Noah Syrkis

December 3, 2024

1 | Since last time

2 | Other relevant papers

1 | Since last time

- ▶ X. Shao, W. Jiang, F. Zuo, and M. Liu [1] llm that plays StarCraft II.
- ▶ Y. Zhou et al. [2] presents a survey paper on vision-language geo-foundation models (VLGFMs). Given that poor AI performance in lllll, VLGFMs might be what we need to make that part better.
- ▶ G. Xu, P. Jin, H. Li, Y. Song, L. Sun, and L. Yuan [3] presents LLaVA-CoT, a vision-model that does reasoning. Could be intersting for us.
- ▶ D. Valevski, Y. Leviathan, M. Arar, and S. Fruchter [4] takes the world models paper to the next level, using diffusion as a real time game engine.
- ▶ A. Ruoss et al. [5] does chess without search trees, using direct observation to action.

1 | Since last time

- ▶ S. Han, Q. Zhang, Y. Yao, W. Jin, Z. Xu, and C. He [6] list challenges and open problems in multi-agent RL.
- ▶ B. Pan et al. [7] does multi-agent coordination through LLM.
- ▶ T. Guo et al. [8] survey of multi-agent llm.
- ▶ S. Hu et al. [9] survey of llm based game agents.
- ▶ Y. Yim et al. [10] theory of mind in llms playing a game with imperfect information.
- ▶ Y. Zhang et al. [11] shows pretty cool example of forced coordination (two llm's have to learn to cook together, or something like that).
- ▶ Y. Zhang et al. [12] Survey oif strategic reasoning in LLM.

1 | Since last time

- ▶ K. Wang, X. Zhang, H. Liu, S. Han, H. Ma, and T. Hu [13] long range causal reasoning. Causal relationship enhancment, and individual treatment effect. seems like a good recepie for "smater" AI.
- ▶ M. G. Mecattaf, B. Slater, M. Těsić, J. Prunty, K. Voudouris, and L. G. Cheke [14] a little less conversation, a little more action (common sense in 3d space).

2 | Other relevant papers

- ▶ F. Chollet [15] presents the Abstraction and Reasoning Corpus (ARC) dataset, which has served as a benchmark for intelligent reasoning.
- ▶ 智能科学学院国防科技大学 and 长沙湖南 [16] presents a survey paper, referencing a bunch of works that are *a*) relevant for us, and *b*) might not be "trending" in our part of the AI community.
- J.-P. Rivera, G. Mukobi, A. Reuel, M. Lamparth, C. Smith, and J. Schneider [17] write about the risk of using LLLM in military and diplomatic decision making. Not super relevant for us, but it's a good read. They design a novel wargame to assess the

2 | Other relevant papers

risk of using LLMs in military and diplomatic decision making, exploring exalatory behaviors.

▶ D. Silver et al. [18], D. Silver et al. [19], D. Silver et al. [20], E. Dinan et al. [21], O. Vinyals et al. [22], are obviously relevant.

- [1] X. Shao, W. Jiang, F. Zuo, and M. Liu, "SwarmBrain: Embodied Agent for Real-Time Strategy Game StarCraft II via Large Language Models," no. arXiv:2401.17749. arXiv, Jan. 2024. doi: 10.48550/arXiv.2401.17749.
- [2] Y. Zhou et al., "Towards Vision-Language Geo-Foundation Model: A Survey," no. arXiv:2406.09385. arXiv, Jun. 2024.
- [3] G. Xu, P. Jin, H. Li, Y. Song, L. Sun, and L. Yuan, "LLaVA-CoT: Let Vision Language Models Reason Step-by-Step," no. arXiv:2411.10440. arXiv, Nov. 2024. doi: 10.48550/arXiv.2411.10440.

- [4] D. Valevski, Y. Leviathan, M. Arar, and S. Fruchter, "Diffusion Models Are Real-Time Game Engines," no. arXiv:2408.14837. arXiv, Aug. 2024. doi: 10.48550/arXiv.2408.14837.
- [5] A. Ruoss et al., "Grandmaster-Level Chess Without Search," no. arXiv:2402.04494. Feb. 2024. doi: 10.48550/arXiv.2402.04494.
- [6] S. Han, Q. Zhang, Y. Yao, W. Jin, Z. Xu, and C. He, "LLM Multi-Agent Systems: Challenges and Open Problems," 2024, doi: 10.48550/ARXIV.2402.03578.

