

# Text-to-SQL Fine-tuning



# Team members



**1- Omer Alaa El Deen**

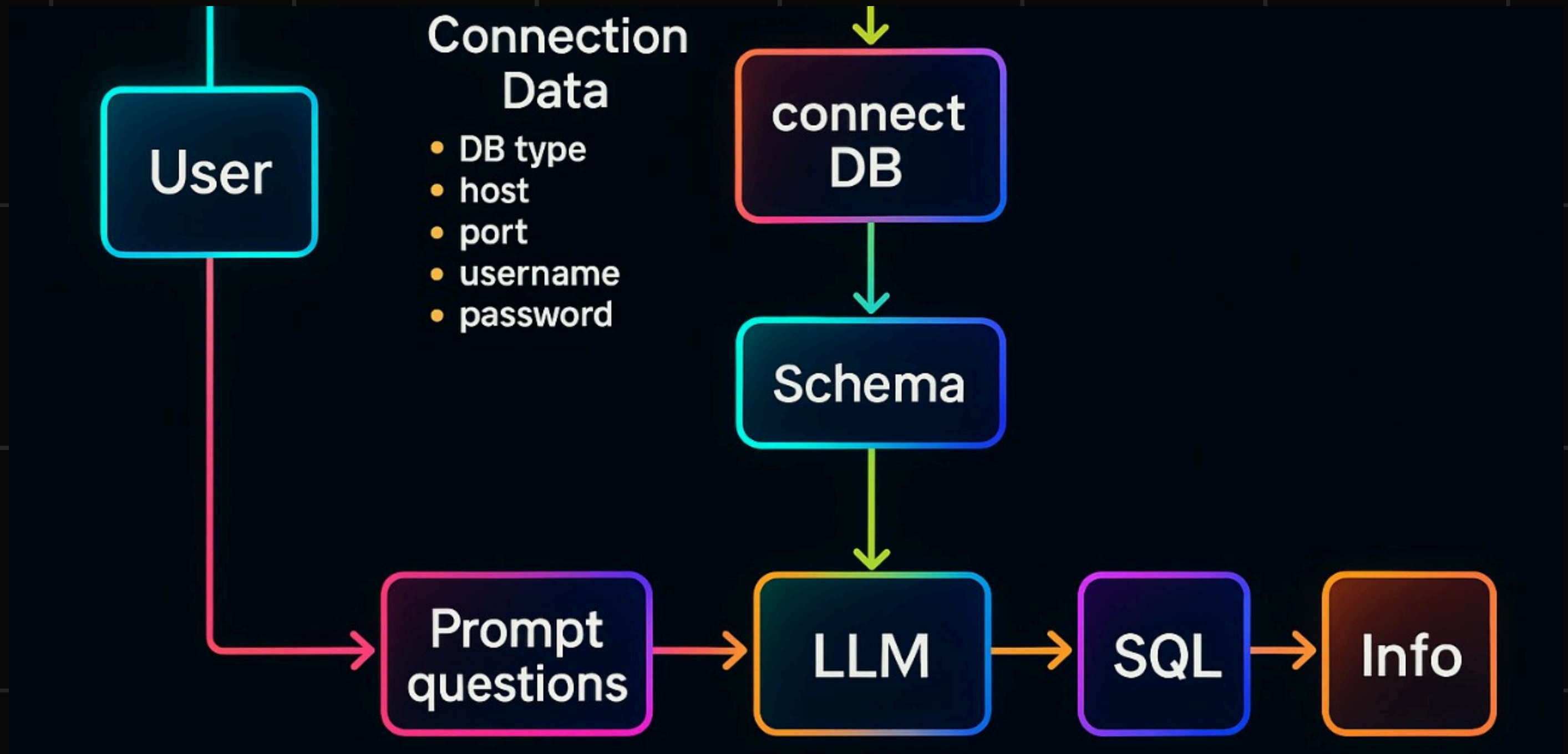
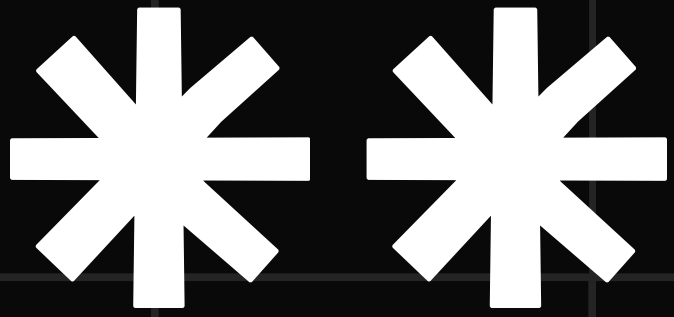


