playgroup – deep dive LLM day

Mor Consulting 2025-06

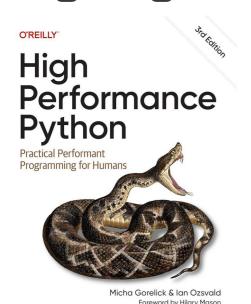
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Strategist/Trainer/Speaker/Author 25+ years

Figuring where LLMs fit into DS



Part of PyData - 165 groups •

PyData London Meetup

4.7 ★★★★ 2576 ratings

Where are the creatives?

London, United Kingdom

🏖 15,298 members · Public group 🕕

Organized by **NumFOCUS, Inc.** and **14 others**

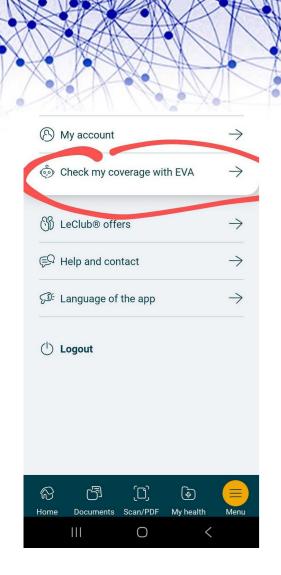


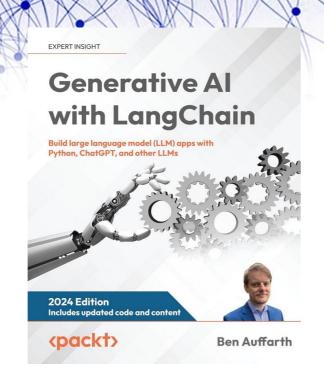














Pydata London



Meetup #58: PyData London 92st Meetup Tuesday, 7th Jan 2025 (#proofofnetwork)

Serge Kozlov, from Conundrum shared insights on deploying optimal control systems in factories. His talk addressed the challenge of maintaining processor

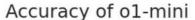


Valuable Lessons Learned on Kaggle's ARC AGI LLM challenge PyDataGlobal 2024-12 talk

- Will agents take over the world or are we living in a world of approximate retrieval? Is AGI nearly here?
- •Can an LLM solve novel problems? See? Reflect?
- You think on a novel problem, meet interesting folk, get your qs answered

https://x.com/yuntiandeng/status/1836114401213989366

Not so good at multiplication



Digits in Number 1 12 13 14 15 16 17 18 19 20 100 100 100 96.2 100 96.2 100 96.2 100 96.2 100 92.3 100 88.5 92.3 96.2 88.5 92.3 80.8 92.3 88.5 100 100 100 100 100 100 100 100 96.2 100 92.3 100 84.6 69.2 76.9 80.8 69.2 65.4 80.8 80.8 46.2 100 100 100 92.3 96.2 92.3 100 100 88.5 84.6 76.9 84.6 73.1 57.7 57.7 65.4 53.8 34.6 42.3 26.9 100 100 100 100 100 100 92.3 92.3 88.5 92.3 84.6 73.1 53.8 42.3 50.0 46.2 46.2 30.8 11.5 26.9 100 100 100 92.3 96.2 92.3 88.5 76.9 76.9 69.2 57.7 38.5 65.4 61.5 34.6 23.1 26.9 30.8 7.7 3.8 96.2|96.2|92.3|100|92.3|84.6|69.2|73.1|61.5|57.7|61.5|46.2|19.2|15.4|15.4|23.1|11.5|0.0|15.4|7.7 96.2 100 92.3 100 80.8 76.9 61.5 73.1 50.0 57.7 46.2 46.2 26.9 11.5 11.5 7.7 3.8 11.5 3.8 7.7 96.2 100 88.5 92.3 84.6 69.2 65.4 61.5 57.7 61.5 34.6 26.9 7.7 3.8 | 0.0 | 3.8 | 0.0 | 3.8 | 0.0 100 100 100 80.8 57.7 57.7 50.0 50.0 53.8 19.2 34.6 19.2 3.8 3.8 3.8 0.0 96.2 96.2 96.2 80.8 73.1 50.0 30.8 34.6 19.2 3.8 0.0 7.7 0.0 3.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 96.2 96.2 84.6 73.1 57.7 42.3 23.1 26.9 11.5 3.8 7.7 7.7 3.8 3.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 34.6 <mark>76.9 73.1 65.4 38.5</mark> 11.5 | 3.8 | 3.8 | 3.8 | 0.0 | 0.0 | 0.0 | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 88.5 <mark>76.9 57.7</mark> 23.1 19.2 7.7 | 7.7 | 3.8 | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8] 0.0 | 0.0 | 0.0 | 0.0 | 0.0 92.3 69.2 53.8 30.8 11.5 19.2 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 <mark>861.5 34.6</mark> 15.4 3.8 | 3.8 | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0

