Papers timeline

Jorge Roldan

March 14, 2025

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1 Disclaimer

Curation of milestone papers was based on and inspired by Hannibal 046/Awesome-LLM: Awesome-LLM: a curated list of Large Language Model

2.1 January

[1] DeepSeek-AI et al., DeepSeek-R1: Incentivizing Reasoning Capability in LLMs via Reinforcement Learning, arXiv:2501.12948 [cs], Jan. 2025. DOI: 10.48550/arXiv. 2501.12948. [Online]. Available: http://arxiv.org/abs/2501.12948 (visited on 03/14/2025).

3.1 December

[1] Qwen et al., Qwen2.5 Technical Report, arXiv:2412.15115 [cs], Jan. 2025. DOI: 10. 48550/arXiv.2412.15115. [Online]. Available: http://arxiv.org/abs/2412.15115 (visited on 03/14/2025).

3.2 September

[1] N. Muennighoff et al., OLMoE: Open Mixture-of-Experts Language Models, arXiv:2409.02060
 [cs], Mar. 2025. DOI: 10.48550/arXiv.2409.02060. [Online]. Available: http://arxiv.org/abs/2409.02060 (visited on 03/14/2025).

3.3 June

[1] G. Penedo et al., The FineWeb Datasets: Decanting the Web for the Finest Text Data at Scale, arXiv:2406.17557 [cs], Oct. 2024. DOI: 10.48550/arXiv.2406.17557. [Online]. Available: http://arxiv.org/abs/2406.17557 (visited on 03/14/2025).

3.4 May

- [1] A. Grattafiori et al., The llama 3 herd of models, 2024. arXiv: 2407.21783 [cs.AI]. [Online]. Available: https://arxiv.org/abs/2407.21783.
- [2] A. Gu and T. Dao, Mamba: Linear-Time Sequence Modeling with Selective State Spaces, arXiv:2312.00752 [cs], May 2024. DOI: 10.48550/arXiv.2312.00752. [Online]. Available: http://arxiv.org/abs/2312.00752 (visited on 03/14/2025).

3.5 February

[1] D. Groeneveld et al., OLMo: Accelerating the Science of Language Models, arXiv:2402.00838
 [cs], Jun. 2024. DOI: 10.48550/arXiv.2402.00838. [Online]. Available: http://arxiv.org/abs/2402.00838 (visited on 03/14/2025).

3.6 January

[1] DeepSeek-AI et al., DeepSeek-V2: A Strong, Economical, and Efficient Mixture-of-Experts Language Model, arXiv:2405.04434 [cs], Jun. 2024. DOI: 10.48550/arXiv. 2405.04434. [Online]. Available: http://arxiv.org/abs/2405.04434 (visited on 03/14/2025).

4.1 December

[1] A. Gu and T. Dao, Mamba: Linear-Time Sequence Modeling with Selective State Spaces, arXiv:2312.00752 [cs], May 2024. DOI: 10.48550/arXiv.2312.00752. [Online]. Available: http://arxiv.org/abs/2312.00752 (visited on 03/14/2025).

4.2 October

[1] A. Q. Jiang *et al.*, *Mistral 7B*, arXiv:2310.06825 [cs], Oct. 2023. DOI: 10.48550/arXiv.2310.06825. [Online]. Available: http://arxiv.org/abs/2310.06825 (visited on 03/14/2025).

4.3 July

[1] H. Touvron et al., Llama 2: Open Foundation and Fine-Tuned Chat Models, arXiv:2307.09288 [cs], Jul. 2023. DOI: 10.48550/arXiv.2307.09288. [Online]. Available: http://arxiv.org/abs/2307.09288 (visited on 03/14/2025).

4.4 May

- [1] Z. Sun et al., Principle-Driven Self-Alignment of Language Models from Scratch with Minimal Human Supervision, arXiv:2305.03047 [cs], Dec. 2023. DOI: 10.48550/arXiv.2305.03047. [Online]. Available: http://arxiv.org/abs/2305.03047 (visited on 03/14/2025).
- [2] R. Anil et al., PaLM 2 Technical Report, arXiv:2305.10403 [cs], Sep. 2023. DOI: 10.48550/arXiv.2305.10403. [Online]. Available: http://arxiv.org/abs/2305.10403 (visited on 03/14/2025).
- [3] B. Peng et al., RWKV: Reinventing RNNs for the Transformer Era, arXiv:2305.13048 [cs], Dec. 2023. DOI: 10.48550/arXiv.2305.13048. [Online]. Available: http://arxiv.org/abs/2305.13048 (visited on 03/14/2025).
- [4] R. Rafailov, A. Sharma, E. Mitchell, S. Ermon, C. D. Manning, and C. Finn, *Direct Preference Optimization: Your Language Model is Secretly a Reward Model*, arXiv:2305.18290 [cs], Jul. 2024. DOI: 10.48550/arXiv.2305.18290. [Online]. Available: http://arxiv.org/abs/2305.18290 (visited on 03/14/2025).
- [5] S. Yao et al., Tree of Thoughts: Deliberate Problem Solving with Large Language Models, arXiv:2305.10601 [cs], Dec. 2023. DOI: 10.48550/arXiv.2305.10601. [Online]. Available: http://arxiv.org/abs/2305.10601 (visited on 03/14/2025).