**2- Abdelmageed Fathy Abdelmageed**

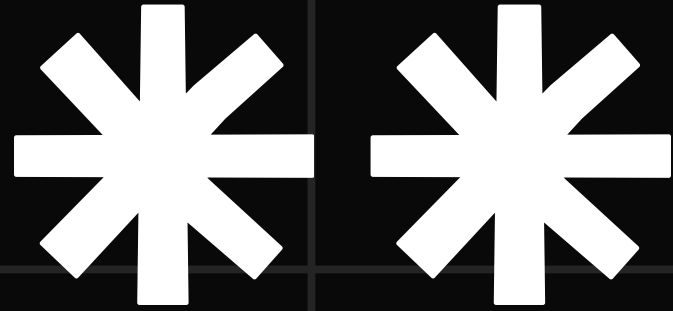
**3- Ahmed Eldairy**

**4- Hanan Khaled**

**5- Mohamed Hussein**



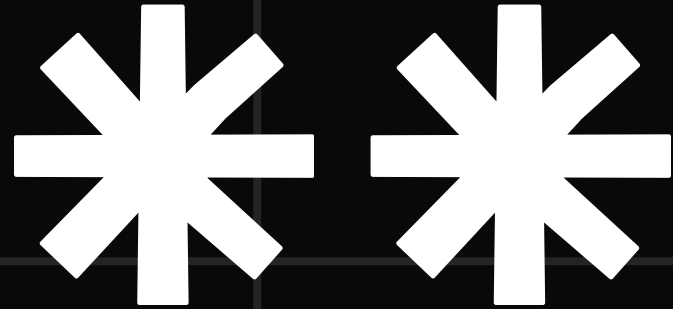
# Dataset Comparison for Text-to-SQL Fine-tuning



## 1. GretelAI Synthetic Text-to-SQL Dataset

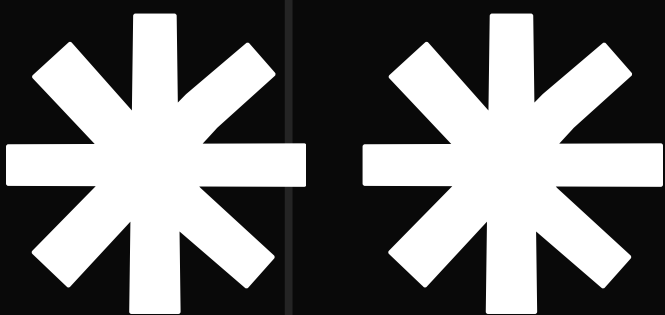
- Size & Scope: Over 105,000 examples.
- Diversity: Covers 100 distinct domains (e.g., healthcare, aviation, sports).
- SQL Complexity: Supports various complexity levels, including aggregations, joins, window functions, and definitions.
- Contextual Information: Includes database context (CREATE TABLE statements) and detailed natural language explanations.
- Quality Validation: Evaluated using GPT-4, surpassing popular benchmarks (like Spider) in SQL correctness and standards compliance.

# Dataset Comparison for Text-to-SQL Fine-tuning



## 2. Meryentr Text-to-SQL Dataset (Kaggle)

- Size & Diversity: Smaller and less diverse compared to GretelAI dataset.
- Information Availability: Limited documentation on variety and complexity of examples.



