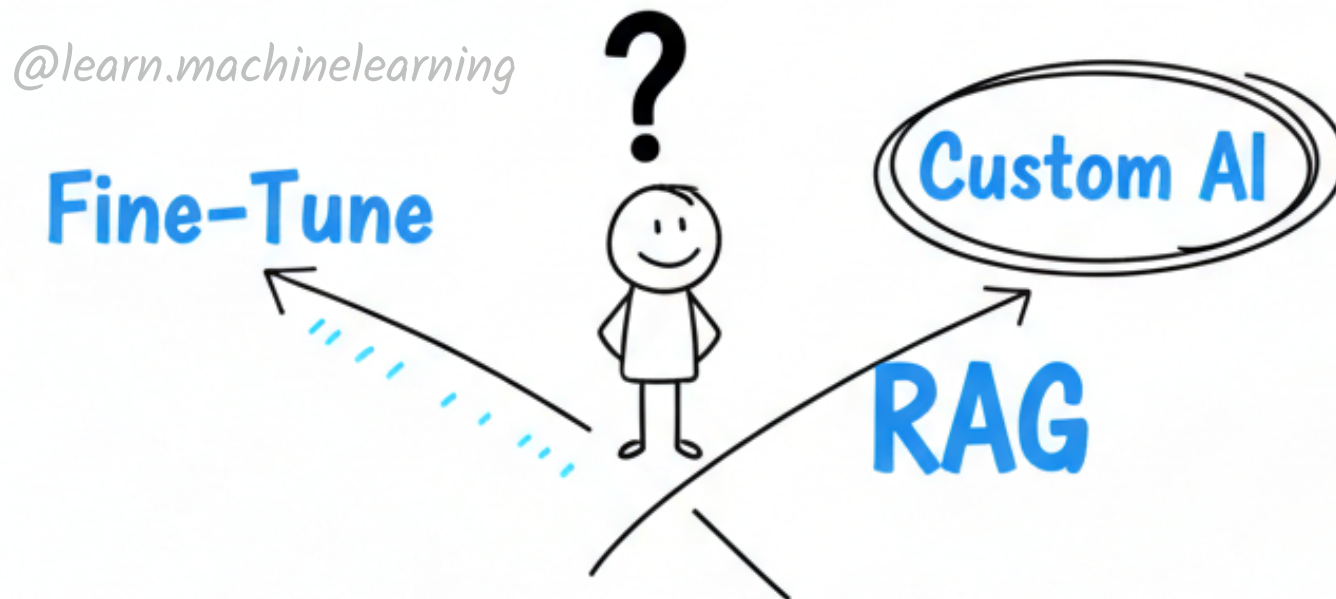


GENERATIVE AI SERIES: DAY 16

Fine-Tuning vs. RAG: Customizing Your AI!

Two powerful ways to make AI smarter for your specific needs! Which one is right? 🤔



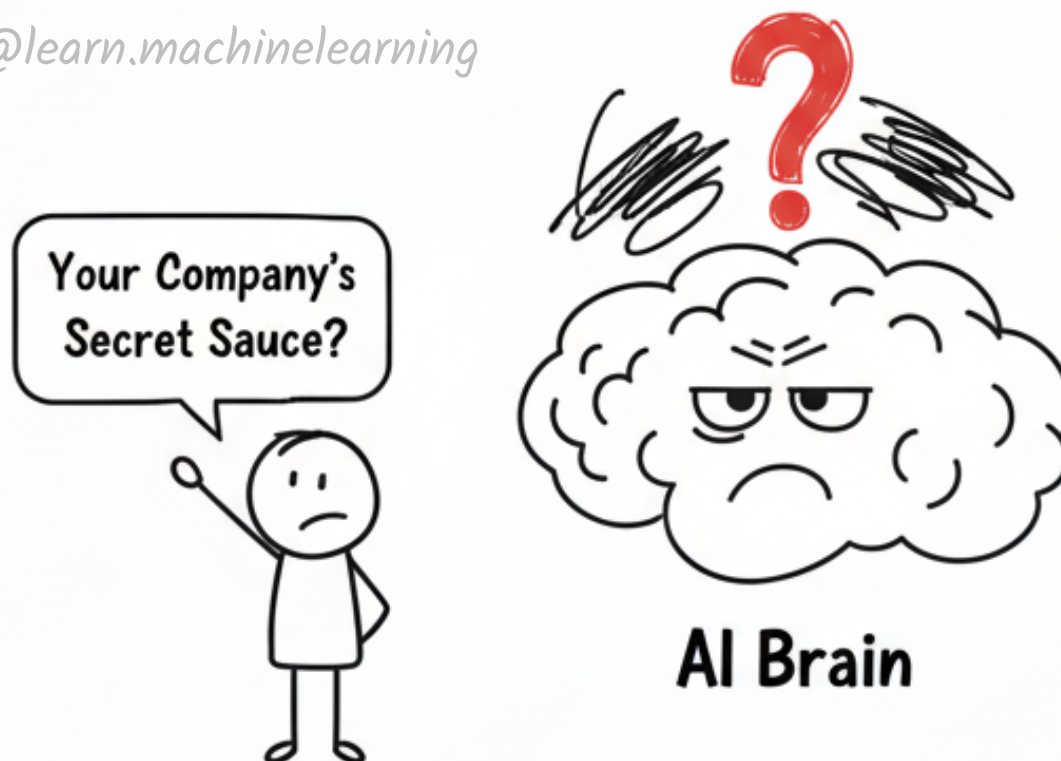
The Challenge: Generic AI vs. Your Niche

