10-05-2020

ECE 451-566 F20: MINI Presentation Assignment

You are required to do a little **research on state-of-the-art articles/posts/documents** and dig up modern microarchitecture of various chips/processors.

1) Provide clear pictures/illustrations of the architecture,
2) Document the technical details on the type of instruction/core/thread parallelism method they focus on: Superscalar, Interleaved-Multi-threaded (IMP), Simultaneous Multi-Threaded (SMT), something different? Of which type? 2, 4, 8 way? Read the Specs, Provide some indicative and significant numbers (use your judgment on how much quotation of specs and technical details you will provide).
3) Also, what is the underlying thread fetch and scheduling algorithm used? Why? Pros and Cons? If you find details about that, document them along with your schemas.

At this point, **you are not asked to fully understand the micro-architecture** of the processor and chip, **just dig up some popular microarchitectures, and present them in class along with some useful technical details**. Your search should start with what is available in 2020 and move downwards …

What to submit, what to prepare:

--- Prepare 5-8 PPT slides per group (or something close to that) and submit them to me via sakai/assignments by Friday Oct 16th 8.00 pm.

---- Every group will prepare a maximum of 7-10 minutes recording of your presentation and share it with me. It would be best if all group members participate, but if this is not possible, perhaps you can choose a representative to go over your group's slides.

---- After you all submit your presentations and your 7-10 minutes recording then we get to do the following:

Every group gets at random two of your colleges presentations: slides + recording. You will serve as "opponents" by asking the groups a couple of clarifying questions, or questions that encourage the presenters and the class dig deeper. You will also provide some feedback and comments to the groups on their presentations. The basic presenters will have the opportunity to address those questions.

---- You are all going to be evaluated not only on your presentations but also on your effectiveness as opponents to two groups.

In order to ensure that presentations are not identical, let's do the following:

At random, I am allocating specific groups to look into specific topics.

Here is your allocation:

- Processors and Trends: 2018-2020 (and future developments): **Group 1**

- Processors and Trends: 2016-2018:   **Group 8**
- Processors and Trends: 2013-2016:   **Group 9**
- Processors and Trends: 2009-2012:   **Group 3**
- Overview of ARM versus Intel Processors: For which applications (and parallel applications) and usability ARM out-wins Intel and Vice-Versa   **Group 4, Group 2**
- Portable Gaming (and Virtual Reality applications also): What type of processors are suitable for these applications? What characteristics do the processors that support them have, what are the trends of the future?   **Group 6, Group 5**
- An overview of Parallel Programming Languages between 2000-2020: How have parallel programming languages and software evolved in the last 2 decades? How did we program our computers then, how do we program them now? What are the trends of the future? **Group 7**

Let's make this presentation a cool, collaborative, funny learning experience for all of us!

The new thing here is that your colleagues will have the chance to ask you educated questions and you will have a chance to …. "fight back" because you will get a chance to dig up further and answer your colleagues questions and append all that to your original recording. This way, everyone's presentation will become an opportunity for fruitful discussion and research by the whole class!

--- **First deadline: next Friday: Oct 16th, 8.00pm**