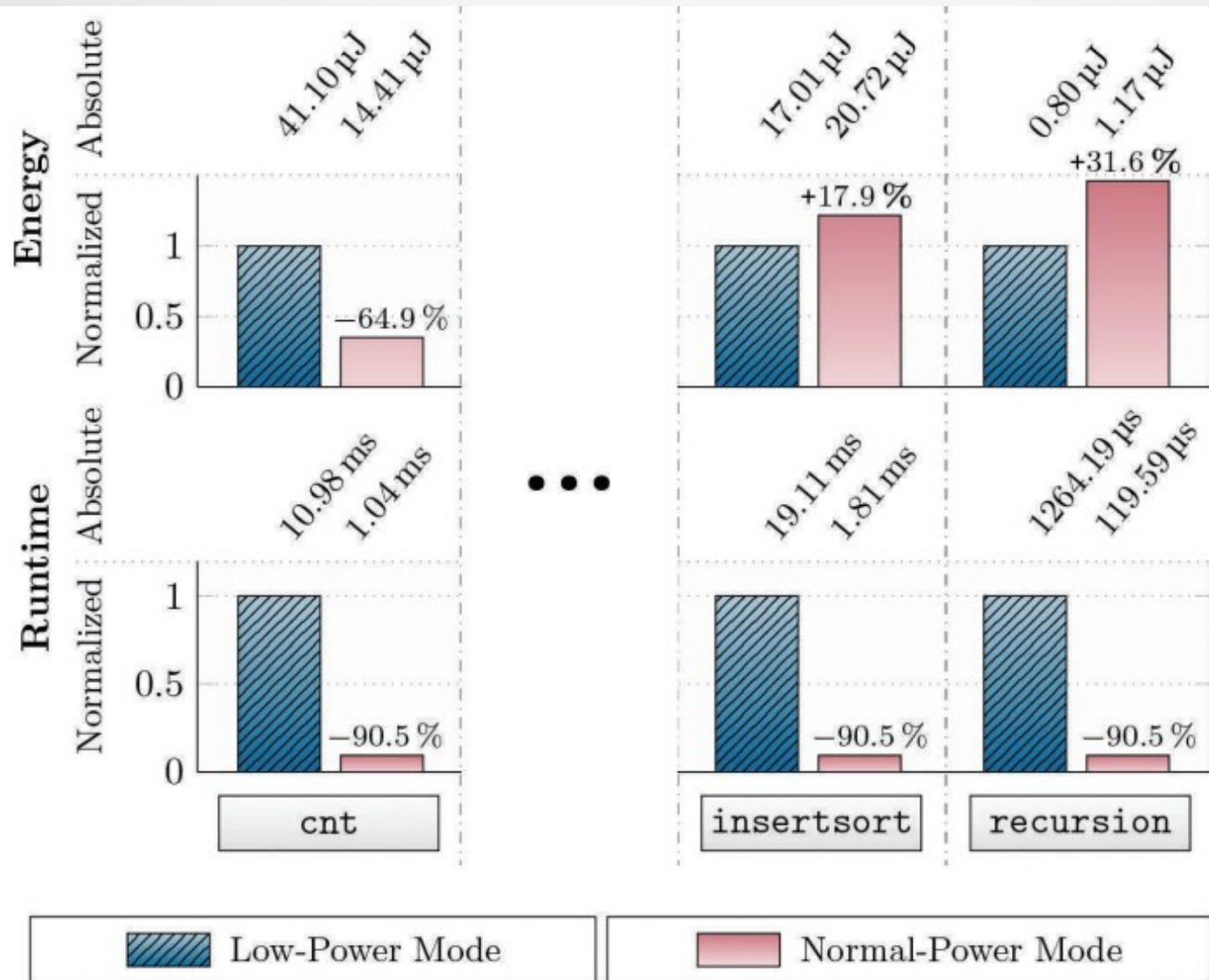


Measurement Device (II)