4.5 April

- [1] [2304.01373] Pythia: A Suite for Analyzing Large Language Models Across Training and Scaling. [Online]. Available: https://arxiv.org/abs/2304.01373 (visited on 03/14/2025).
- [2] H. Liu, C. Li, Q. Wu, and Y. J. Lee, *Visual Instruction Tuning*, arXiv:2304.08485 [cs], Dec. 2023. DOI: 10.48550/arXiv.2304.08485. [Online]. Available: http://arxiv.org/abs/2304.08485 (visited on 03/14/2025).

4.6 March

- [1] S. Longpre et al., The Flan Collection: Designing Data and Methods for Effective Instruction Tuning, arXiv:2301.13688 [cs], Feb. 2023. DOI: 10.48550/arXiv.2301. 13688. [Online]. Available: http://arxiv.org/abs/2301.13688 (visited on 03/14/2025).
- [2] H. Touvron et al., Llama: Open and efficient foundation language models, 2023. arXiv: 2302.13971 [cs.CL]. [Online]. Available: https://arxiv.org/abs/2302.13971.
- [3] S. Huang et al., Language Is Not All You Need: Aligning Perception with Language Models, arXiv:2302.14045 [cs], Mar. 2023. DOI: 10.48550/arXiv.2302.14045. [Online]. Available: http://arxiv.org/abs/2302.14045 (visited on 03/14/2025).
- [4] A. Orvieto et al., Resurrecting recurrent neural networks for long sequences, 2023. arXiv: 2303.06349 [cs.LG]. [Online]. Available: https://arxiv.org/abs/2303.06349.
- [5] PaLM-E: An Embodied Multimodal Language Model. [Online]. Available: https://palm-e.github.io/ (visited on 03/14/2025).
- [6] GPT-4, en-US, Jan. 2024. [Online]. Available: https://openai.com/index/gpt-4-research/ (visited on 03/14/2025).

4.7 February

- [1] S. Longpre et al., The Flan Collection: Designing Data and Methods for Effective Instruction Tuning, arXiv:2301.13688 [cs], Feb. 2023. DOI: 10.48550/arXiv.2301. 13688. [Online]. Available: http://arxiv.org/abs/2301.13688 (visited on 03/14/2025).
- [2] H. Touvron et al., Llama: Open and efficient foundation language models, 2023. arXiv: 2302.13971 [cs.CL]. [Online]. Available: https://arxiv.org/abs/2302.13971.

5.1 December

[1] S. Iyer et al., OPT-IML: Scaling Language Model Instruction Meta Learning through the Lens of Generalization, arXiv:2212.12017 [cs], Jan. 2023. DOI: 10.48550/arXiv. 2212.12017. [Online]. Available: http://arxiv.org/abs/2212.12017 (visited on 03/14/2025).

5.2 November

- P. Liang et al., Holistic Evaluation of Language Models, arXiv:2211.09110 [cs], Oct. 2023. DOI: 10.48550/arXiv.2211.09110. [Online]. Available: http://arxiv.org/abs/2211.09110 (visited on 03/14/2025).
- [2] B. Workshop et al., BLOOM: A 176B-Parameter Open-Access Multilingual Language Model, arXiv:2211.05100 [cs], Jun. 2023. DOI: 10.48550/arXiv.2211.05100. [Online]. Available: http://arxiv.org/abs/2211.05100 (visited on 03/14/2025).
- [3] R. Taylor et al., Galactica: A Large Language Model for Science, arXiv:2211.09085 [cs], Nov. 2022. DOI: 10.48550/arXiv.2211.09085. [Online]. Available: http://arxiv.org/abs/2211.09085 (visited on 03/14/2025).

5.3 October

- [1] H. W. Chung et al., Scaling Instruction-Finetuned Language Models, arXiv:2210.11416 [cs], Dec. 2022. DOI: 10.48550/arXiv.2210.11416. [Online]. Available: http://arxiv.org/abs/2210.11416 (visited on 03/14/2025).
- A. Zeng et al., GLM-130B: An Open Bilingual Pre-trained Model, arXiv:2210.02414
 [cs], Oct. 2023. DOI: 10.48550/arXiv.2210.02414. [Online]. Available: http://arxiv.org/abs/2210.02414 (visited on 03/14/2025).

