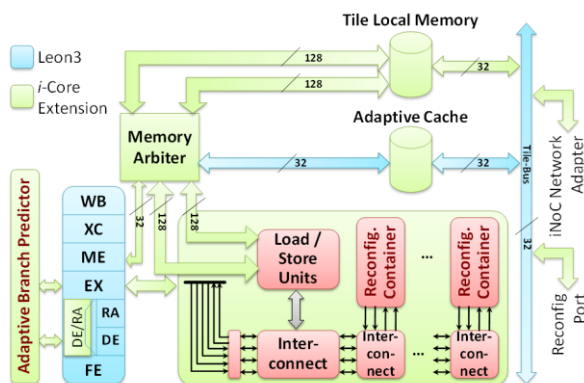


HiWi Job

Updating, Testing, and Maintaining a Reconfigurable Processor



The *i*-Core is a run-time adaptive reconfigurable processor. In addition to a typical 7-stage pipeline, it has reconfigurable containers that are used to load hardware accelerators at run time. These accelerators are used to execute Special Instructions (SIs).

For instance, we have SIs to accelerate video encoders, object detection, and differential solvers. The SIs development started some years ago and not all of them are up to date. For instance, some of the older SIs are not compatible with our most-recent tool chain that generates the SI execution control (actually micro-ops) out of a graphical representation of the SI behavior. Some of these SI descriptions need updates and additionally we would benefit from having more unit-tests to ensure that the SIs work properly.

We know what we want to do/update about the SIs and tests, but we need help (i.e. potentially you) for actually doing it.

Expected Tasks to be performed

- Software testing of the current SIs
- Updating some of the SIs
- Git repo management and cleaning
- Potentially Further development of the *i*-Core

The tasks will vary according to your capabilities and the change of the tasks' priorities during the period of the HiWi job.

Skills beneficial for the HiWi Job

- Programming Skills (C, Shell/Script)
- Knowledge of VHDL
- Basic Background on Processor Architecture
- Knowledge in Git usage and management

Skills acquired within the HiWi Job

- Project Management
- Practical VHDL implementation and work with processor architectures

Misc

- Language: can be German or English
- Working hours: 40 hours / month

Contact

Hassan Nassar, M.Sc., hassan.nassar@kit.edu
<http://ces.itec.kit.edu/~nassar>

Dr.-Ing. Lars Bauer, lars.bauer@kit.edu
<http://ces.itec.kit.edu/~bauer>