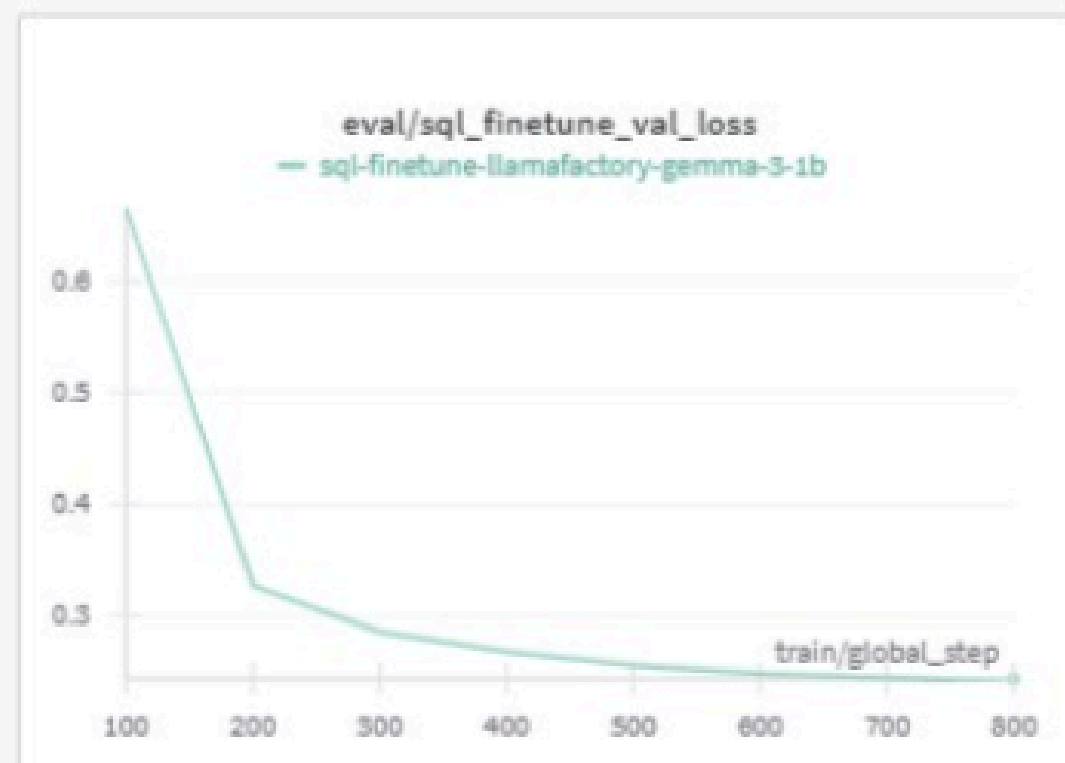
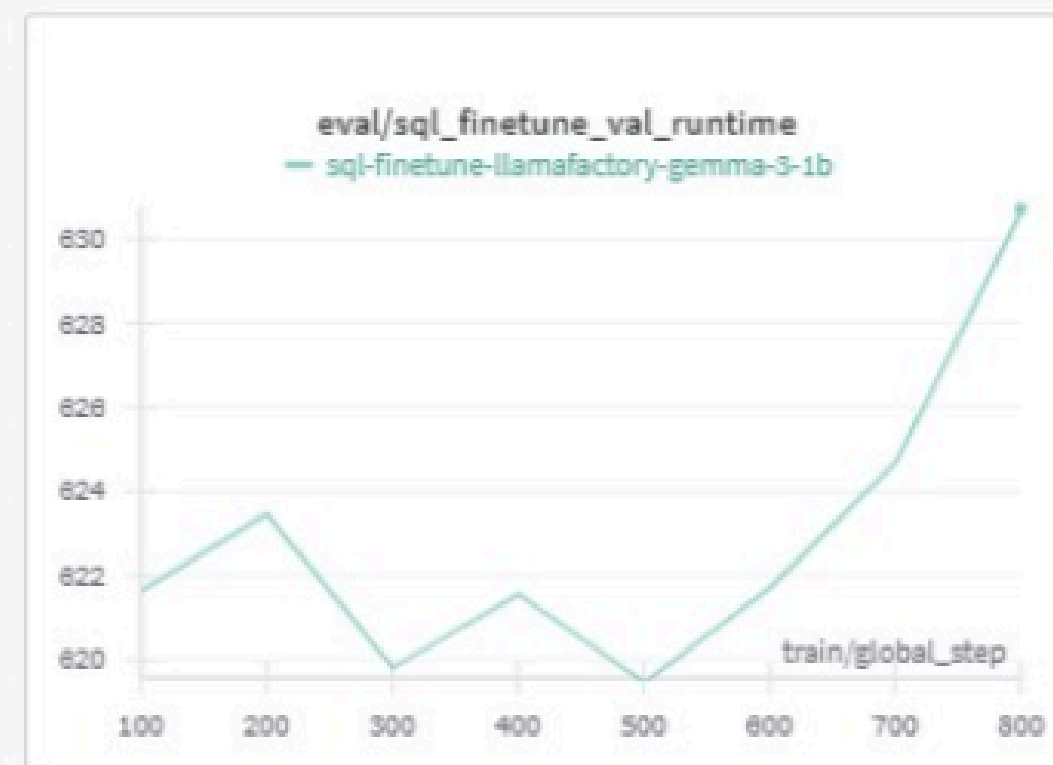
