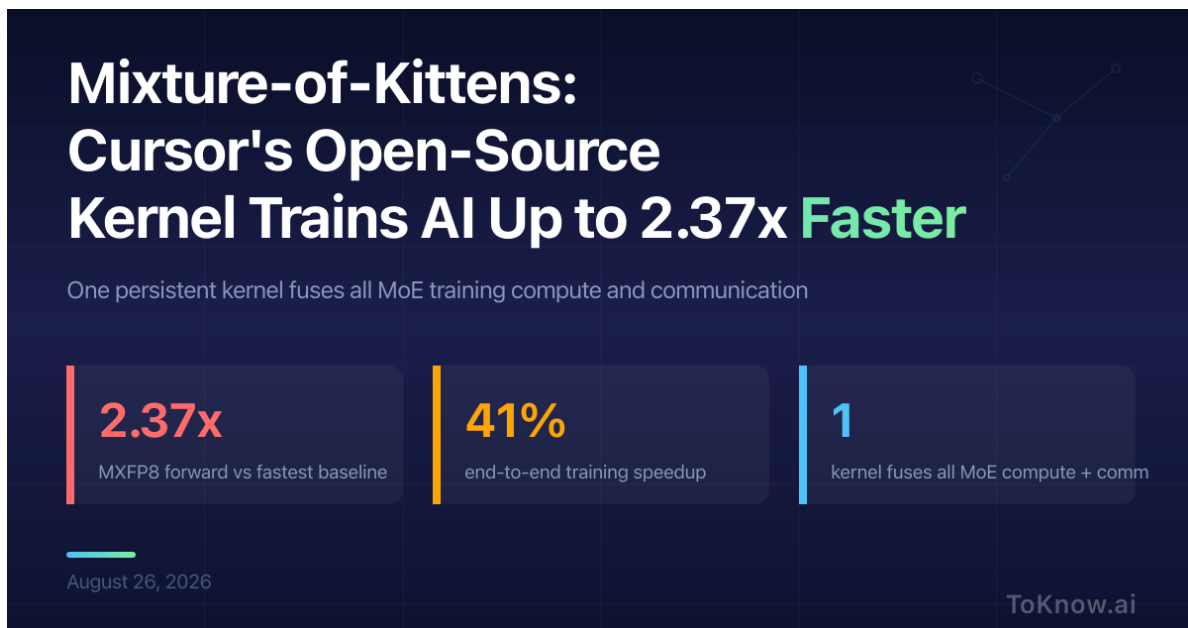


Mixture-of-Kittens: Cursor's Open-Source Kernel Trains AI Up to 2.37x Faster

Kabui, Charles

2026-08-26

[Read at ToKnow.ai](#)



Mixture-of-Kittens (MoK) is an open-source training kernel from Cursor Research for mixture-of-experts (MoE) models, the design that spreads a model across many specialized sub-networks, called experts, and routes each input to a few of them. When experts live on different GPUs, tokens get shuttled between GPUs through many small kernels, and that overhead can eat more than half of end-to-end training time. MoK replaces that pipeline

with one persistent kernel that fuses all the computation and inter-GPU communication and removes CPU-GPU synchronization. Open-sourced under Apache-2.0 on [August 4](#), it needs NVIDIA Blackwell NVL72 racks (CUDA 13, PyTorch 2.10) and already powers training of Cursor’s Composer coding model. It is up to 2.37x faster than the fastest public baseline in 8-bit (MXFP8) precision, and 41% faster end to end on Cursor’s 512-GPU production stack.

MoE is the design behind many of today’s largest models: DeepSeek, [GLM](#), Qwen, and Kimi all use the same layer pattern MoK optimizes. Because it is open source, labs without a kernel team can skip months of work. And the economics are direct: a 41% throughput gain means a three-week training run finishes in about two, on the same rented hardware, with no quality trade-off.

Cursor says AI coding agents helped its small team write the megakernel from scratch, work that a year ago needed a purpose-built framework. If agents can now do kernel engineering, the next round of training-cost wins may come as much from software as from new chips.

Read More: [TurboFieldfare](#), [Deltafin](#), and [WASTE](#): three ways to run MoE models from disk

Sources:

- [Mixture-of-Kittens](#): our open-source MoE megakernel for NVL72s (Cursor)
- [Mixture-of-Kittens repository](#) (GitHub)
- [Composer 2 Technical Report](#) (arXiv)
- [Introducing Composer 2](#) (Cursor)

Disclaimer: For information only. Accuracy or completeness not guaranteed. Illegal use prohibited. Not professional advice or solicitation. **Read more:** [/terms-of-service](#)