

Christof Teuscher

ECE 410/510: Hardware for AI and ML

Week 3: Recap, outlook, and reminders

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What did you learn last week?

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An analogy for using LLMs

- LLMs are your **team**.
- You are becoming more of "manager" who knows how to ask the right questions.
- As a manager, it is not necessary that you understand all the technical details of what your **team** is working on.
- You may not be able to help your **team** directly, but you may be able to ask the right questions to lead them to success.

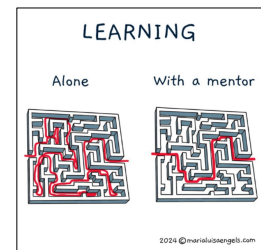
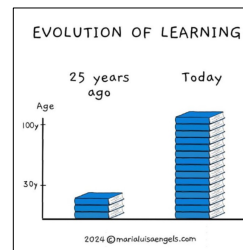
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LLMs, please help!



LLM,
Teacher

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That might be the wrong question

"Will it work?"

Along the way, we've been pushed to load our decisions with a need for certainty. It's easier, it seems, to not try than it is to fail.

But the question, "**is it worth trying?**" unlocks possibility.

A surgeon in the middle of an operation should probably not experiment with an untested technique. But a writer, a leader or a musician can make that question part of their craft.
It's the only way we learn.

<https://seths.blog>



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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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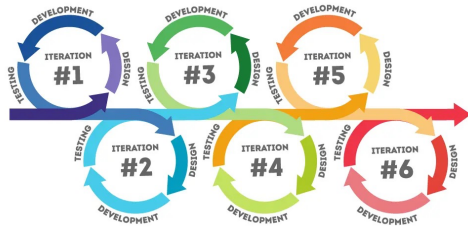
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Iterative codesign process



<https://www.pacific-research.com/iterative-product-development>

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