

Christof Teuscher

ECE 410/510: Hardware for AI and ML

## Week 4: Recap, outlook, and reminders

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## What did you learn last week?

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Week	Monday	Wednesday (Codefest)
2	HW/AI/ML overview + codesign overview	Start main project: pick workload, start analysis, benchmark, ...
3	GPU architecture and programming for AI	Drafting a HW architecture, creating a model
4	Deep neural networks on GPUs	Coding HW description
5	Transformers on GPUs	First simulation + refinement
6	In-memory computation	Improving initial design
7	Neuromorphic chips: TrueNorth, Loihi, Akida	Simulation + refinement
8	Neuromorphic computing with mem-devices	Synthesizing design + benchmarking
9	Hardware accelerators for embedded systems	Final improvements
10	Emerging technologies and future directions	Final tests, validation, verification, benchmarking

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## This week

### Monday

- CUDA
- Mapping deep neural nets (CNN) on GPUs
- TPUs

### Wednesday

- **No in-person codefest. Individual project time instead.**
- Work from home or get together somewhere in small working groups.

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## In the works

- Week 4 challenges
- Week 4 codefest
- Guidance on progress and self-grading

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## Github and portfolio

- Update at least weekly.
- Push codes out, even if not working or finished yet. Show steady progress and good work ethic.
- Organize your Github/portfolio somewhat logically. Your work should be easy to find.
- Someone should be able to replicate what you did.
- See (upcoming) self-evaluation guidelines for more dos and don'ts

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## Industry news

- **Intel will sell 51% of Altera** to investment firm Silver Lake in a deal that values the FPGA maker at \$8.75 billion. Intel will retain the remaining 49% stake. Intel acquired Altera in 2015 for \$16.7 billion. Raghiv Hussain, previously president of products and technologies at Marvell, will take over as Altera's new CEO. The deal is expected to close in the second half of 2025.