



Secondment report

TIRAMISU DC2.3

Fellow: Sergiu-Mohamed Abed
Research project title: “Analysis and improvement of fault tolerance and safety of AI accelerators”
From: CDNS
To: PDT
Secondment period: 19.09.2025 – 27.02.2026

Activities during the secondment

Scope and objectives

- Achieve hard and soft-skill hours requirements at PDT (the academic institution issuing the PhD degree).
- Collaborate with DC2.2 for a joint publication.
- Conduct research work on Algorithm-Based Fault Tolerance (ABFT) for RISC-V vector processors.

Activities

- Attended courses “Testing and Fault Tolerance”, “AI safety” and “Specification and simulation of digital systems”.
- Followed multiple soft-skill courses (Project management, Public speaking, Thinking out of the box, etc.)
- Conducted Power, Performance and Area (PPA) analysis on a RISC-V vector processor for the joint work with DC2.2.
- Developed ABFT resorting to RISC-V Vector instructions, assessed its fault detection capabilities for permanent (stuck-at) faults, analysed its performance overhead and compared its performance efficiency with respect to a baseline version.
- Prepared a presentation for the Yearly Evaluation Committee to pass to the second year of the PhD program at PDT

Main results achieved

- Acquired a strong background in the field of reliability.
- Passed exams at PDT for achieving the requirements.
- Passed to the second year of the PhD program at PDT.
- Joint paper accepted at conference LASCAS 2026 at Arequipa, Peru.
- Paper for the work on ABFT for RISC-V vector processors submitted at conference IOLTS 2026.

Next steps

- Extend the work on ABFT for the execution of a whole neural network on the vector processor.





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Self-evaluation

Overall score

I consider this secondment successful, with regard to the research objectives achieved, skills developed, supervision quality and diversity of the resources. (Agree = 5 ... Disagree = 1)

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Optional comments

None

Date of the report approval by the supervisor: 13.03.2026



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