Base LLMS (like standard **ChTGPT**) are amazing, but are generalists.

What if the AI that knows your company's specific policies, your personal writing style, highly niche technical jargon?

Solution: We need ways to inject this specific knowledge!

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Fine-Tuning: Teach the AI New Tricks!

How it works:

You take an existing LLM and continue training it on your new, specific dataset.

- This changes the model's weights (its internal "brain connections").

It learns new styles, formats, or niche facts and becomes an expert in your specific domain.

Analogy: *@learn.machinelearning*

It's like sending a general-purpose chef to a specialized cooking school to learn only Indian cuisine. They become an Indian food expert.



Fine-Tuning: Pros & Cons

✓ Pros:

- ✓ AI adopts your specific style/tone
- ✓ Can learn new behaviors/formats
- ✓ Can be very powerful for specific tasks

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🧠 Cons:

- ✗ Expensive (requires lots of data, compute)
- ✗ Risk of 'Catastrophic Forgetting' (forgetting old knowledge)
- ✗ Hard to update (need to re-train for new info)
- ✗ Still prone to hallucinations if it doesn't have the info



RAG: Giving AI an Open Book!

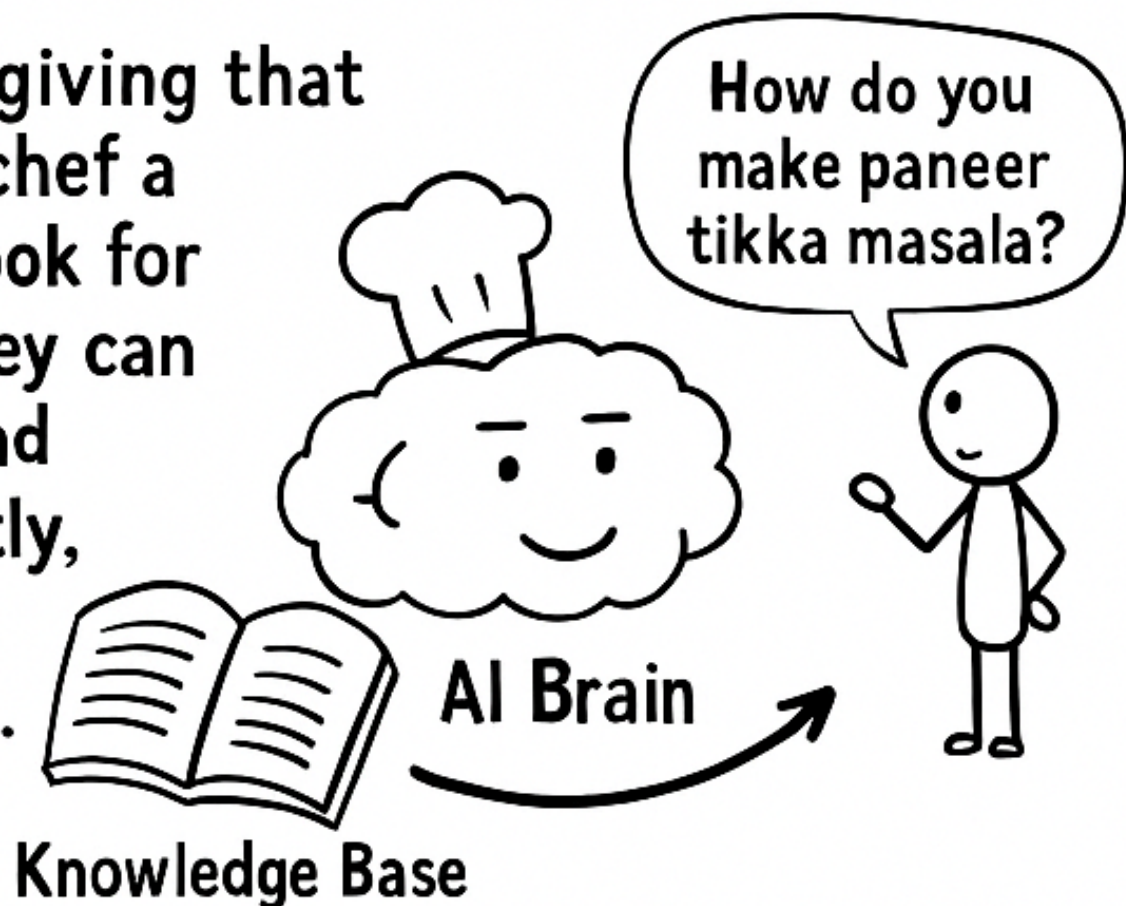
(Recap Day 14)