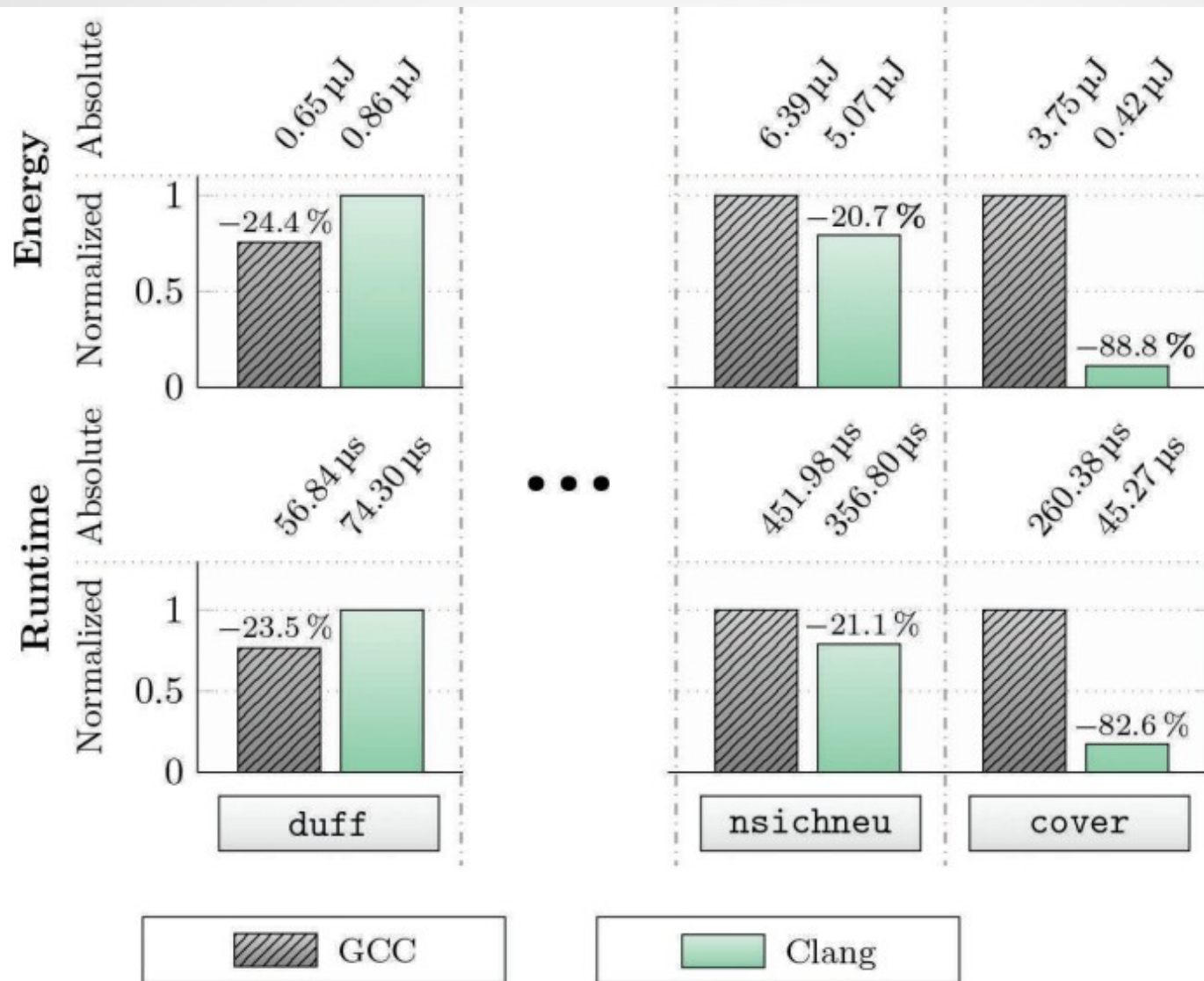


energy measurement resolution: $0.1\mu\text{J}$, temporal resolution 6ns ($\sim 150\text{kHz}$)

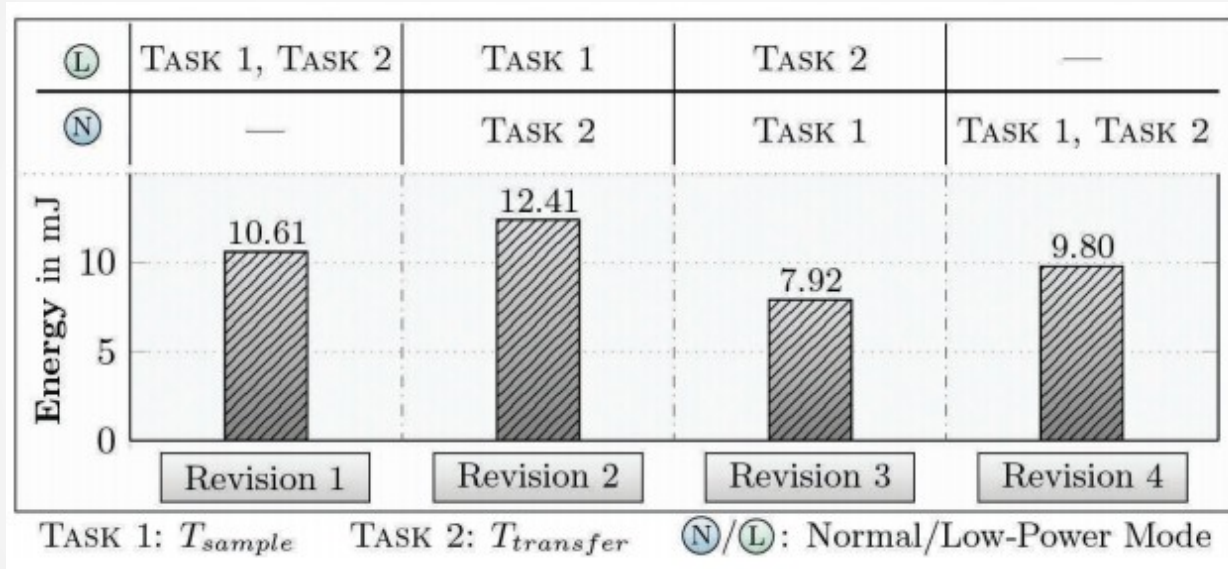
Evaluation (Modes)