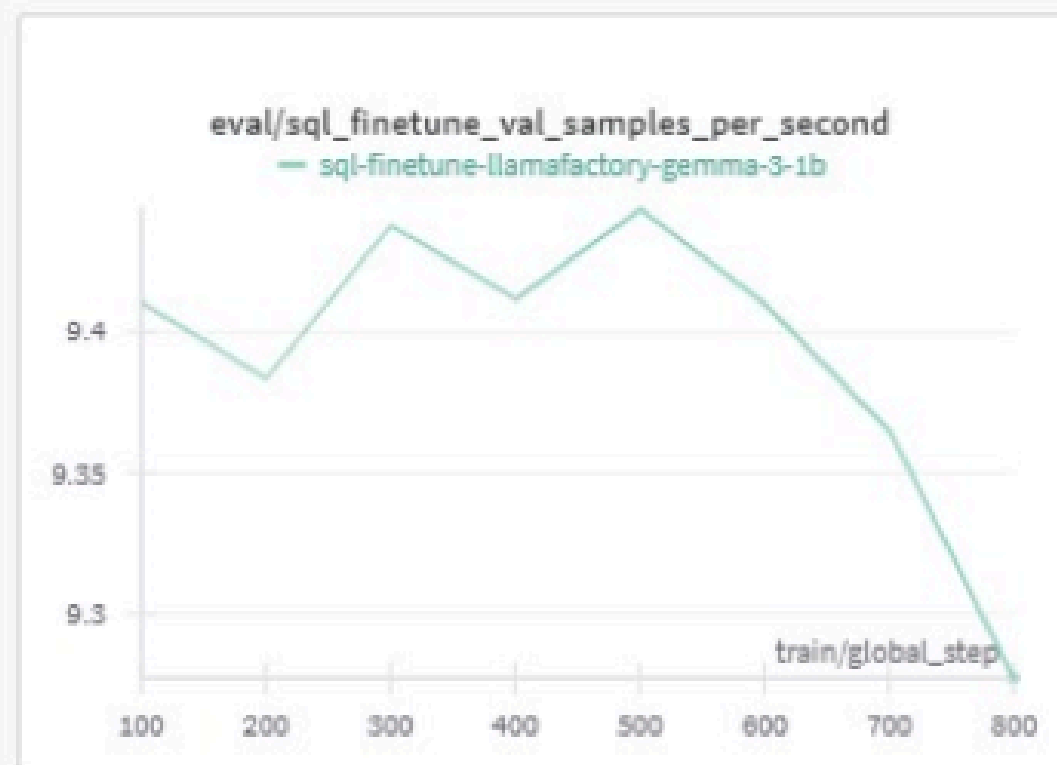
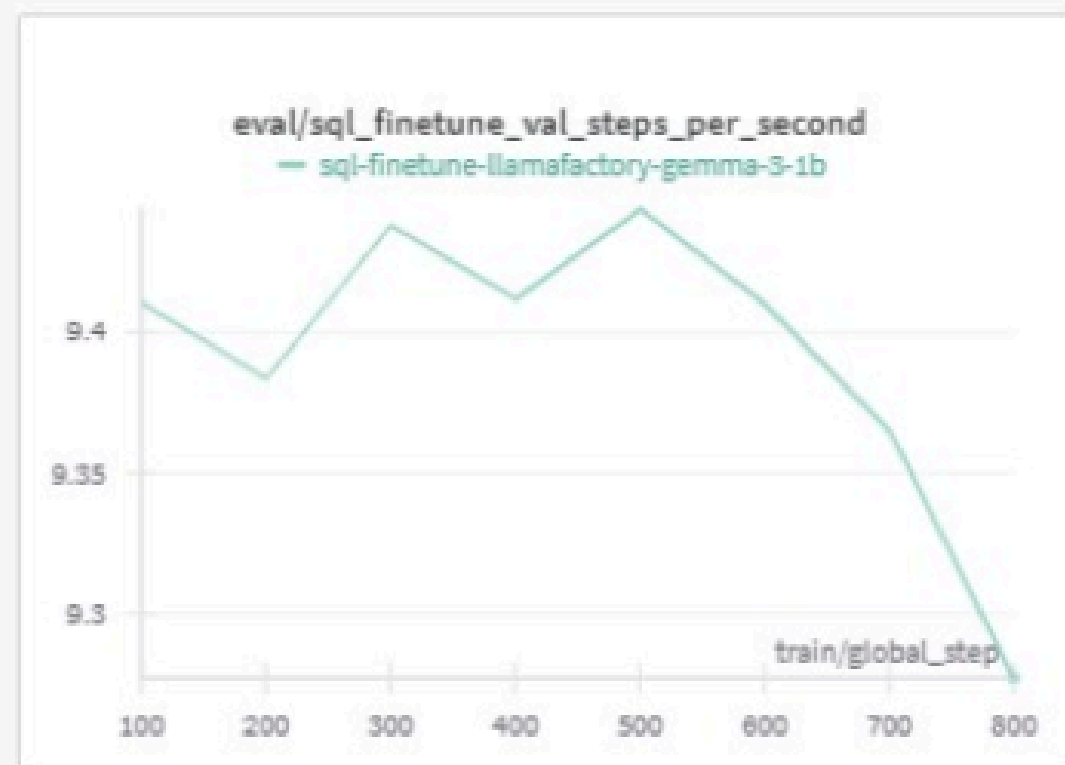
# Fine-Tuning Frameworks Comparison

