AI News #20

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Here's what caught our eye last week.

Research

Llama 3

- Meta released LLama 3.
- 8k context length.
- Outperforms Gemma and Mistral on MMLU, HumanEval and other benchmarks.

Video2Game: Real-time, Interactive, Realistic and Browser-

Compatible Environment from a Single Video

- An approach that automatically converts videos of real-world scenes into realistic, interactive game environments.
- Paper

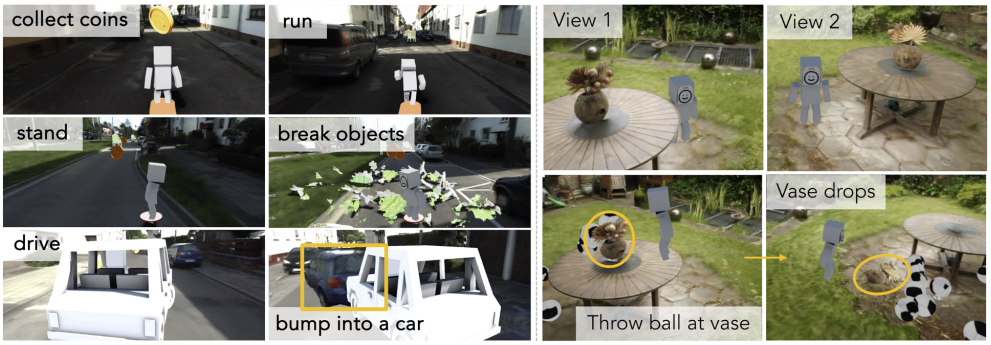
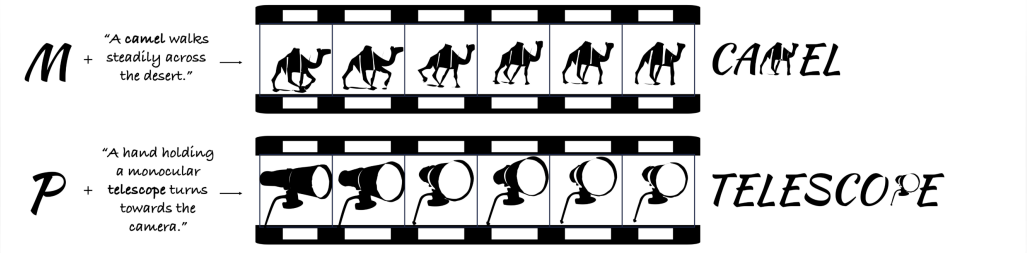


Figure 1. **Video2Game** takes an input video of an arbitrary scene and automatically transforms it into a real-time, interactive, realistic and browser-compatible environment. The users can freely explore the environment and interact with the objects in the scene.

Dynamic Typography: Bringing Words to Life

- Given a letter and a text description of an animation, this method transforms the letter into the animation. Check out the example below:
- Paper



BLINK: Multimodal Large Language Models Can See but Not Perceive

- A new benchmark for multimodal LLMs that focuses on core visual perception abilities that other benchmarks don't cover.
- Most tasks in this benchmark can be solved by humans in just a "blink", but current multimodal LLMs struggle - while humans get 95.70% accuracy on average, GPT-4V and Gemini only achieve accuracies of 51.26% and 45.72%.
- Paper

Learn Your Reference Model for Real Good Alignment

- Introduces a new Direct Preference Optimization (DPO) algorithm called Trust Region DPO (TR-DPO), which updates the reference policy (commonly the Supervised Fine Tuning model) during training.
- Outperforms DPO by up to 19%.
- Paper

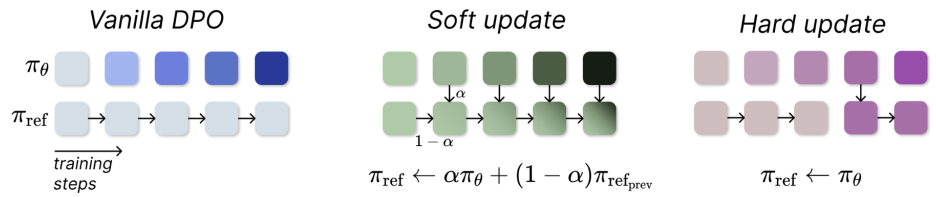


Figure 1: Schematic illustration of the proposed method. While vanilla DPO (left) uses a fixed reference policy during the training, for TR-DPO we update it either with soft-update (center) for which parameters of π_θ are merged into parameters of π_{ref} with some weight α, or with hard-update (right) for which we copy parameters of π_{ref} into reference policy once in a pre-determined number of training steps. See Section 3 for more details.