How it works:

- You connect a base LLM to an external, up-to-date knowledge base (your documents, database, web).
- When a query comes, the system *retrieves* relevant info from your library
- This info is then given to the LLM as context to answer the question

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Analogy: It's like giving that general-purpose chef a massive recipe book for Indian cuisine. They can *look up* recipes and cook them perfectly, without changing their core training.



RAG: Pros & Cons



Pros

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Cons

- ✓ **Accurate & Factual:**
Reduces hallucinations by citing external sources
- ✓ **Always Current**
Easy to update knowledge base (just add/remove documents)
- ✓ **Cost-Effective**
Don't need to retrain the core LLM

- ✗ **Doesn't change the AI's core style or behavior**
- ✗ **Performance depends heavily on the quality of retrieval**
- ✗ **Still relies on the LLM to interpret the retrieved info correctly**

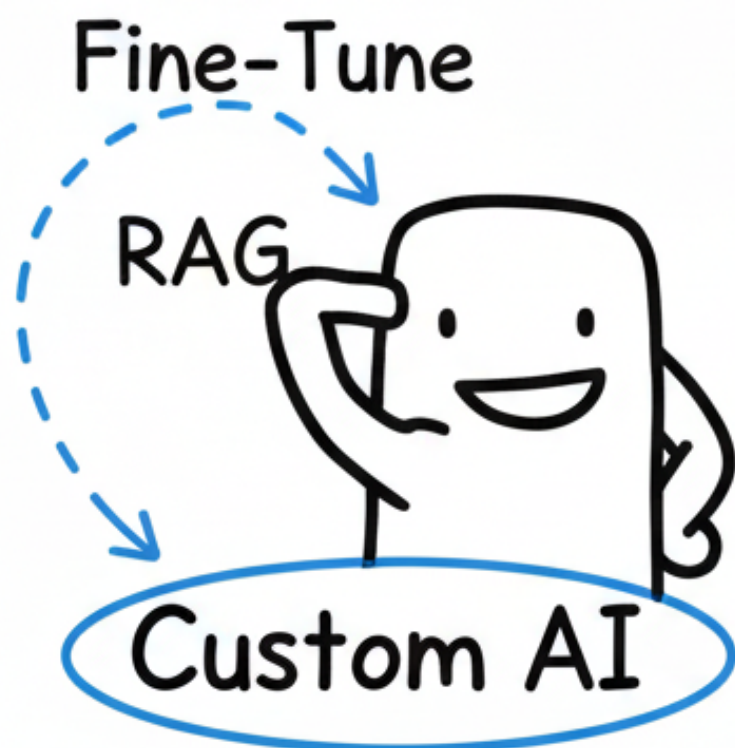


GENERATIVE AI SERIES: DAY 16

Day 16 Takeaway: Choose Your Customization Wisely!

- Fine-Tuning changes the AI's core knowledge and style (expensive, powerful for niche behavior).
- RAG supplements the AI's knowledge with external data (cost-effective, accurate, easy to update).
- Often, the best approach is to combine both!

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Next Up:

Day 17: Multimodal AI - Beyond
Beyond Text & Images!



Which method you think is more impactful for enterprise AI?
Fine-tuning or RAG? Discuss! ↓

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SAVE this to understand how build truly smart AI!
A! 🗒