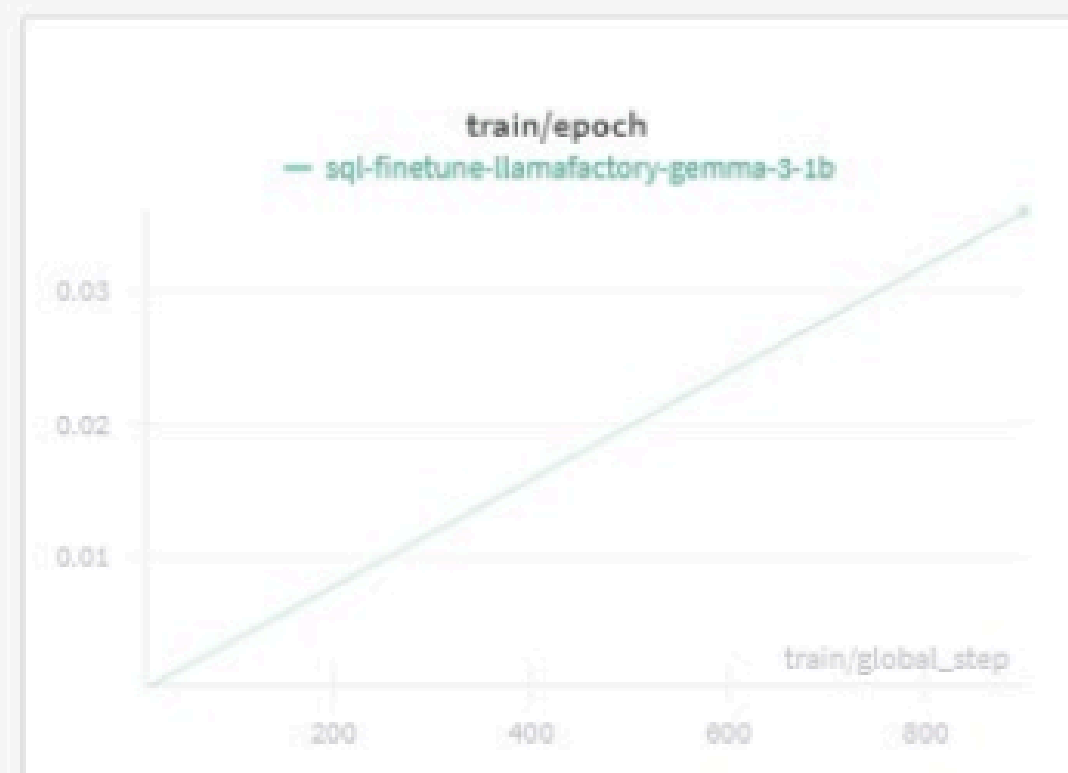
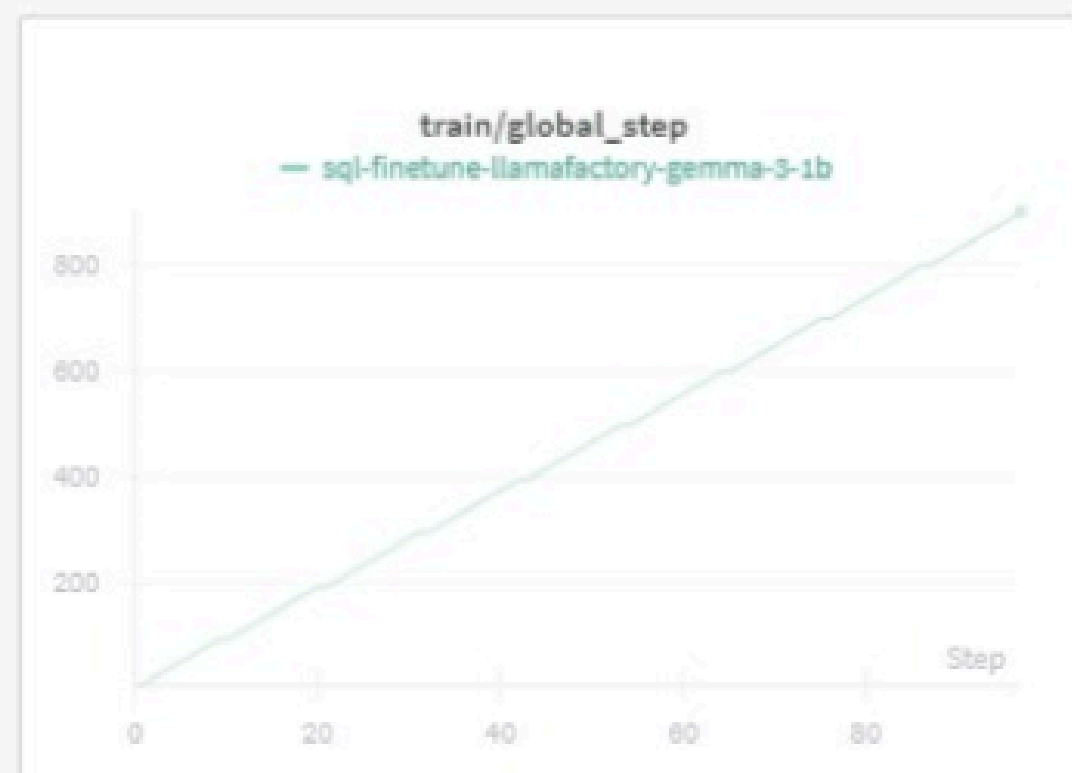