Megalodon: Efficient LLM Pretraining and Inference with Unlimited Context Length

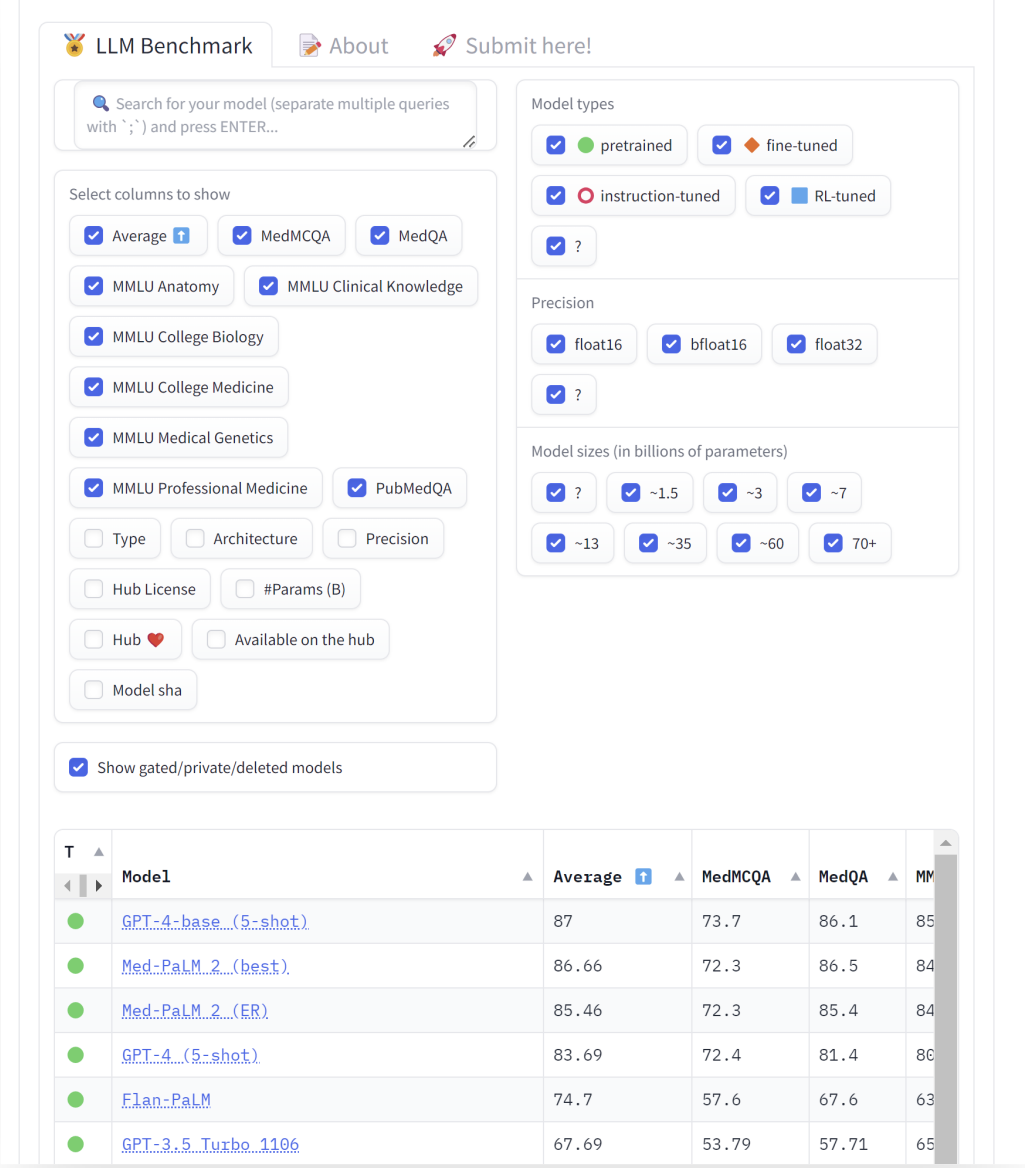
- Introduces Megalodon, a neural architecture for efficient sequence modeling with unlimited context length.
- Based on Mega.

- Comparable to Llama-2B and 13B.
- Code
- Paper

Leaderboards

HF medical leaderboard

- LLMs have shown promise in healthcare settings, such as medical Q/A. But the stakes are much higher when using an LLM based tool in a clinical setting - mistakes can be harmful or fatal.
- The benchmark covers general medical knowledge, clinical knowledge, anatomy, genetics, and more, to help bridge the gap between LLM potential for medical use cases and proper evaluation.
- Backend uses Eleuther AI Language Model Evaluation Harness.
- Read more



HF coding leaderboard

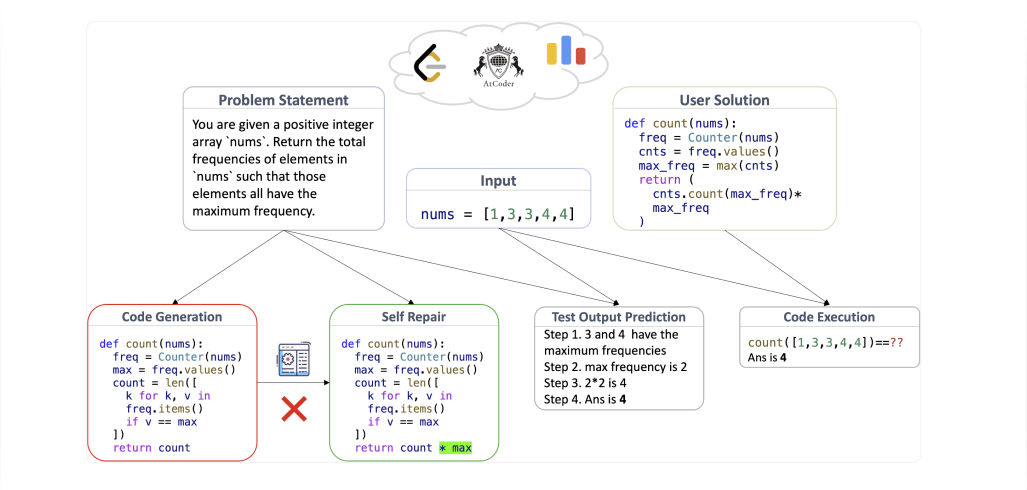
- A new benchmark for assessing LLM code generation capabilities
- Contains a standard code generation task, as well as more difficult tasks for more robust, next-generation AI assistant capability testing:

1. Code Generation: Standard task to generate a

correct solution to a natural language description.

2. Self Repair. Generate a code fix given error feedback.
3. Code Execution: Predict the output of a program on a given input.
4. Test Output Prediction: Same as Code Execution, but the program is not actually implemented, only described.

Read more here.



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