

Address Translation & IRAM Cache

Progress Report #2

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Group 327

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Achievements

- Completed investigating adjacent blocks for the Cache unit.
- Completed investigating adjacent blocks for the Address Translation unit.
- Understood the latest architectural demands for the Cache unit.
- Understood the latest architectural demands for the Address Translation unit.
- Took a course about DVT - IDE for design and verification.
- Had a meeting with a member of the formal verification team in Haifa (Yonatan) – in order to characterize our unit's need of formal verification.
- Start writing the MAS for the address translation:
 - Overview
 - Features
- Start writing MAS for the Iram Cache:
 - Overview
 - Features
 - External I/F
- Set up external GIT repository.

Challenges

- We received additional architectural requirements (new features to support) to the address translation unit:
 - One of the changes concern the security assumptions our system has on the different processes that use the translation function.
 - The other change concern the clock frequency which was increased significantly. This change affects some of our old assumptions such as the number of combinatorial cells we could use in one clock cycle.

We hope these changes will not affect our schedule although it is too soon to know for sure.

- The next few weeks focus will be to think about the top level design of our units and plan our way down to the sub-block level:
 - The design should be modular in order to be readable, understandable and easier to debug.
 - The design should be parametric so it can be used in future projects.
- The eviction policy unit of the cache still needs a small and efficient design thinking.
- Contacting Intel Legal department in order to get permission of viewing part of the MAS (Micro Architectural Specifications) document – WIP*.

Correspondence with advisor

- Our advisor also participated in our meeting with the formal team member.
- We had a meeting with our advisor and the team's micro-architect (Alon) concerning the architectural design changes described above.
- In our 1:1 meetings with our advisor which we have every week we discussed:
 - Cleared parts of the adjacent blocks that we didn't understand when investigating them.
 - Splitting the MAS to stages and weekly deadlines.