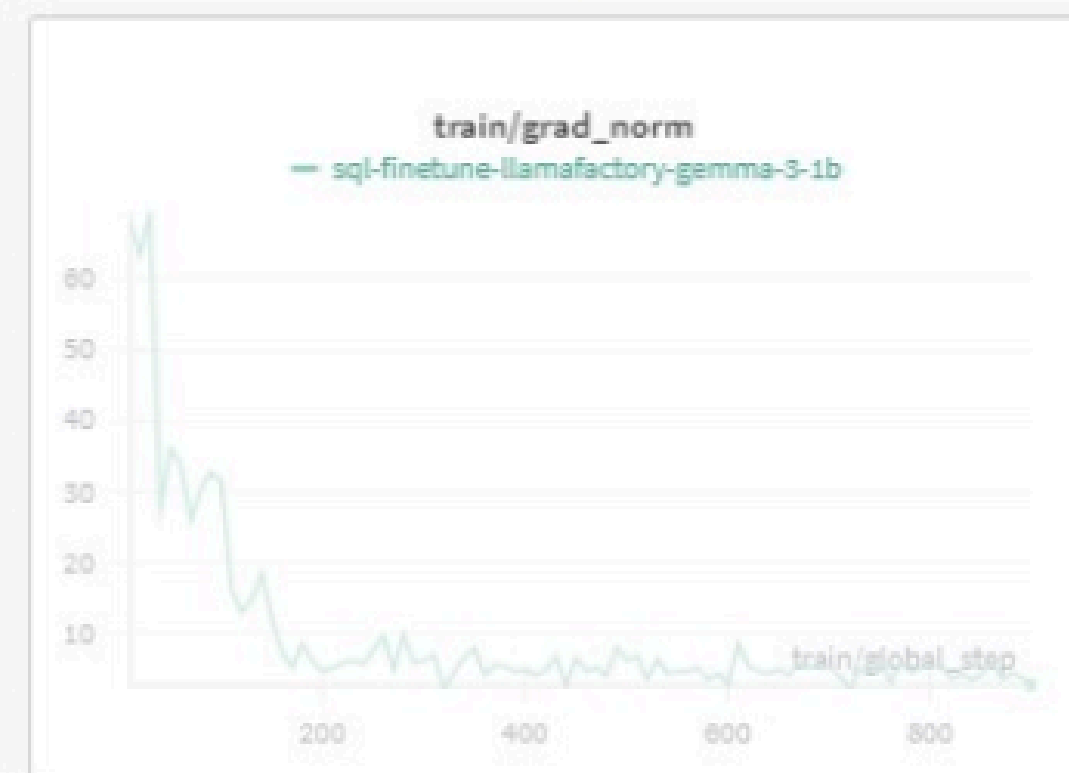
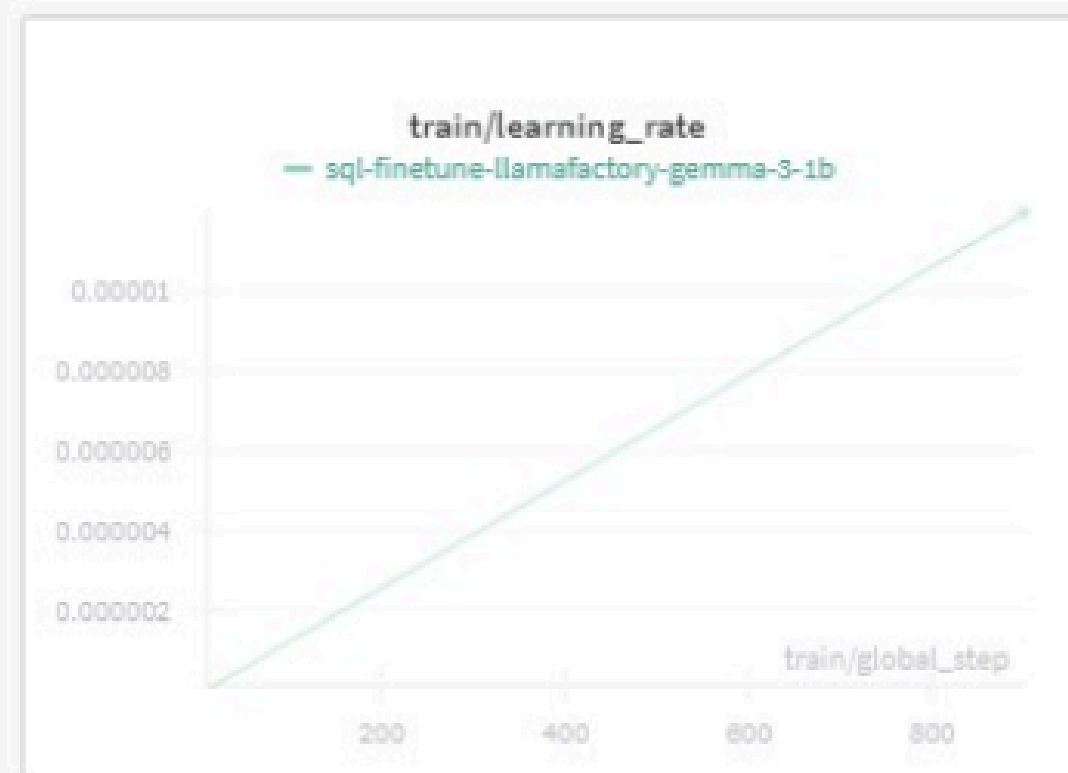
