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Sumanth P's Post



Sumanth P

Machine Learning Developer Advocate | LLMs, AI Agents & RAG | Shipping Open Source AI ...
1d · Edited



Fine-tuning massive LLMs used to be painfully slow, but not anymore!

4 open source libraries that accelerate fine-tuning of Large Language Models

1. Unsloth AI

- Fine-tune models like Qwen3, Llama 4, and Gemma 3 up to 2× faster with 70% less VRAM
- Uses optimized Triton kernels and manual backprop for exact accuracy
- Supports low-resource setups and runs on consumer GPUs or even Colab/Kaggle with ~3 GB VRAM

GitHub repo → <https://lnkd.in/g4MfgVh3>

2. LLaMA Factory

- Fine-tune over 100 models (LLaMA, Mistral, Gemma, etc.) using a simple CLI or WebUI
- Supports LoRA, QLoRA, full or frozen fine-tuning across 2–8-bit precision
- Includes built-in dataset templates, training monitors, and model export options

GitHub repo → <https://lnkd.in/gTpaFzY2>

3. DeepSpeed

- Built for large-scale distributed fine-tuning with ZeRO and FSDP
- Optimized for multi-GPU and multi-node training with advanced memory management
- Trusted in production environments for scalable LLM training

GitHub repo → <https://lnkd.in/gUpE66zw>

4. Axolotl

- Yaml-based setup for fine-tuning, LoRA/QLoRA, DPO, GRPO, and multimodal workflows
- Includes kernel optimizations for memory-efficient training
- Actively maintained with support for Hugging Face, model export, and inference

GitHub repo → <https://lnkd.in/giRYvhsc>

Fine-tuning massive LLMs used to be painfully slow, but not anymore.

If there's any other library you think should be in the list, drop them in the comments!

If you're into ML, LLMs, RAG, and AI Agents, I share AI apps and tutorials every week. Subscribe to AI Engineering (it's free): <https://lnkd.in/gfkzKZYk>

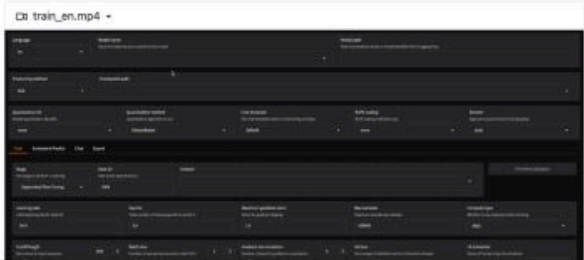
Easily fine-tune 100+ large language models with zero-code **CLI** and **Web UI**

STAVAN TREWANI

#1 Repository Of The Day

Fine-tuning a large language model can be easy as...

CLI train_en.mp4



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type package


downloads 1.1M

build check-status

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stars 1.2K

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Latest News

DeepSpeed empowers ChatGPT-like model training with a single click, offering 15x speedup over SOTA RLHF systems with unprecedented cost reduction at all scales: [learn how](#).


- [2025/06] Arctic Long Sequence Training (ALST) with DeepSpeed: Scalable And Efficient Training For Multi-Million Token Sequences
- [2025/04] DeepCompile: Unlocking Compiler Optimization for Distributed Training
- [2025/03] DeepSpeed-AutoTP: Automatic Tensor Parallel Training of Mixture of Experts models

Finetune for Free

Notebooks are beginner friendly. Read our [guide](#). Add your dataset, click "Run All", and export your finetuned model to GGUF, Ollama, vLLM or Hugging Face.

Unsloth supports	Free Notebooks	Performance	Memory use
Gemma 3n (4B)	Start for free	1.5x faster	50% less
Qwen3 (14B)	Start for free	2x faster	70% less
Qwen3 (4B): GRPO	Start for free	2x faster	80% less
Gemma 3 (4B)	Start for free	1.6x faster	60% less
Llama 3.2 (3B)	Start for free	2x faster	70% less
Phi-4 (14B)	Start for free	2x faster	70% less
Llama 3.2 Vision (11B)	Start for free	2x faster	50% less
Llama 3.1 (8B)	Start for free	2x faster	70% less
Mistral v0.3 (7B)	Start for free	2.2x faster	75% less
Orpheus-TTS (3B)	Start for free	1.5x faster	50% less

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license Apache-2.0

tests passing

coverage 100%

release v0.11.0 (prod)

contributors 100+

stars 3.3K

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tests nightly against upstream main

testing

docker-multi-gpu-tests: biweekly

testing

Latest Updates

- 2025/06: Magistral with mistral-common tokenizer support has been added to Axolotl. See [examples](#) to start training your own Magistral models with Axolotl!
- 2025/05: Quantization Aware Training (QAT) support has been added to Axolotl. Explore the [docs](#) to learn more!
- 2025/04: Llama 4 support has been added in Axolotl. See [examples](#) to start training your own Llama 4 models with Axolotl's linearized version!

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Sai Charan

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Unsloth AI is my go to for Fine-Tuning LLMs, Thanks for sharing this list!

Like · Reply | 6 Reactions

Khushboo Alvi

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Senior Data Scientist - AI | IIT Delhi | AI Agents | Generative AI | LLM | NLP | Deep Learning | Machine ...

Thoughtful post, thanks Sumanth

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Victor Fernandez

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AUTOMATIZATION SERVICES FOR THE NEW ECONOMY

Thanks for sharing, Sumanth

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Muhammad Khizer Zakir

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Software Engineer | Machine Learning Engineer | Data Science

https://www.linkedin.com/posts/sumanth077_fine-tuning-massive-llms-used-to-be-painfully-activity-7349701022719623168-zKAY/?utm_source=share&utm_m... 2/4

Thanks that really helpful and I'll try to utilize it in my projects.

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Pallavi A.

1d ⋮

AI | Software Engineering [Let's grow together 🙌]

Helpful insights, Sumanth

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Adam Fard

1d ⋮

Founder of UX Pilot AI

When open source makes fine-tuning feel like a weekend side project, you know we're leveling up.

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Shantanu Ladhwe

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AI/ML Engineering Leader | Helping you learn AI/ML the right way | AI Agents, RAG, NLP, Recommen...

I am actually happy to have so many options out there - but will only do fine-tuning when its actually required!

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Sai Praveen V.

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Senior Data Scientist @ Data Semantics | Gen AI expert | Data Wizard ✨ | Cloud solution expert | 25k...

Thanks for sharing, Sumanth

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Grzegorz Gwiazdowski

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The Generalist, Applied AI, Angel Investor

Thanks for sharing, Sumanth. Please take a look [AICONIC](#).

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Soham Sarkar

13h ⋮

Business Analytics & Data Science Student at Bengal Institute of Business Studies, Kolkata | AI / ML i...

Thanks for sharing, Sumanth

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