5.4 September

[1] A. Glaese et al., Improving alignment of dialogue agents via targeted human judgements, arXiv:2209.14375 [cs], Sep. 2022. DOI: 10.48550/arXiv.2209.14375. [Online]. Available: http://arxiv.org/abs/2209.14375 (visited on 03/14/2025).

5.5 June

- [1] J. Wei et al., "Emergent Abilities of Large Language Models," en,
- [2] Y. Hao et al., Language models are general-purpose interfaces, 2022. arXiv: 2206. 06336 [cs.CL]. [Online]. Available: https://arxiv.org/abs/2206.06336.
- [3] Google/BIG-bench, original-date: 2021-01-15T23:28:20Z, Mar. 2025. [Online]. Available: https://github.com/google/BIG-bench (visited on 03/14/2025).

5.6 May

- [1] S. Zhang et al., Opt: Open pre-trained transformer language models, 2022. arXiv: 2205.01068 [cs.CL]. [Online]. Available: https://arxiv.org/abs/2205.01068.
- Y. Tay et al., Unifying Language Learning Paradigms, arXiv:2205.05131 [cs] version:
 May 2022. DOI: 10.48550/arXiv.2205.05131. [Online]. Available: http://arxiv.org/abs/2205.05131 (visited on 03/14/2025).

5.7 April

- [1] A. Chowdhery et al., Palm: Scaling language modeling with pathways, 2022. arXiv: 2204.02311 [cs.CL]. [Online]. Available: https://arxiv.org/abs/2204.02311.
- [2] Y. Wu, Z. Sun, S. Li, S. Welleck, and Y. Yang, Inference Scaling Laws: An Empirical Analysis of Compute-Optimal Inference for Problem-Solving with Language Models, arXiv:2408.00724 [cs], Mar. 2025. DOI: 10.48550/arXiv.2408.00724. [Online]. Available: http://arxiv.org/abs/2408.00724 (visited on 03/14/2025).

5.8 March

[1] L. Ouyang et al., Training language models to follow instructions with human feed-back, arXiv:2203.02155 [cs], Mar. 2022. DOI: 10.48550/arXiv.2203.02155. [Online]. Available: http://arxiv.org/abs/2203.02155 (visited on 03/14/2025).

5.9 January

- [1] J. Wei et al., Chain-of-Thought Prompting Elicits Reasoning in Large Language Models, arXiv:2201.11903 [cs], Jan. 2023. DOI: 10.48550/arXiv.2201.11903. [Online]. Available: http://arxiv.org/abs/2201.11903 (visited on 03/14/2025).
- [2] R. Thoppilan et al., LaMDA: Language Models for Dialog Applications, arXiv:2201.08239 [cs], Feb. 2022. DOI: 10.48550/arXiv.2201.08239. [Online]. Available: http://arxiv.org/abs/2201.08239 (visited on 03/14/2025).
- [3] A. Lewkowycz et al., Solving Quantitative Reasoning Problems with Language Models, arXiv:2206.14858 [cs], Jul. 2022. DOI: 10.48550/arXiv.2206.14858. [Online]. Available: http://arxiv.org/abs/2206.14858 (visited on 03/14/2025).
- [4] S. Smith et al., Using DeepSpeed and Megatron to Train Megatron-Turing NLG 530B, A Large-Scale Generative Language Model, arXiv:2201.11990 [cs], Feb. 2022. DOI: 10.48550/arXiv.2201.11990. [Online]. Available: http://arxiv.org/abs/2201.11990 (visited on 03/14/2025).

6.1 December

- [1] N. Du et al., GLaM: Efficient Scaling of Language Models with Mixture-of-Experts, arXiv:2112.06905 [cs], Aug. 2022. DOI: 10.48550/arXiv.2112.06905. [Online]. Available: http://arxiv.org/abs/2112.06905 (visited on 03/14/2025).
- [2] R. Nakano *et al.*, "WebGPT: Browser-assisted question-answering with human feedback," *ArXiv*, Dec. 2021. [Online]. Available: https://www.semanticscholar.org/paper/WebGPT%3A-Browser-assisted-question-answering-with-Nakano-Hilton/2f3efe44083af91cef562c1a3451eee2f8601d22 (visited on 03/14/2025).
- [3] S. Borgeaud et al., Improving language models by retrieving from trillions of tokens, arXiv:2112.04426 [cs], Feb. 2022. DOI: 10.48550/arXiv.2112.04426. [Online]. Available: http://arxiv.org/abs/2112.04426 (visited on 03/14/2025).
- [4] J. W. Rae et al., Scaling Language Models: Methods, Analysis & Insights from Training Gopher, arXiv:2112.11446 [cs], Jan. 2022. DOI: 10.48550/arXiv.2112.11446. [Online]. Available: http://arxiv.org/abs/2112.11446 (visited on 03/14/2025).