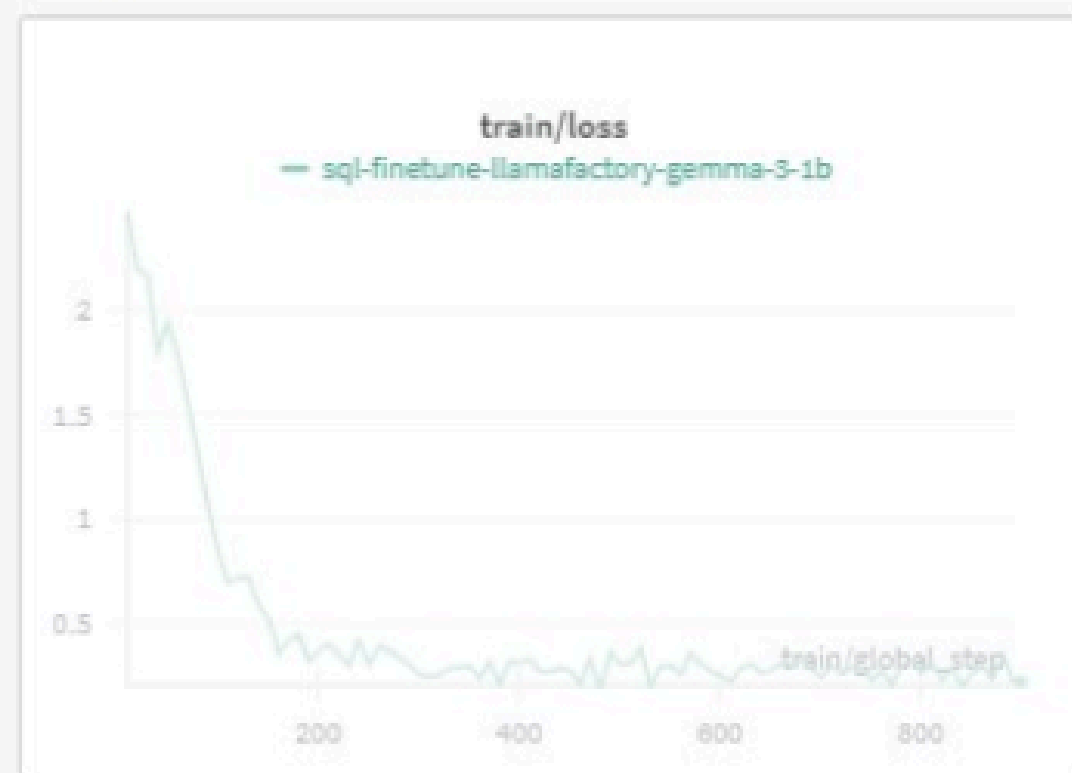
## 1. LLaMA-Factory

