

ECE 410/510: Hardware for AI and ML

Week 10: Recap, outlook, and reminders

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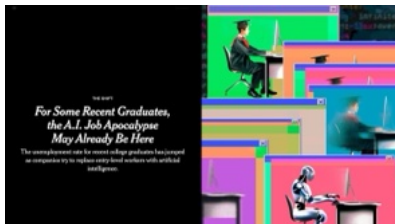
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What did you learn last week?

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<https://www.nytimes.com/2025/05/30/technology/ai-jobs-college-graduates.html>

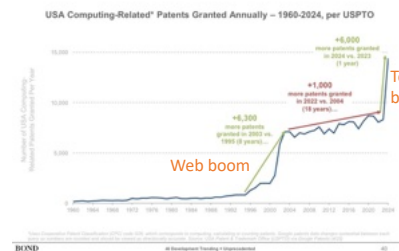


<https://www.axios.com/2025/05/28/ai-jobs-white-collar-unemployment-anthropic>

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Computing-Related Patent Grants, USA = Exploded...
Post-Netscape IPO (1995)... Again + Faster Post-ChatGPT Public Launch (2022)



Tech acceleration
because if AI

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SEMICONDUCTOR ENGINEERING
DEEP INSIGHTS FOR THE TECH INDUSTRY

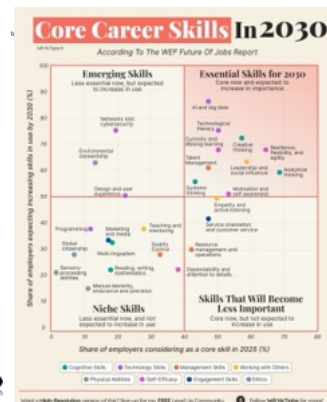


Advanced Packaging Depends On Materials And Co-Design

New materials play a pivotal role, but solving integration problems remains a challenge.

Multi-die assemblies offer significant opportunities to boost performance and reduce power, but these complex packages also introduce a number of new challenges, including die-to-RDL misalignment, evolving warpage profiles, and CTE mismatch.

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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 (1): TrueNorth, Loihi, Akida	Simulation + refinement
8	Neuromorphic chips (2) + mem devices	Synthesizing design + benchmarking
9	Memorial Day	Final tests, validation, verification, benchmarking
10	Emerging technologies and future directions	Doc, final tests, validation, verification, benchmarking