Secondment report

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IRP title: Innovative real-time operating system for error management for single- and multi-core units

From: BTU
To: CDNS
Period: April 1st – 5th, 2019

Activities during the secondment

- **Scope and objectives.**
    - The utilization of the Cadence Xcelium Fault Injection Simulator to evaluate the fault tolerance of the fine-grained reconfigurable platform from [1].

- **Activities**
    - Perform fault injection campaigns over the original Plasma processor design [2] and the reconfigurable platform from [1] build over this respective processor.

- **Main results achieved**
    - The fault injections were successful performed over the desired designs which enabled a comprehensive fault tolerance evaluation of the reconfigurable platform. This evaluation allowed to check for week points in the design and improve it.

- **Next steps**
    - Perform improvements in the platform based in the fault tolerance evaluation resulted from the fault injections.

- **Optional request for support or a technology/tool available at host:**
    - Support was provided by local experts, especially in respect to the Cadence Xcelium Fault Injection Simulator.

Self-evaluation

Overall score: 5
I consider this secondment successful, with regards to the research objectives achieved, skills developed, supervision quality, diversity of the resources. (Agree = 5 … Disagree = 1)

Optional comments: The fault injections were performed using the Cadence Xcelium Fault Injection Simulator with support from the local ESR 4.1. The simulations allowed for a fault tolerance evaluation and improvements in the design based in this evaluation are already under development.

References

[1] R. Segabinazzi Ferreira and J. Nolte, "Low latency reconfiguration mechanism for fine-grained processor internal functional units," in LATS 2019 - 20th IEEE Latin American Test Symposium, 2019.
[2] OpenCores.org, "Plasma - most MIPS I(TM) Overview," in https://opencores.org/projects/plasma, visited November 6th, 2019.

Date of the report approval by the supervisor: November 11th, 2019

www.rescue-etn.eu