- Easy-to-use CLI and Web UI (LlamaBoard).
- Supports 100+ LLMs (LLaMA 2/3, Mistral, Gemma, etc.).
- Integrated with advanced methods: LoRA, QLoRA, FlashAttention-2, Unsloth.
- Efficient multi-GPU and quantized training (4-bit, 8-bit).
- Supports monitoring with TensorBoard, Wandb, MLflow

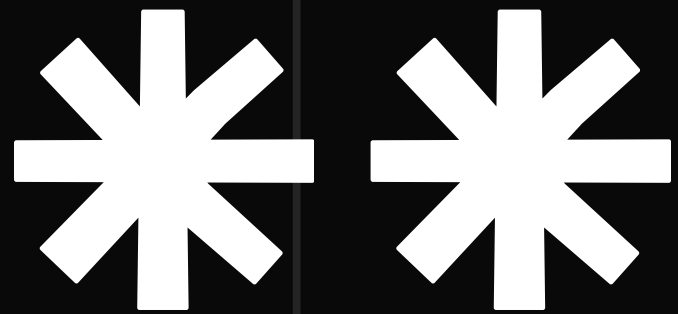
## 2. Unsloth

- Optimized for single-GPU setups.
- Very fast and memory-efficient.
- Limited multi-GPU support.











# System Output

Current connection

Type: mysql


Schema tables: 1

 Disconnect


Deploy 


## SQL Chatbot — talk to your data!

 كم عدد التيشترات البيضاء

 Generated SQL:

```
SELECT COUNT(*) FROM products WHERE product_color = 'white'
```

 How is the product size of Gray dresses?

 Generated SQL:

```
SELECT product_size FROM products WHERE product_name = 'Gray dresses'
```

Ask a question about your database ...



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Thankyou

