Development of a test environment for a High Performance Computing (HPC) CPU

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CONTEXT & OBJECTIVE

- SIPEARL company was born from the European Processor Initiative (EPI).
- EPI: design, develop and produce a new family of European low-power processors for HPC, allowing Europe technological sovereignty.
- Objective: setup an automatic test environment to execute and verify unitary tests and non-regression on ARM Cortex M7 target on a HPC CPU, and integrate it on Gitlab CI.

METHOD & DEVELOPMENT

Our toolchain:
- Automatically launches test scripts at specific moments
- Integration into Gitlab CI tool
- A framework to automate tests: Robot Framework.

Main components:
- A coprocessor simulator for ARM Cortex M7: Fastmodel
- A list of tests to run automatically: Robot test suite
- A specific debugger that connects to the coprocessor simulator and loads the unitary test script generated by Robot Framework: ARM Debugger

RESULTS & CONCLUSION

- Results: - HTML report
  - XML report for Gitlab CI

KEYWORDS: Gitlab CI, Unitary test, HPC, Debugger, ARM Cortex M7, Robot Framework, Slurm