

# LLM Engineering

## MASTER AI & LARGE LANGUAGE MODELS



A stylized illustration of a man with a backpack walking through a rugged landscape with mountains and a lake.

## PROGRESS

# Bring on the Training

### What you can now do

- Generate text and code with Frontier Models and Open Source models using APIs and HuggingFace, including tools, assistants and RAG
- Follow a 5 step strategy to solve problems, including dataset curation, making a baseline model, and fine-tuning a Frontier model
- Explain QLoRA for fine-tuning open-source models including defining target modules, r and alpha, select and evaluate a base open source model

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### By next time you will be able to:

- Outline the major hyper-parameters used during training
- Set up an Supervised Fine Tuning Trainer
- Kick off training your own proprietary LLM!

# Five Important Hyper-parameters for QLoRA...



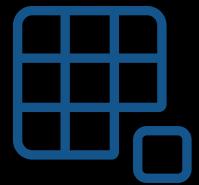
Target Modules



r



Alpha

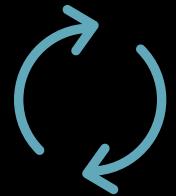


Quantization

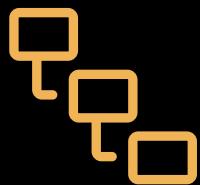


Dropout

# ... and Five Important Hyper-parameters for Training



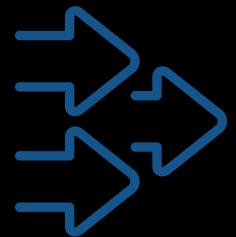
Epochs



Batch Size



Learning Rate



Gradient Accumulation



Optimizer

A stylized illustration of a person with a backpack walking away from the viewer towards a range of mountains under a yellow sky.

## PROGRESS

# TRAINING IN PROGRESS

### What you can now do

- Generate text and code with Frontier Models and Open Source models using APIs and HuggingFace, including tools, assistants and RAG
- Follow a 5 step strategy to solve problems, including dataset curation, making a baseline model, and fine-tuning a Frontier model
- Explain QLoRA for fine-tuning open-source models including defining and choosing hyper-parameters and kicking off a training run

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By next time you will be able to:

- Monitor progress in Weights & Biases
- See your model in the Hugging Face hub
- Explain ways to train more quickly at lower cost