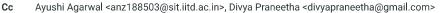
## Re: COL719 Course Projects



From Ayushi Agarwal <ayushi.agarwal@sit.iitd.ac.in>

To Preeti Ranjan Panda <panda@cse.iitd.ac.in>, <2402-col719@courses.iitd.ac.in>



Date 07.02.2025 13:17

Hi Students,

This email only concerns the students who have been allotted the following two projects:

Accelerators: DVFS
Accelerators: 3D Stacking

You can start-off with the following:

## Resources:

- 1. Scale-Sim-v2: <a href="https://scalesim-project.github.io">https://scalesim-project.github.io</a> this is the project page with links to the source code (on GitHub), documentation, and tutorials. Scale-Sim-v2 Setup: Instructions are here: <a href="https://github.com/scalesim-project/scale-sim-v2">https://github.com/scalesim-project/scale-sim-v2</a>
- We will be using the scalesim-accelergy branch in both projects. Please follow the steps in rundir-accelergy folder.

It will help if you understand how the accelergy tool generates the architecture reference table to estimate energy.

- Please look at the scale-sim code to understand how the "action\_counts.yaml" file is generated. This file summarizes the action counts or activity of different components in the accelerator over the complete computation time.
- Think about ways of changing the code to be able to generate these actions after every few intervals instead of generating a summary at the end.

## 2. Hotspot 7.0 tool:

https://github.com/uvahotspot/HotSpot

Please go through the examples present here: https://github.com/uvahotspot/HotSpot/tree/master/examples

Understand the input file formats and think about ways of converting the scalesim output to generate a similar power trace for hotspot.

- 3. CNN: <a href="https://cs231n.github.io/convolutional-networks/">https://cs231n.github.io/convolutional-networks/</a>: This is a good reference for understanding CNNs. The students can explore additional material available in this course.
- 4. SIMD vs. Spatial vs. Systolic Architecture:
- a. Efficient Processing of Deep Neural Networks: A Tutorial and Survey Good paper to understand reuse is, ws, and os (takes references from Eyeriss); covers SIMD vs Spatial since Eyeriss is a spatial architecture.
- b. https://arxiv.org/pdf/1704.04760.pdf: Google TPU is one of the architectures used in scale-sim. It is used in systolic PEs and could be a good read.

Thanks and Regards,

Ayushi Agarwal

On Wed, Feb 5, 2025 at 11:42 PM Preeti Ranjan Panda panda@cse.iitd.ac.in> wrote:

Dear COL719 students,

The assigned projects to COL719 student groups are uploaded on Moodle. Please take a look. There are 3 students for whom I don't have any preferred groupings; not sure if I missed any communication. I will wait for a confirmation from those 3 that they are doing the projects alone. There are students marked in red, to whom I have not assigned any project based on attendance so far; I am assuming they are withdrawing from the course. I will upload an edited file after I receive any updates from you.

Tentative names of senior researchers who will be monitoring the project, are given alongside. They will communicate with you for initial documents, experimental platform, etc. Note that they are NOT TAs for the course, and are not obliged to spend time on the projects. Their follow-up will be proportional to the seriousness shown by the students, as evidenced from the progress.

Regards, Preeti agind way