Accuracy of gpt-4o-2024-08-06

3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0



80

- 20

Is OpenAl's o1 a good calculator? We tested it on up to 20x20 multiplication—o1 solves up to 9x9 multiplication with decent accuracy, while gpt-4o struggles beyond 4x4. For context, this task is solvable by a small LM using implicit CoT with stepwise internalization. 1/4

Maybe it lacks short term memory and iterative processing?

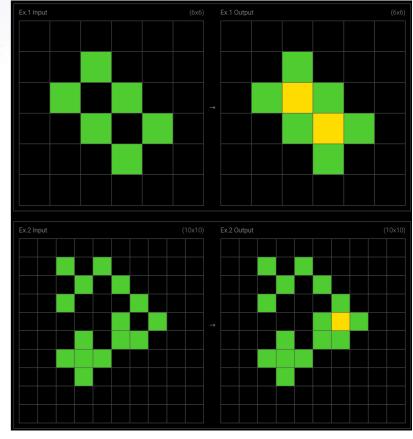
Tokens – representation issues?

Approximate retrieval at work?

Ø ...



- Talk about ARC AGI, try manually
- Get (v)LLM to solve some (maybe)
- •Can an agent(?) reflect and improve?
- → office: prompting, testing, autocode SQL, resilience



Business thoughts

- VCs will want their cash back at some point
- Scaling is expensive can we keep our solution?
- Keep IP in-house
- Maybe we don't need to burn the planet on LLMs

Am I asking the right question?

- Representation
- Prompt
- Process

•What am I missing? What's a big question to ask?

Kick off ...

- Do you have the Gdoc? Do you have the code?
 - Add to the Gdoc with shared notes, branch code
- Tables when is GenAl useful? Share back, start in pairs, decide on someone's example to share 15 mins

ARC-AGI-2: A New Challenge for Frontier AI Reasoning Systems

François Chollet*	Mike Knoop Gregory Kamradt Henry Pinkard	Bryan Landers	•	
	May 20, 2025	Model	ARC-AGI-1	ARC-AGI-2
	11200 20, 2020	o3-mini (High)	34.5%	3.0%
		o3 (Medium)	53.0%	3.0%
		ARChitects (ARC Prize 2024)	56.0%	2.5%
		o4-mini (Medium)	41.8%	2.4%
		Icecuber (ARC Prize 2020)	17.0%	1.6%
		o1-pro (Low)	23.3%	0.9%
		Claude 3.7 (8K)	21.2%	0.9%

- •ARC AGI 1 (few years), now ARC AGI 2025
- •400+ problems, public and private (offline) set
- •ARC AGI 1 "solved" by GPT o3 88% public \$70k (xmas)

ARC AGI 2025 (today)

```
ARC-AGI-2 LEADERBOARD
                           Score
                                   $/Task
AI System
o3 (medium)
                           3.9X
                                   $2.53
                                   $0.55
o3-mini (high)
                           3.9%
ARChitects (2024)
                           2.5X
                                   $0.20
                                   $0.23
o4-mini (Medium)
                           2.4%
                                   $0.08
DeepSeek R1
                           1.3X
Gemini 2.0 Flash
                           1.3X
                                   $0.004
```

Stages

- •Limited GPU, Llama Scout (mm) about right how should we represent the problem? Might vision help?
- We can try DeepSeek, Opus 4 (\$\$\$!)
- Does giving feedback help?
- Could 'agent framework' help? Open q



- Run the code, notes are in the README
- I'll tell you about our stages
- Try to talk to everyone in the room (cheatsheet)

How could it do better?

- Make hypotheses, critique, rank
- Implement, get graded feedback, iterate
- Extract library of useful fns
- Writing code solved?

How did others solve it?

- •GA on human-designed solver components (no LLM)
- Library of human-solved clues, synthetic dataset
- Test-time fine tuning on 3 examples
 - Restricted representation fine tune
- GA to evolve prompts