- [7] B. Pan et al., "AgentCoord: Visually Exploring Coordination Strategy for LLM-based Multi-Agent Collaboration," no. arXiv:2404.11943. arXiv, Apr. 2024. doi: 10.48550/arXiv.2404.11943.
- [8] T. Guo et al., "Large Language Model Based Multi-Agents: A Survey of Progress and Challenges," no. arXiv:2402.01680. arXiv, Apr. 2024. doi: 10.48550/arXiv.2402.01680.
- [9] S. Hu et al., "A Survey on Large Language Model-Based Game Agents," no. arXiv:2404.02039. arXiv, Apr. 2024. doi: 10.48550/arXiv.2404.02039.

- [10] Y. Yim et al., "Evaluating and Enhancing LLMs Agent Based on Theory of Mind in Guandan: A Multi-Player Cooperative Game under Imperfect Information," no. arXiv:2408.02559. arXiv, Aug. 2024. doi: 10.48550/arXiv.2408.02559.
- [11] Y. Zhang et al., "Towards Efficient LLM Grounding for Embodied Multi-Agent Collaboration," no. arXiv:2405.14314. arXiv, May 2024. doi: 10.48550/arXiv.2405.14314.
- [12] Y. Zhang et al., "LLM as a Mastermind: A Survey of Strategic Reasoning with Large Language Models," 2024, doi: 10.48550/ARXIV.2404.01230.

- [13] K. Wang, X. Zhang, H. Liu, S. Han, H. Ma, and T. Hu, "CreDes: Causal Reasoning Enhancement and Dual-End Searching for Solving Long-Range Reasoning Problems Using LLMs," 2024, doi: 10.48550/ARXIV.2410.01696.
- [14] M. G. Mecattaf, B. Slater, M. Těsić, J. Prunty, K. Voudouris, and L. G. Cheke, "A Little Less Conversation, a Little More Action, Please: Investigating the Physical Common-Sense of LLMs in a 3D Embodied Environment," 2024, doi: 10.48550/ ARXIV.2410.23242.
- [15] F. Chollet, "On the Measure of Intelligence," no. arXiv:1911.01547. arXiv, Nov. 2019. doi: 10.48550/arXiv.1911.01547.

- [16] 智能科学学院国防科技大学 and 长沙湖南,"智能推演综述:博弈论视角下的战术战役兵棋与战略博弈," vol. 35, no. 9, 2023.
- [17] J.-P. Rivera, G. Mukobi, A. Reuel, M. Lamparth, C. Smith, and J. Schneider, "Escalation Risks from Language Models in Military and Diplomatic Decision-Making," no. arXiv:2401.03408. Jan. 2024. doi: 10.48550/arXiv.2401.03408.
- [18] D. Silver et al., "Mastering the Game of Go with Deep Neural Networks and Tree Search," Nature 2016 529:7587, vol. 529, no. 7587, pp. 484–489, Jan. 2016, doi: 10.1038/NATURE16961.

- [19] D. Silver et al., "Mastering the Game of Go without Human Knowledge," Nature, vol. 550, no. 7676, pp. 354–359, Oct. 2017, doi: 10.1038/nature24270.
- [20] D. Silver et al., "A General Reinforcement Learning Algorithm That Masters Chess, Shogi, and Go through Self-Play," Science, vol. 362, no. 6419, pp. 1140–1144, Dec. 2018, doi: 10.1126/science.aar6404.
- [21] E. Dinan *et al.*, "Human-Level Play in the Game of \emph{Diplomacy} by Combining Language Models with Strategic Reasoning," *Science*, vol. 378, no. 6624, pp. 1067–1074, Dec. 2022, doi: 10.1126/science.ade9097.

[22] O. Vinyals et al., "Grandmaster Level in StarCraft II Using Multi-Agent Reinforcement Learning," Nature, vol. 575, no. 7782, pp. 350–354, Nov. 2019, doi: 10.1038/s41586-019-1724-z.