6.2 October

[1] V. Sanh et al., Multitask Prompted Training Enables Zero-Shot Task Generalization, arXiv:2110.08207 [cs], Mar. 2022. DOI: 10.48550/arXiv.2110.08207. [Online]. Available: http://arxiv.org/abs/2110.08207 (visited on 03/14/2025).

6.3 September

[1] J. Wei et al., "Finetuned Language Models are Zero-Shot Learners," en, Oct. 2021. [Online]. Available: https://openreview.net/forum?id=gEZrGCozdqR (visited on 03/14/2025).

6.4 August

- [1] M. Chen et al., Evaluating Large Language Models Trained on Code, arXiv:2107.03374 [cs], Jul. 2021. DOI: 10.48550/arXiv.2107.03374. [Online]. Available: http://arxiv.org/abs/2107.03374 (visited on 03/14/2025).
- [2] R. Bommasani et al., On the Opportunities and Risks of Foundation Models, arXiv:2108.07258
 [cs], Jul. 2022. DOI: 10.48550/arXiv.2108.07258. [Online]. Available: http://arxiv.org/abs/2108.07258 (visited on 03/14/2025).

6.5 January

[1] W. Fedus, B. Zoph, and N. Shazeer, Switch Transformers: Scaling to Trillion Parameter Models with Simple and Efficient Sparsity, arXiv:2101.03961 [cs], Jun. 2022. DOI: 10.48550/arXiv.2101.03961. [Online]. Available: http://arxiv.org/abs/2101.03961 (visited on 03/14/2025).

7.1 May

[1] T. Brown et al., "Language Models are Few-Shot Learners," in Advances in Neural Information Processing Systems, vol. 33, Curran Associates, Inc., 2020, pp. 1877—1901. [Online]. Available: https://papers.nips.cc/paper/2020/hash/1457c0d6bfcb4967418bf Abstract.html (visited on 03/14/2025).

7.2 January

- [1] C. Raffel et al., "Exploring the Limits of Transfer Learning with a Unified Text-to-Text Transformer," Journal of Machine Learning Research, vol. 21, no. 140, pp. 1-67, 2020, ISSN: 1533-7928. [Online]. Available: http://jmlr.org/papers/v21/20-074.html (visited on 03/14/2025).
- [2] J. Kaplan et al., Scaling laws for neural language models, 2020. arXiv: 2001.08361 [cs.LG]. [Online]. Available: https://arxiv.org/abs/2001.08361.

8.1 October

- [1] C. Raffel *et al.*, "Exploring the Limits of Transfer Learning with a Unified Text-to-Text Transformer," *Journal of Machine Learning Research*, vol. 21, no. 140, pp. 1–67, 2020, ISSN: 1533-7928. [Online]. Available: http://jmlr.org/papers/v21/20-074.html (visited on 03/14/2025).
- [2] S. Rajbhandari, J. Rasley, O. Ruwase, and Y. He, ZeRO: Memory Optimizations Toward Training Trillion Parameter Models, arXiv:1910.02054 [cs], May 2020. DOI: 10.48550/arXiv.1910.02054. [Online]. Available: http://arxiv.org/abs/1910. 02054 (visited on 03/14/2025).

8.2 September

[1] M. Shoeybi, M. Patwary, R. Puri, P. LeGresley, J. Casper, and B. Catanzaro, Megatron-LM: Training Multi-Billion Parameter Language Models Using Model Parallelism, arXiv:1909.08053 [cs], Mar. 2020. DOI: 10.48550/arXiv.1909.08053. [Online]. Available: http://arxiv.org/abs/1909.08053 (visited on 03/14/2025).

8.3 February

[1] A. Radford, J. Wu, R. Child, D. Luan, D. Amodei, and I. Sutskever, "Language models are unsupervised multitask learners," 2019. [Online]. Available: https://api.semanticscholar.org/CorpusID:160025533.

9.1 October

[1] J. Devlin, M.-W. Chang, K. Lee, and K. Toutanova, Bert: Pre-training of deep bidirectional transformers for language understanding, 2019. arXiv: 1810.04805 [cs.CL]. [Online]. Available: https://arxiv.org/abs/1810.04805.

9.2 June

[1] A. Radford, K. Narasimhan, T. Salimans, and I. Sutskever, "Improving Language Understanding by Generative Pre-Training," en,

10.1 June

[1] A. Vaswani et al., Attention is all you need, 2023. arXiv: 1706.03762 [cs.CL]. [Online]. Available: https://arxiv.org/abs/1706.03762.