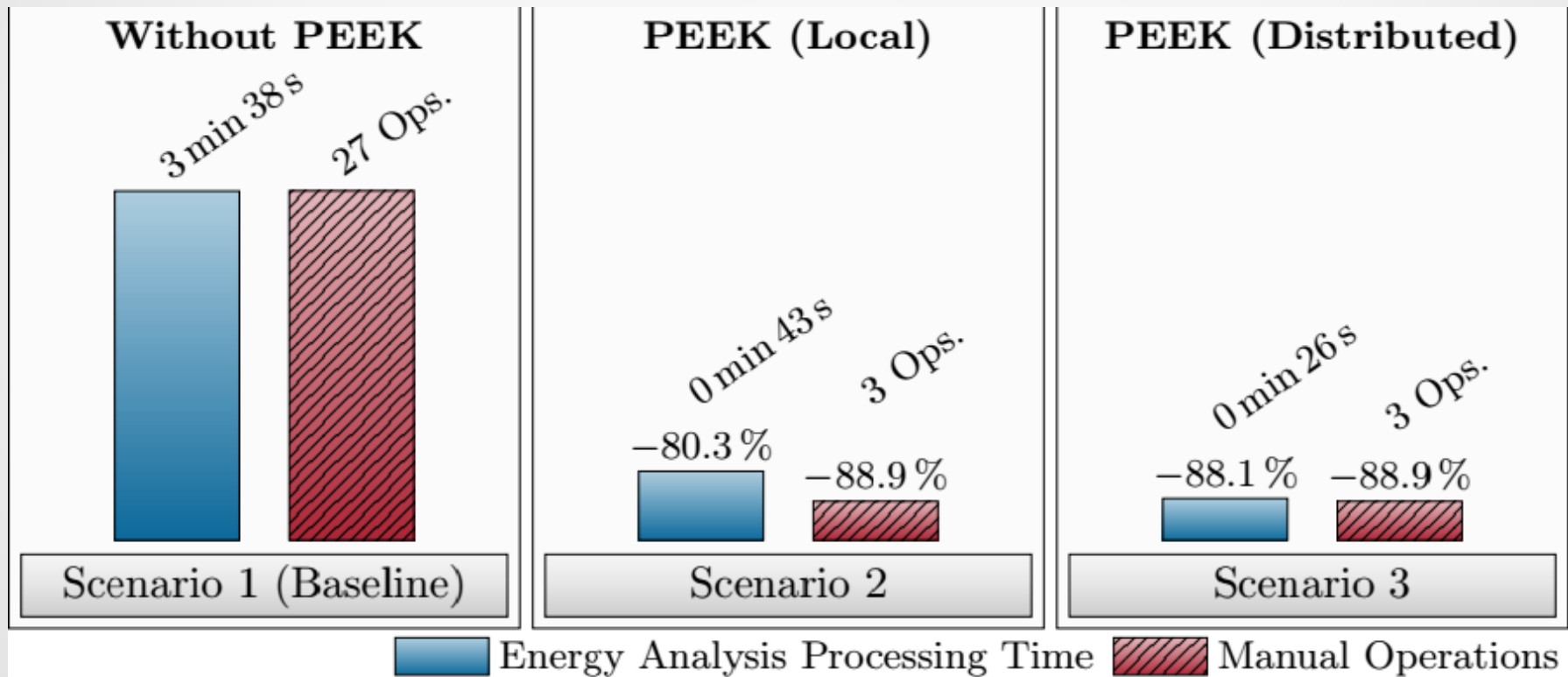
Evaluation (Compilers)



Evaluation (Multi-Task)



Evaluation (Development time)



And students (2!) liked it more

Discussion

- Why can you not detect the non-proportionality between run-time and energy in ins-based models?
- How does to insertion of hints work?
- Can you optimize the approach by caching common executions between versions?
- How are the modes in M0 defined?
- Wouldn't a 150kHz sampling rate achieve the same?
- How is multi task different from two single tasks?