EE/CprE/SE 491 WEEKLY REPORT 09
Nov 19 – Dec 2

Group number: **22**

Project title: **ReRAM Compute Asic Fabrication**

Client &/Advisor: **Cheng Wang & Henry Duwe**

Team Members/Role:

Ali Mannan
Tyler Kloser
Austin Miller
Vinicius Malaman Soares

- **Weekly Summary**
  - This week (or rather 2 weeks with break) mainly consisted of preparing for the upcoming design presentation, along with some tests for further functionality of the designs we are going to implement. For our presentation, we will likely focus on the design and functionality/behavior of the 1T1R cell since it is our fundamental building block for the overall crossbar that our client would like to scale up later.
- **Past week accomplishments**
  - Vinicius Malaman Soares: Worked on the presentation for the senior design review panel
  - Tyler Kloser: Worked on presentation and finalizing design document
  - Ali Mannan: Built a design of a 4x4 crossbar made of the 1T1R modules. Design supports writing (SET, RESET) of all individual cells as well as read operations of all individual cells (read and write multiple items at a time through the use of WORDLINE and BITLINE/SOURCELINE combinations)
  - Austin Miller: Worked on Design presentation materials (mostly the doc, and diagrams) and tried to progress 1T1R layout more
- **Pending issues**
  - Tyler Kloser: N/A
  - Ali Mannan: N/A
  - Austin Miller: Layout still being weird, I might have some includes syntax incorrect in the schematic or something too. Planning on utilizing other designs for reference.
  - Vinicius Malaman Soares: N/A

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Tyler Kloser	Worked on presentation and finalizing design document	3	51
Ali Mannan	4x4 crossbar design and simulation. Verified read and write functions.	10	68
Austin Miller	Design Presentation and Document, 1T1R layout	6	67
Vinicius Malaman Soares	Senior design presentation progress	3	56

- **Comments and extended discussion**
  - N/A

Plans for the upcoming week

- Ali Mannan: Attempt to extract parasitics from layout of 1T1R and simulate 4x4 crossbar with parasitic behavior accounted for, this is the final goal before presentation week.
- Tyler Kloser: Update the SD website, presentation, design document, Understand 4x4 crossbar and how each cell can be written and read from
- Austin Miller: Progress 1T1R layout, bring either that or simple inverter all the way through precheck and update the design presentation with findings
- Vinicius Malaman Soares: Keep on polishing the Design document and the slideshow presentation for the review panel.

- **Summary of weekly advisor meeting**
  - Our discussions for the weekly meeting primarily focused on the basic modules (1T1R, 1-bit DAC, etc.) and the design presentation. We reviewed the modules we have been testing (basic schematics without parasitics) and how they might be configured. We also talked about the desired modules with some of the drawn schematics/diagrams to give a rough idea of what we're going to implement and how that should be refined for our presentation. We then discussed some more about expectations of the design presentation and what to look out for, what we should make sure to include, and a few other things that we'll likely refine in our next meeting, where we'll give a sort of practice presentation to our advisor and client.